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APPENDIX

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ABBREVIATIONS AND ACRONYMS

CBOs	Community Based Organizations
CESMP	Contractor Environmental and Social Management Plan
CHS	Community Health and Safety
CITES	Convention on International Trade in Endangered Species
CLO	Community Liaison Officer
DHS	Demographic Health Survey
EA	Environmental Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Safeguards
FDRD	Federal Department of Rural Development
FMARD	Federal Ministry of Agriculture and Rural Development
FMEnv	Federal Ministry of Environment
FGN	Federal Government of Nigeria
FPMU	Federal Project Management Unit
GBV	Gender Based Violence
GIS	Geographic Information System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
IDA	International Development Association
IPV	Intimate Partner Violence
LGA	Local Government Area
MDAs	Ministries, Departments and Agencies
MEnv	Ministry of Environment
NESREA	National Environmental Standards and Regulations Enforcement Agency
NGO	Non-Governmental Organization
NPC	National Population Commission
OHS	Occupational Health and Safety
OP	Operational Policy (of the World Bank)
PAPs	Project Affected Persons
RAPs	Resettlement Action Plans
RoW	Right of Way
RPF	Resettlement Policy Framework
RTTP	Rural Travel and Transport Policy
SEA	Sexual Exploitation and Abuse
TA	Technical Assistance
ToR	Terms of Reference
VAC	Violence against Children
WB	World Bank
WHO	World Health Organization

EXECUTIVE SUMMARY

ES.01: Introduction/ Project Background

The Federal Capital Development Authority (FCDA) is responsible for the provision of basic infrastructural needs of the Federal Capital City- Abuja. The FCDA has taken proactive steps to open the districts for investment through infrastructural developments which include road constructions and maintenance. Thus, the FCDA has put up a proposal for the construction of arterial and collector road N5 and N2 respectively from Life Camp Junction to Efab-Jabi road is the N2 and the N5 is to the Ring Road III in Karemo. The proposed roads cover a total distance of 7.2km. The collector road is 2.7km stretch from Life Camp Junction to Efab- Jabi road, while the arterial road is 4.5km stretch from the Life Camp Junction to Karemo Village intersecting the proposed ring road III. The entire road network is within AMAC of FCT-Abuja.

ES.02: Project Description

The road construction will involve engineering works which will include site marking and pegging, site clearing, mobilization of equipment to site, removal of top soil, de-watering, earth works, excavation, construction of drainage structure and facilities, earth filing and road surfacing.

The N2 road project is a single lane carriageway with a design speed of 60km/hr. This portion is expected to have a carriageway width of 3.5m, a shoulder width of 1m and a (RoW) of 40m, a maximum grade of 5% and a pavement laterite sub-base. Meanwhile, the N5 road project is a double lane carriageway with a design speed of 80km/hr, a carriageway width of 3.5m, a shoulder width of 1.2m, a (RoW) of 70m including design parameters; curve radius, curve lengths, sight distances and other parameters all corresponding to the designed speed.

ES.03: Description of Project Environment

The proposed N5-N2 road construction is 7.2Km long and it lies between Lat. N09^0 04′ 26.3″ and Long E007^0 22′ 39.4″ for the N5 road and Lat. N09^0 04′ 31.5″ and Long E007^0 24′ 27.1″ for the N2 road in AMAC of FCT-Abuja. The entire distance traverses five major settlements and communities prominently in the Federal Capital City (FCC) and district areas which are in Jabi, Efab, Dape, Old Karemo and Karemo Sabo.

Survey of the areas shows that major human activities and land use include commercial activities such as buying and selling in the markets, petty trading around residential areas, mini shops and business complexes. There are also many residential buildings and farms where some cash crops such as cashew and cassava are planted.

It was observed that the N2 road alignment is poorly drained in some locations especially around the Efab estate, and between the baseline estate and the bypass junction at the end of the N2 road. The condition is believed to be caused by poor drainage channels which have led to surfaces erosion of the road. The N5 is a new route from the Life Camp junction through some bush parts with many farmlands usually cashew plantations. It is feared that during the construction, some of these farmlands will be affected by the engineering designs which include line drains and slope protection works.

ES.04: Environmental and Social Mitigation and Monitoring Plan

However, with the observed challenges above, it is important to list some of the expected positive impacts the road construction will have on the communities.

1) No doubt the construction will improve the standard of living of the households in the host communities by making it easier to link up with business and sales opportunities beyond their local environment.
2) A well-constructed road with adequate drainage system will improve environmental sanitation situation of the host communities and enhance healthier living. This is because rainwater and other water bodies will move in the right direction without encroaching on residential and business premises.
3) After construction, the roads will open the communities to more commercial and economic activities which are expected to create local job and wealth which will be

retain the communities since more people may want to settle down in the communities due to good roads.

4) The roads will attract investments in health, retail, small scale manufacturing as well as food and beverages businesses due to increase in the number of motorists plying the routes.
5) The construction of roads will also increase people's confidence in governance and reduce rural-urban migration because the community people can now save more money from the reduced cost of maintaining their vehicles, bikes etc. Finally, public transportation will improve because the transportation fares should be technically affected and adjusted to ease local transportation.

Notwithstanding, there are also some environmental and social challenges the construction may generate in the host communities. These challenges are presented in the main body of the EMP report with corresponding mitigation measures on Table 12 – 13.

ES.05: Public Consultation

Consultations were held with government agencies in the FCT such as the Ministry of Environment, the Abuja Municipal Area Council AMMAC. There were also consultations with traditional rulers, community leaders, and the youth groups in the communities, i.e. Dape and Karemo Sabo where the project is domiciled. Three major things were articulated by the stakeholders during the consultations. One; the communities and other stakeholders wanted the project to commence within the shortest time. Two; the communities requested that willing and eligible persons from the communities should be considered for employment during the execution of the project. Third; the communities wanted compensation for farmlands, crops and structures that will be affected by the construction. The detail of the consultations is presented in Chapter 5.

CHAPTER ONE

INTRODUCTION

1.1 PROJECT BACKGROUND

The Federal Capital Development Authority (FCDA) provides the basic infrastructure needs of the Federal Capital City- Abuja. The Federal Capital Development Authority (FCDA) is an arm of the FCTA. It has taken proactive step to open the districts for investment through infrastructural development of the area by constructing roads among other things in some parts of the Federal Capital City (FCC). The infrastructural development initiatives are expected to enhance access to these areas and encourage investment in housing projects and industrial development. As part of its numerous development initiatives the FCDA engaged Messrs Tectonic Engineering & Consult Limited to undertake an Environmental Management Plan (EMP) for the construction of the proposed Arterial and collector Road N5-N2 from Life Camp Junction to Efab- Jabi road and to Ring Road III in Karemo area. The proposed roads cover a total of 7.2km. The distance from the Life Camp Junction to Efab-Jabi is the collector road; 2.7km, while the stretch from the Life Camp Junction to Karemo Village is the Arterial road; 4.5km all in AMAC Abuja- FCT.

The roads when constructed will improve transportation and the livelihood of the communities along this road corridor. There will equally be reduction in travel time and cost while local businesses will boom resulting in household income. Overall, the beneficiaries of the project will include civil servants, businessmen and women, and would be investors in properties, factories and transportation services and the people that rely on the roads for access to their homes, office, market and social service centres. Notwithstanding these positive impacts, the project is envisaged to have limited negative environmental and social impacts on the environment and host communities.

These impacts are technically common to civil engineering works, and the project has been placed on Category Two (2) by the Federal Ministry of Environment requirements for Environmental Management Plan (EMP).

Therefore, the Federal Capital Development Authority (FCDA) through Messrs Tectonic Engineering & Consult Limited has prepared this Environmental Management Plan (EMP)

highlighting the environmental and social concerns for the proposed road construction. Consequently, issues such as loss of economic trees, cash crops, loss of assets/structures, economic displacement land take features/construction requirements and displacement associated with involuntary resettlement are being assessed for appropriate action by the FCDA.

1.2 OBJECTIVE OF THE EMP

The Objectives of the EMP are:

- To ensure the project follows applicable Nigeria and international environmental and social legal requirements and policies and procedures that safeguard the environment.
- To outline the mitigating/enhancing, monitoring, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse environmental and social impacts.
- To provide technical views and factors variables that will enhance the benefits of the project among all stakeholders.
- To specify the environmental and social conditions of the project area that will guide the effective and efficient implementation of the project.

1.3 ADMINISTRATIVE AND INSTITUTIONAL LEGAL FRAMEWORK

This EMP is prepared in consonance with relevant FCT and Federal Government policies, laws, regulations, guidelines, and applicable international environmental laws.

In Nigeria, the Federal Ministry of Environment (FMEnv) is the nation's regulatory authority for the environment. Earlier, an Act Number 58 of 1988 established the Federal Environmental Protection Agency (FEPA) which was the chief regulatory body for environmental protection in Nigeria. The FEPA is since defunct. However, when the FMEnv was created in June 1999, it took over the functions of the FEPA. The Act establishing the ministry places on it the responsibility of ensuring that all development and industry activity, operations and emissions are within the limits prescribed in the National Guidelines and Standards. Again, the ministry must ensure that individuals, corporate bodies or groups comply with relevant regulations for environmental pollution management in Nigeria as may be released by the ministry from time to time.

In general, the Nigerian and international laws, regulations, and policies applicable to this project are described on Table 1 & 2 below; while table 3 gives a comparison of FCT laws, the Federal laws and the international policies applicable to the project.

Table 1. Nigeria Legislations/ Regulations/Policy

S/N	Policy/Regulation	Highlights
1.	A. Federal Ministry of Environment (FMEnv) National Policy on Environment	Environmental management in Nigeria is based on the National Policy on the Environment (1989), as revised in 1999. The goal of this policy is to achieve sustainable development which includes to: • Secure for all Nigerians a quality of environment which is adequate for their health and wellbeing. • Conserve and use the environment and natural resources for the benefit of present and future generations. • Restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principle of optimum sustainable yield in the use of these natural resources and ecosystems. • Raise public awareness and promote understanding of essential linkages between environment and development and The proposed project will therefore imbibe the principles of the National Policy on Environment in its execution.
2.	Environmental Impact Assessment (EIA) Act No. 86 of 1992	The EIA Act No 86 of 1992 stipulates that the public or private sector of the economy shall not embark on or undertake or authorize projects or activities without prior consideration, at an early stage of their environmental effects. The Act makes EIA mandatory for any major development project, prescribes the procedure for conducting and reporting EIAs. The Act also clearly stipulates among other things the objectives of an EIA, list of project activities for which an EIA is mandatory; minimum content of an EIA, regulatory authority of FMEnv; offences and penalties.
3.	National Environmental Impact Assessment Procedural and Sectoral Guidelines, 1995.	In response to the promulgation of the EIA Act of 1992, the FMEnv developed a National EIA Procedure in 1995. The procedure provides steps to be followed from the stage of project conception to commissioning to ensure that the project is implemented with maximum consideration for the environment. Fig. 1.2 presents the EIA Process Flowchart showing the onset of EIA Registration with the Federal Ministry of Environment to Audit stage when a project becomes operational.
4.	Environmental Impact Assessment (EIA) Act CAP E12, LFN 2004	The EIA Act stipulates that the public or private sector of the economy shall not embark on or undertake or authorize projects or activities without prior consideration, at an early stage of their environmental effects. The Act makes EIA mandatory for any major development project, prescribes the procedure for conducting and reporting EIAs. The proposed project is being prepared as required by the EIA Act.

S/N	Policy/Regulation	Highlights
5.	S.I.9, 1991 - National Environmental Protection (Pollution Abatement in Industries Generating Wastes) Regulations 1991	This Regulation imposes restrictions on the release of toxic substances and stipulate requirements for pollution monitoring units, machinery for combating pollution and contingency plan by industries; submission of lists and details of chemicals used by industries to FMEnv; requirement of permit by industries for the storage and transportation of harmful or toxic waste; the generator's liability; strategies for waste reduction; permissible limits of discharge into public drains; protection of workers and safety requirements; environmental audit (or EIA for new industries) and penalty for contravention. The project shall therefore adhere to the requirement of this regulation.
6.	Harmful Waste (Special Criminal Provisions etc) Act CAP 165 LFN 1990.	The Harmful Waste (Special Criminal Provisions etc) Act CAP 165 LFN 1990 prohibits and declares unlawful all activities relating to the purchase, sale, importation, transit, transportation, deposit, storage of harmful wastes. Appropriate penalties for contravention are also prescribed. The project shall therefore adhere to the requirement of this regulation.
7.	S.1.15, 1991: National Environment Protection (Management of Solid and Hazardous Wastes) Regulations 1991.	The National Environment Protection (Management of Hazardous and Solid Wastes) Regulations, S.1.15 of 1991 (No. 102, Vol. 78, August 1991) define the requirements for groundwater protection, surface impoundment, land treatment, waste piles, landfills, and incinerators. The Regulations describe the hazardous substances tracking programme with a comprehensive list of acutely hazardous chemical products and dangerous waste constituent. The requirements and procedure for inspection, enforcement and penalty are also described. The project shall therefore adhere to the requirement of this regulation.
8.	National Environmental Standards and Regulations Enforcement Agency (NESREA), Act 2007.	NESREA established by 2007 Act of the National Assembly is charged with the responsibility of enforcing all environmental laws, guidelines, policies, standards and regulations in Nigeria. It also has the responsibility to enforce compliance with provisions of international agreements, protocols, conventions and treaties on the environment. Eleven (11) regulations for pollution abatement in all categories of industries have been published up to date and include regulations on sanitation and waste control; Regulations, 2009 (S. I. 28), Noise standards and control; Regulations, 2009 (S.I.35), Soil erosion and flood control; Regulations, 2010 (S.I.12) surface and groundwater quality control Regulations, 2010 (S.I.22), and ozone layer protection Regulations, 2009 (S.I.32)
9.	Land Use Act CAP 202 LFN 1990	The Land Use Act (formerly Land Use Decree of 1978) protects the rights of all Nigerians to use and enjoy land in Nigeria which must be protected and preserved. Land acquisition must follow all the due process of law. The Land Use Act of 1978 vests all land in the territory of each state (except land vested in the Federal government or its agencies) solely in

S/N	Policy/Regulation	Highlights
		the hand of the Governor of each state, who would hold such land in trust for the people and would henceforth be responsible for its allocation in all urban areas while similar power in non-urban areas are conferred on Local Governments.
10.	Forestry Act CAP 51 LFN 1994	This Act provides for the preservation of forests and the setting up of forest reserves. It is an offence, punishable with up to 6-month imprisonment, to cut down trees over 2ft in height or to set fire to the forest except under special circumstances.
11.	The Endangered Species Act, Cap E9, LFN 2004	This Act prohibits, except under a valid license, the hunting, capture or trade in animal species, either presently or likely to be in danger of extinction and defines the liability of any offender under this Act. It also provides for regulations to be made necessary for environmental prevention and control as regards the purposes of this Act.
12.	The Nigerian Urban and Regional Planning Act, No 88 of 1992	This Act makes it mandatory for proposed development of certain categories including industries to have Environmental Impact Assessment as part of the Planning Approval Application.
13.	The State Legislations (Kaduna and Kano States)	In accordance with Section 24 of the FMEnv Act, Chapter 131 of the Laws of the Federal Republic of Nigeria, 1990, the State Environmental Protection Edicts are enacted. The edict empowers the state environmental protection agency to establish such environmental criteria, guidelines/specifications or standards for the protection of the state's air, lands and waters as may be necessary to protect the health and welfare of the people.

Table 2. International Regulations and Conventions

S/N	Policy	Highlights
1.	World Bank Guidelines on Environmental Assessment (EA) 1991. World Bank Environmental and Social Safeguard Policies	The World Bank requires an Environmental Assessment (EA) of a proposed activity/facility (i.e. project) from a borrower as a pre-requisite before granting any financial assistance in the form of loans. The EA report usually forms part of the overall feasibility study or project preparation. The bank has categorization for projects based on their EA requirements, which is like that of FMEnv. • Environmental Assessment (OP/BP 4.0, • Natural Habitats (OP/BP 4.04) • Involuntary Resettlement (OP/BP 4.12) • Physical Cultural Resources (OP/BP 4.11)
Some of the international conventions are outlined below:		
	African Convention on the Conservation of Nature and Natural Resources, 1968.	The African Convention on the Conservation of Nature and Natural Resources was adopted in Algiers, Algeria, on September 15, 1968 and entered into force on June 16, 1969. The Convention stipulates that the contracting States shall undertake to adopt the measures necessary to ensure conservation, utilization and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best

		interests of the people.
	Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972	This Convention also known as the Bonn Convention was adopted in 1979 and entered into force in 1983. It stipulates actions for the conservation and management of migratory species including habitat conservation.
	The Montreal Protocol on Substances that Deplete the Ozone Layer, 1987**.**	The Protocol was adopted on September 16, 1987 as an international treaty to eliminate ozone depleting chemicals production and consumption.
	Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal, 1987.	The Convention was adopted on March 22, 1989 and entered into force in May 1989*.* It focuses attention on the hazards of the generation and disposal of hazardous wastes. The Convention defines the wastes to be regulated and controlled, warned on their trans-boundary movements in other to protect human and environmental health against their adverse effects.
	The United Nations Convention on Biological Diversity, 1994.	The convention was adopted in 1994. The objectives of the Convention include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources.
	The United Nations Convention on Climate Change, 1992.	The Convention on Climate Change was adopted in 1992 during the Rio Earth Summit in Rio De Janeiro, Brazil and entered into force in 1994; to limit Greenhouse Gas (GHG) emissions which cause global warming.
	Endangered Species Act 11, 1985	In pursuance of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES, the Federal Government of Nigeria enacted the Endangered Species (Control of International Trade and Traffic) Act 11,1985 which makes among others, provisions for the conservation, management and protection of some of the country's endangered species. Section 1 absolutely prohibits the hunting or capture or trading in the threatened animal species. The list of endangered species includes reptiles, birds (Aves) and mammals (insectivores, primates, rodents, carnivores).
	United Nations Guiding Principles on the Human Environment, 1972.	The conference on the Human Environment, held at Stockholm from June 5 to 16, 1972, was in many respects the most successful inter-national conference held in recent years. In a two-week period, it adopted not only a basic Declaration and a detailed resolution on institutional and financial arrangements, but also 109 recommendations comprising an ambitious action plan. The Declaration contains a set of common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.
	International Health Regulations (2005)	The International Health Regulations (IHR) is an international legal instrument that is binding on 196 countries across the globe, including all the Member States of World Health Organisation (WHO). This binding instrument of international law entered into force on 15 June 2007. The purpose and scope is "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks and which avoid unnecessary interference with international traffic and trade".
	Declaration of the United Nations Conference on	The principles of this Declaration relevant to the Project are summarized below:

	Human Environment	Principle 2: The natural resources of the earth, including the air, water, land, flora and fauna especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate. Principle 3: The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved. Principle 4: Nature conservation, including wildlife, must receive importance in planning for economic development. Principle 15: Planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. Principle 18: Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.
	International Labour Organisation (ILO): ILO-OSH 2001 - Guidelines on Occupational Safety and Health (OSH) Management Systems.	These guidelines call for coherent policies to protect workers from occupational hazards and risks while improving productivity. The guidelines present practical approaches and tools for assisting organizations, competent national institutions, employers, workers and other social partners in establishing, implementing and improving occupational safety and health management systems, with the aim of reducing work-related injuries, ill health, diseases, incidents and deaths. At the organizational level, the guidelines encourage the integration of OSH management system elements as an important component of overall policy and management arrangements. Organizations, employers, owners, managerial staff, workers and their representatives are motivated in applying appropriate OSH management principles and methods to improve OSH performance. Nigeria ratified the guidelines in 2001.

Table 3: Comparison of FCT, Nigerian EA and International (World Bank) EA Guidelines

FCT- Abuja	Nigeria National	World Bank Policies
FCT – Abuja Environment Protection Board has domesticated the National Policy on Environment to guide its development operations Abuja Environmental Protection Board (AEPB) is the enforcement arm of the FCT Environmental laws. Its operations are guided by the following: • Abuja Environmental Protection Board AEPB Act, 2007. • The Federal Government of	The Federal Ministry of Environment through the National Policy of Environment has a goal to achieve sustainable development The Environmental Impact Assessment (EIA) Act CAP. E12 L.F.N (*2004)* makes it mandatory for all major development projects likely to have negative impacts on the environment like the RAAMP to conduct Environmental Impact Assessments. RAAMP is rated a category II based	Environmental Assessment (OP/BP 4.01) which ensures that projects likely to have potential environmental and social negative impacts undergo environmental assessments based on the defined project category.

Nigeria Public Health Laws, 1998 for sanitation enforcement issues.	on the Nigerian EIA law which stipulates the need for an Environmental Management Plan	
Environmental Protection and Conservation Agency law has provisions for biodiversity protection	The National Policy on Environment has provisions to restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principle of optimum sustainable yield in the use of these natural resources and ecosystems.	Natural Habitat (OP/BP 4.04) which is triggered by RAAMP activities such as vegetation clearance. The policy aims to conserve biological diversity and promote the sustainable use of natural resources. Mitigation measures for envisaged associated negative impacts have been captured in this EMP
No specific law	National Cultural Policy, 1988 sets directions for the following: affirmation of the authentic cultural values and cultural heritage; building up of a national cultural identity and parallel affirmation of cultural identities of different ethnic groups. Federal Ministry of Information & Culture has a mandate to promote the nation's rich cultural heritage. National Commission for Museums and Monuments has a mandate to manage the collection, documentation, conservation and presentation of the National Cultural properties	Physical Cultural Resources (OP/BP 4.11) which stipulates the need to protect the integrity of physical and cultural heritage. Excavation works may lead to chance find, also, project activities may not completely avoid unknown sacred sites and cultural resources. To address this policy, chance find procedures is applicable
The state adopts the National Land Use Act (1978)	Land Use Act (1978) which proscribes that all Land belongs to the State Government / FCT and can be allocated for developmental purposes	OP 4.12 Involuntary Resettlement which ensures measures to compensate for land acquisition, economic and physical displacement, loss of assets, economic trees and cash crops.

CHAPTER TWO
PROJECT DESCRIPTION

2.1 OVERVIEW OF THE PROPOSED PROJECT

The proposed project is the engineering design and construction of the N5-N2 7.2Km Life Camp Junction- Efab-Jabi-Karemo Road. The proposed roads are N5: Arterial road and N2: collector road. The roads form a T-Junction at the starting point from the Life Camp junction to the Efab- Jabi road as the collector road, while the Life Camp junction to the proposed Ring Road III in Karemo village is the Arterial road. As earlier stated in Chapter One, the proposed roads cover 7.2km in total. The N2 collector road is a total of 2.7km with a right of way (RoW) of 40m, a single lane carriageway, a 3.5m lane width and an asphalt of 25mm – 30mm thickness. The design speed is 60km/h. The road construction will also de-silt existing culverts; provide new box culverts at selected locations and reinforced concrete (RC), rectangular line drain at selected/appropriate alignments within the built-up areas, while slope protection works/embankment in areas with erosion threat will be provided.

The N5 Arterial road is a total of 4.5km and a right of way (RoW) of 70m. It is a dual lane carriageway, with a 3.5m lane width each and an asphalt of 30mm – 40mm thickness. The design speed is 80km/h with a 4m pedestrian pavement and a 3m parking lane. The road construction will also de-silt existing culverts, provide new box culverts at selected locations, and provide reinforced concrete (RC), rectangular line drain at selected alignments within the built-up areas. It will also provide slope protection works/embankment in areas with erosion threat.

Detail of the road sections are shown in Plate 1&2 below and in the subsequent figure and sub sections.

Plate1. A cross section of the N2 Collector Road

Plate 2. Cross section of the proposed N5 Arterial Road

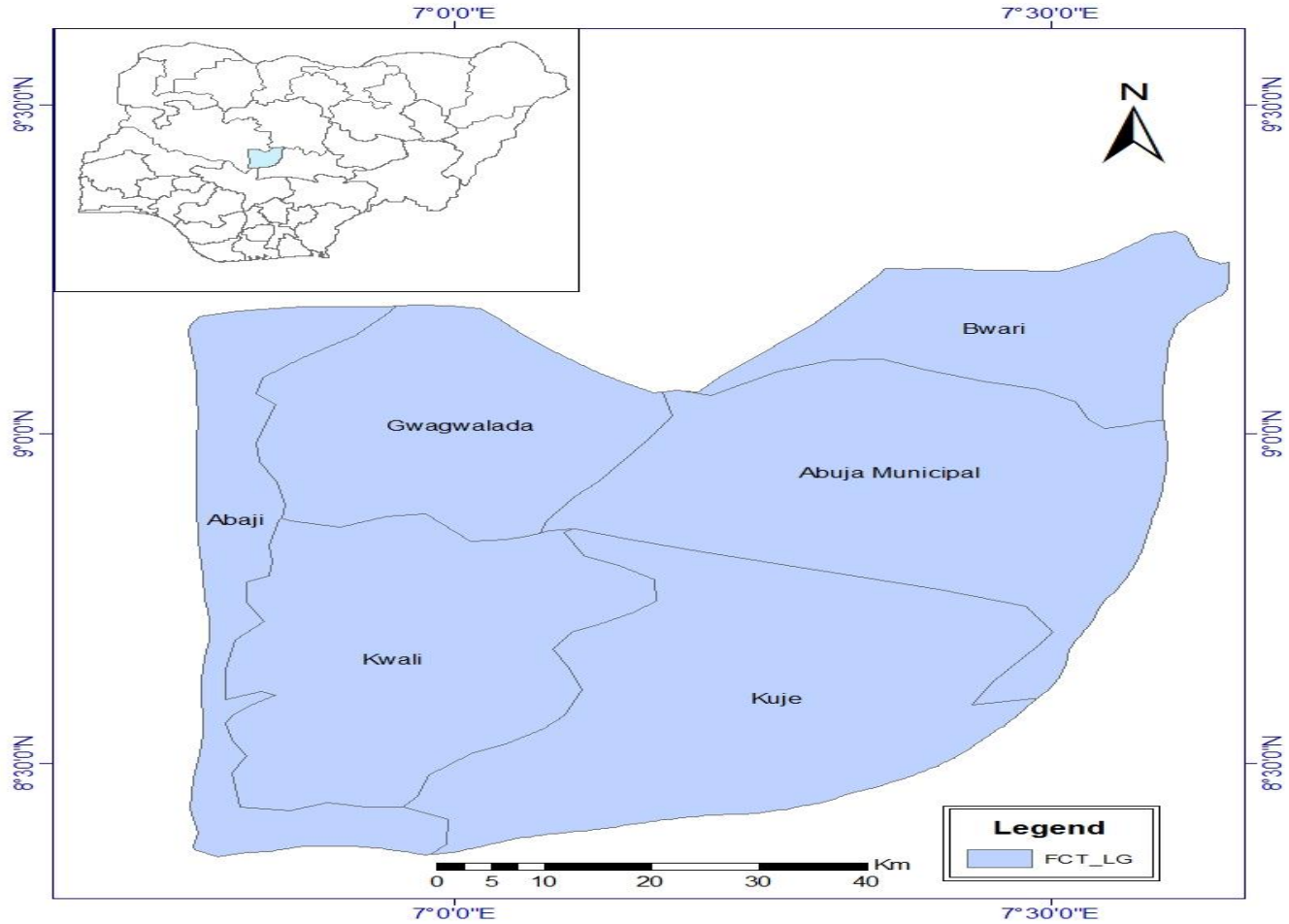


Figure 1: Map of the FCT Abuja, Nigeria

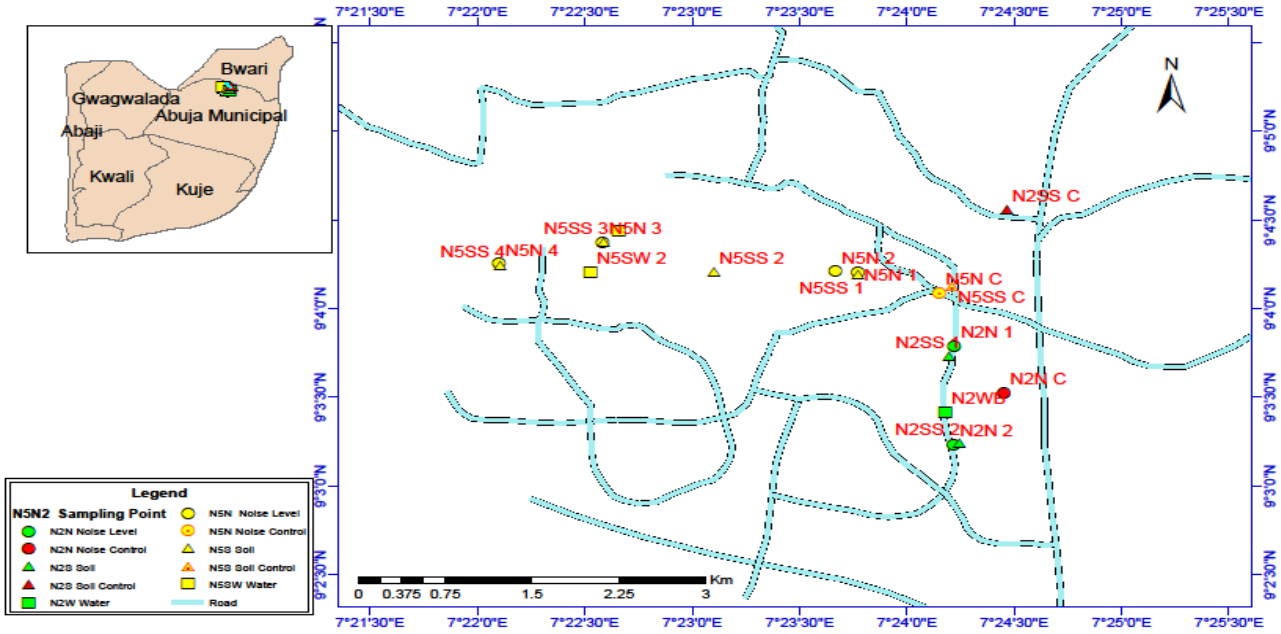


Figure 2: Map showing the proposed N5-N2 Project Routes

2.2 PROPOSED PROJECT ACTIVITIES

Table 4: Proposed Project Activities

SN	PROJECT PHASE	ACTIVITIES	LABOR / STAFFING	SUPPORT FACILITIES
1.	Pre-Construction	• Site marking and Pegging • Site clearing • Mobilization of equipment to site • Removal of topsoil • Dewatering • Creation of borrow pits	• Skilled labour (estimate of 7 nos) • Unskilled Labour (estimate of 20 nos)	• Base Camp • Sanitary Facilities (1 male and 1 female toilets) • Staging Area • Borrow Pit Area • PPEs • First Aid kits • Portable water
2.	Construction	• Earth works • Excavation • Construction of drainage structure and facilities • Earth filing • Road surfacing • Construction of Box culverts • Strengthening the existing carriage way • Installation of Traffic Signage along rehabilitated Road	• Skilled labour (estimate of 8 nos) • Unskilled labour (estimate of 30 nos)	• Base Camp • Clinic • First aid kits (1: 20 staff) • Borrow pit • Maintenance Workshop • Staging Area • Sanitary Facilities (2 male and 2 female toilets) • PPEs • Portable water
3.	Operation and Maintenance	• Vehicular movement • Identification of road defects • Fixing of potholes • De-siltation of culverts and drains • Treatment such as crack sealing	• Skilled labour (estimate 3 nos) • Unskilled labour (estimate 10 nos)	• Maintenance Workshop • Maintenance equipment

2.3 PROPOSED ROAD DESIGN PLANNING AND MOBILISATION

The proposed alignment is designed in accordance with the provisions of the Draft Low Volume Roads (LVRs) Manual, 2016. All standards adopted in the design of the roads are those set out in the 'Federal Highway Design Manual' Part 1: Design (2008); Maintenance (1980). Other relevant design codes from the British Standards Manual adopted include the Road Notes 29, 30, and 31 as well as the TRL overseas Road Notes 3, 5, 18, 19, (TRRL Report 1132) and Road Note no 39. In general, the manuals clearly state that minimum standards shall only be employed throughout a route if it is likely that no further development will be required.

In line with this, the FCDA design is planned for a maximum width of 15m (for locations with line drains) and a minimum width of 10m depending on existing sensitivities in the area. The road will be surfaced with asphalt of 25mm – 30mm and 30mm - 40mm thickness along the stretch of the road. Detail design standard is stated on Table 5 & 6 below.

Table 5. Geometric Design Standards for Arterial Road

ITEMS	Standard
Design Speed	80km/h
Vertical Clearance (min. above pavement)	5.3m
Desirable min. horizontal curve radius	500m
Absolute min. horizontal curve radius	250m
Max. Longitudinal Gradient	5%
Summit "K" value	25min
Sag "K" value	20min
Normal Cross Fall	2%
Max. Super elevation	6%
Stopping Sight Distance	120m

Table 6. Geometric Design Standards for Collector Road

ITEMS	Standard
Design Speed	60km/h
Vertical Clearance (min. above pavement)	5.3m
Desirable min. horizontal curve radius	200m
Max. Longitudinal Gradient	8%
Summit "K" value	20min
Sag "K" value	15min
Normal Cross Fall	2%
Max. Super elevation	5%
Stopping Sight Distance	80m

2.4 PROPOSED DRAINAGE STRUCTURES

2.4.1 Bridges and Culverts/Drains

Reinforced Concrete (RC) rectangular line drains of 0.8mx0.8m will be provided at locations necessary on the proposed N2 Collector road and N5 Arterial road. The essence is to check the menace of erosion and ensure sustainability of the road. Bridges and culverts will also be provided to aid water crossing at some location along the N5 Arterial road. Specifically, the stream channel at Dape village along the N5 road connecting the Julius Berger Quarters storm water drain system, and the major surface water at old Karemo will require a bridge. So also, there will be a culvert at Karemo Sabo where the road terminates.

- The project will de-silt and provide protection works to some existing culverts along the proposed N2 collector road and protect embankments and
- Provide 7 new culverts of 1x900mm dia. PC and 2x900mm dia. PC along the N5 route

This information is depicted in table 7 below:

Table 7. Proposed Bridge and Culverts

SN	Description	GPS Ref point	Location	Remark
1	1x900mm dia. PC	N 09^0 04′ 17.2″ E 007^0 23′ 22.4″/430m	Dape village by Gorruba & cashew plantation	Build new culvert
2	2x900mm dia. PC	N 09^0 04′ 14.8″ E 007^0 23′ 02.2″/406m	Dape village by Julius Berger Quarters	Build new Culvert
3	1x900mm dia. PC	N 09^0 04′ 13.5″ E 007^0 23′ 11.8″/430m	Around cross section with proposed N30 road	Build new culvert
4	2x900mm dia. PC	N 09^0 04′ 15.2″ E 007^0 22′ 06.0″/411m	Approach to Karemo Sabo	Build new culvert
5	Bridge	N 09^0 04′ 26.3″ E 007^0 22′ 39.4″/405m	Old Karemo area	Build bridge

2.5 BASE CAMP

Temporary base camp for construction workers will be located along the project routes as stated on Table 8 below. Separate rooms will be provided for male and female workers. All necessary sanitary facilities complying with the World Health Organisation (WHO) regulations will be provided for workers, that is:

- Separate toilets for male and female
- Portable water with well-placed overhead tanks
- Wash basins
- Concrete and covered septic tanks

Table 8. Proposed Base Camp Locations

SN	Base Camp Locations	Location	Coordinates		
1	Proposed Base Camp	Old Karemo area off the market by temporary access road about 1km from the village	N 09^0 04′ 11.7″	E 007^0 22′ 21.3″	416m

2.6 MATERIAL SOURCING/BORROW PITS

Some area within the district of the proposed project has a rich laterite deposits (Borrow pits located in the Gwagwa area or along the N2 Efab-Jabi area). All materials for construction are expected to be sourced locally with the bulk of it from nearby environs. The materials shall be transported to the site by road. The fill materials will be obtained from the proposed borrow areas identified in areas along the project routes on N2 or the

Gwagwa area. While gravels shall be sourced from nearest quarries located at 5km, 10km, 15km and 20km from the proposed road project area within the FCT.

The criteria considered before making this submission are that:

1) The proposed locations (for material sourcing) are not located in agricultural fields, or along the proposed route.
2) There are enough quality of soil and suitable earth in the area so identified.
3) Soil tests from the proposed locations were carried out to affirm the suitability of the materials to ensure that fill material compact to the required density for the proposed construction works.

The results from the analyses are presented as Appendix 7. In addition, a borrow pit management plan is provided as Appendix 8.

Table 9. Borrow Pit Locations

SN	Burrow Pit	Location	Coordinates	
1	Proposed Burrow pit 1	End of Efab-Jabi untarred road	N 09^0 04′ 33.3″	E 007^0 24′ 27.9″
2	Proposed Burrow pit 2	Gwagwa Saburi area	N09^0 05′ 39.3″	E007^0 17′ 14.6″

CHAPTER THREE

DESCRIPTION OF PROJECT ENVIRONMENT

3.1 GENERAL DESCRIPTION OF PROJECT AREA

The proposed N5-N2 road for construction is a 7.2Km road which lies between Lat. N09^0 04' 26.3" and Long E007^0 22' 39.4" of the N5 road and Lat. N09^0 04' 31.5" and Long E007^0 24' 27.1" of the N2 road in AMAC FCT Abuja. The roads traverse five major settlements and communities in the Federal Capital City (FCC) and district area: Jabi, Efab, Dape, Old Karemo and Karemo Sabo. Major human activities and land use in these communities include residential settlements, commercial activities such as buying and selling in the markets, petty trading, shops and business complex and farming activities that involves cash crops such as cashew and cassava plantation. Each of the communities has local grain milling centres. Economic trees along the project routes as earlier mentioned include cashew plantation and doum palm (gingerbread) trees.

The N2 collector road alignment is poorly drained in some locations especially at the Efab estate settlement area and between the baseline estate and the bypass junction at the end of the N2. The situation is caused by poor drainage channels which have engendered road surfaces erosion. The N5 is a new route from the Life Camp junction through some bush parts usually with farmlands and cashew plantations. It is important to state that the situation will be mitigated by the proposed line drains and slope protection works in the project engineering designs. The existing stream intersects (Dape channels) at Dape Community and Karemo river at old Karemo, this will be mitigated with box culvert and bridge already captured in the engineering design for the road construction.

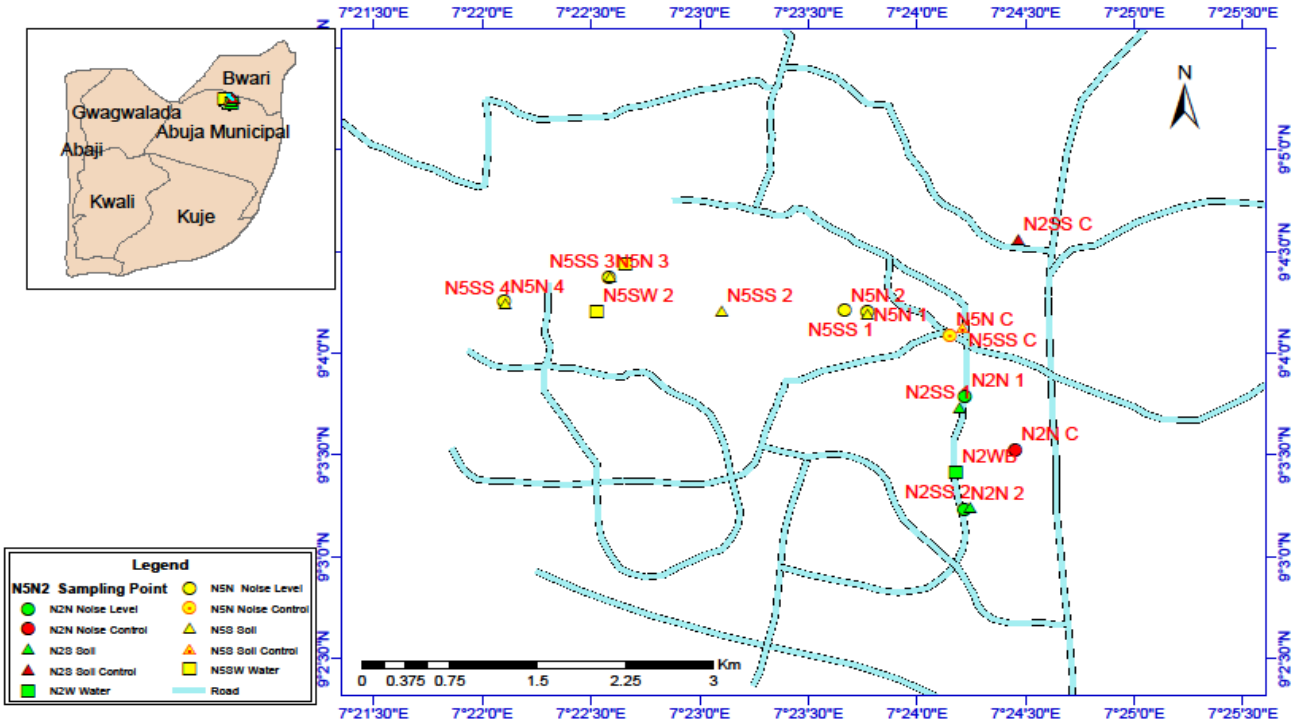


Figure 3: Schematic representation of the project area showing the start and end point of the road

3.2 ENVIRONMENTAL AND SOCIAL SENSITIVITIES OF THE ROAD PROJECT

There are quite several structures and means of livelihood and economic trees in the Right of Way and they will be impacted by the project (as captured on Table 10 below). Assessment by FCDA is on-going to adequately capture the assets and take measures for compensating the owners. Table 10 below highlights environmental and social sensitivities along the project route.

Table 10: Environmental and Social Sensitivities along the Proposed Road

SN	COORDINATES	DESCRIPTION	PHOTO
1	N 09^0 04′ 07.6″ E007^0 24′ 12.6″ Elevation- 445m	Start Point of the N5-N2 Road Project at Intersection with Life Camp Junction, Jabi District and existing Jabi-Karemo road.	
2	N 090 04′ 13.9″ E007^0 23′ 37.4″ Elevation- 454m	The proposed N5 road will pass through Cashew Plantation within the ROW; This will be impacted by the project. The cashew plantation will be removed for the road project. Compensation for the economic trees must be considered for this project.	
3	N 090 04′ 17.2″ E007^0 23′ 22.4″ Elevation- 430m	A Box Culvert proposed for the N5 road across a small running water that form a pond along the RoW, is located on a farmland in Dape Community, the farmland is (within the RoW) on both sides of the road. Doum palm tree/Goruba tree, Banana and cashew plantation are also sight around the farm and may be impacted.	
4	N 090 04′ 13.5″ E007^0 23′ 11.8″ Elevation- 430m	A cross section of an intersection point for the proposed N5 road and N30 road. The both roads are proposed but will intersect here. Issue of road safety and traffic management need to be carefully considered	

5	N 090 04′ 15.1″ E007^0 22′ 06.0″ Elevation- 430m	The proposed N5 road will pass through an existing football pitch, beside a mosque and will go through some existing structures at Karemo Sabo. This community will be impacted. Involuntary resettlement will take place for impacted houses.	 
6	N 090 04′ 26.3″ E007^0 22′ 39.4″ Elevation- 405m	Road intersection with a stream –Old Karemo Stream at Karemo Community. The width of the running water is about 8m, and the elevation of the surrounding area to the water body rang from 2m to 5m at different point along the channel, as it flows NE-SW. There will be need for water crossing or bridge for both vehicles and pedestrians. A bridge is proposed for the passage of water.	
7	N 090 04′ 14.7″ E007^0 22′ 06.3″ Elevation- 413m	Terminal point of the Road Project at Karemo Sabo Community.	

3.2.1 Baseline Data Sampling for the Project Area

The project will equally impact on other physical and biological features on the RoW and the social fabric of the communities along the project routes. However, the baseline information provides the understanding of the existing environment as measure for reference in the feature and guide for mitigating impacts and any significant changes on the environment in the project area. The field sampling was carried out between the 30th and 31st November 2019. Samples including surface and ground water, soil and air quality and ambient noise were collected, analysed and presented as Appendix 7 in this report. Below is Figure 4 showing the sampling locations along the proposed roads.

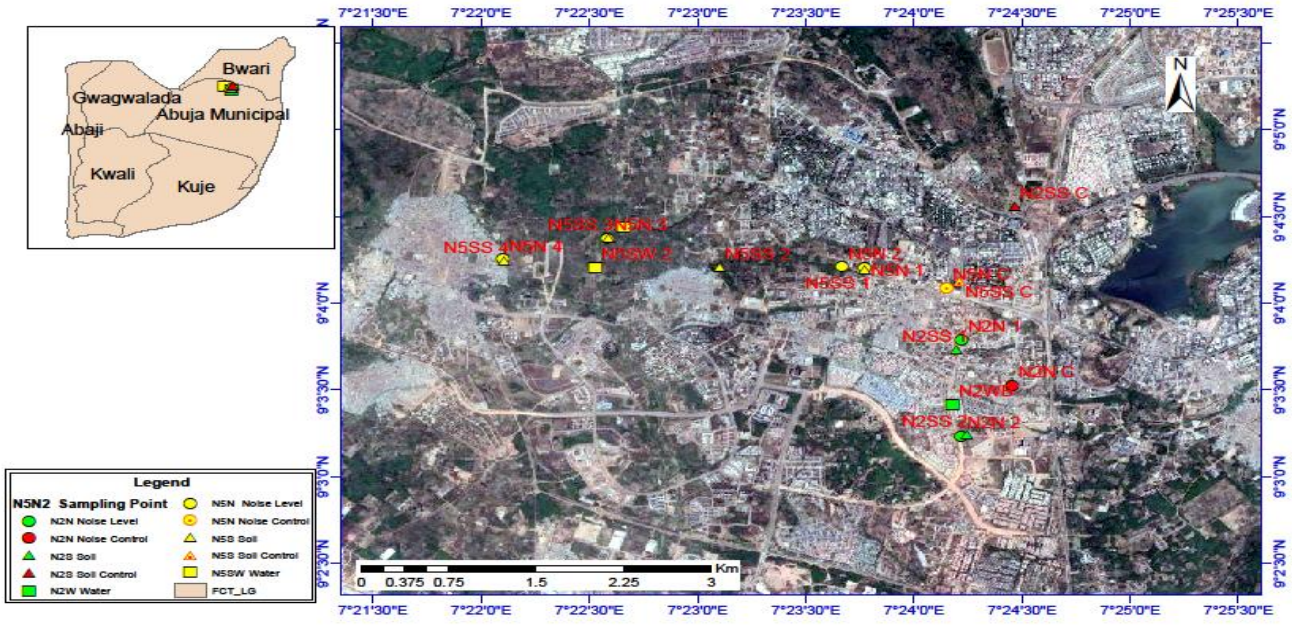


Figure 4: Map of the project area showing the sampling point location along the project routes

3.2.2 Climatic Condition of Project Area

Rainfall

The project area is characterized by two dominant seasons (dry and wet seasons) on the basis of rainfall pattern with peaks in July and August. The rainy season begins in May, when there is significant rainfall and last till October. Rainfall is often at its maximum at night and during the early morning hours. The 25-year mean monthly rainfall (1990 – 2014) ranged from 0 – 316 mm. (Fig.5). Its distribution pattern generally influences ambient and relative humidity among other environmental parameters.

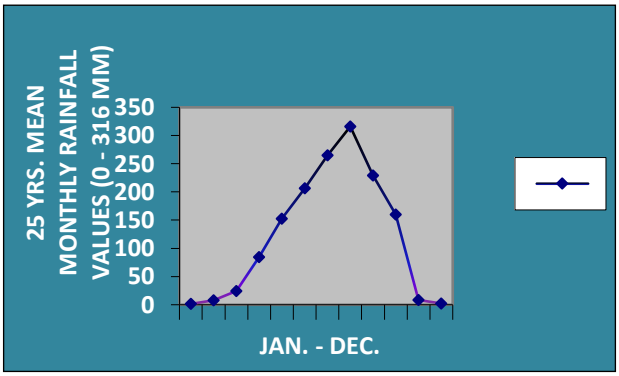


Figure 5: Mean Monthly Rainfalls

Relative Humidity

The mean monthly relative humidity as obtained from NIMET (1990 – 2014) at 0900 hours ranged from 15% in January to 95% during the dry season. The Relative humidity was generally found to be higher in the morning than in the afternoon, for 09 hours and 15 hours. (Fig: 6a & b).

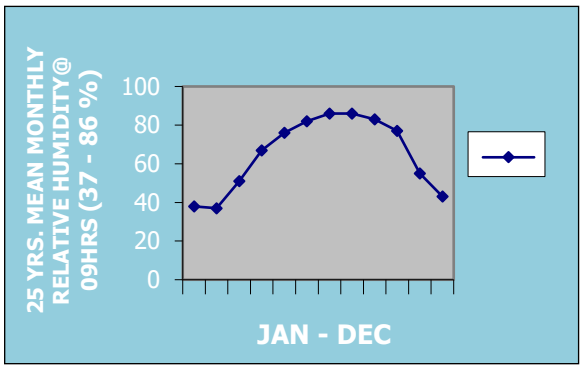


Figure 6a: Mean Relative Humidity 09hr

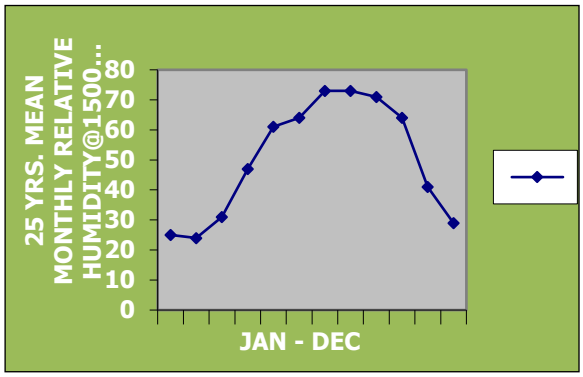
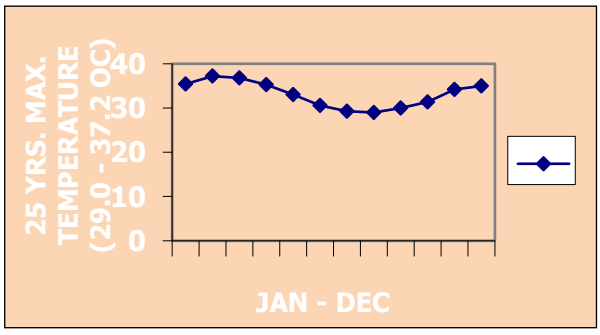


Figure 6b: Mean Relative humidity 15hr

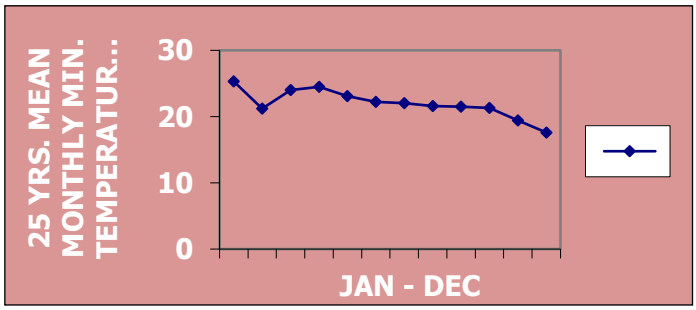
Temperature

The both wet and locations. The project area and 30.3°C varies between November to the months of maximum and



temperatures recorded in these areas in dry seasons are typically of their tropical monthly maximum temperature of the was high and ranged between 16.6°C while the monthly minimum temperature 11.9°C and 25.4°C. Also, the months of December are the coolest months while January to April are the hottest. The minimum temperatures of the area from

Figure 7a: Mean Monthly Maximum Temperatures (°C)

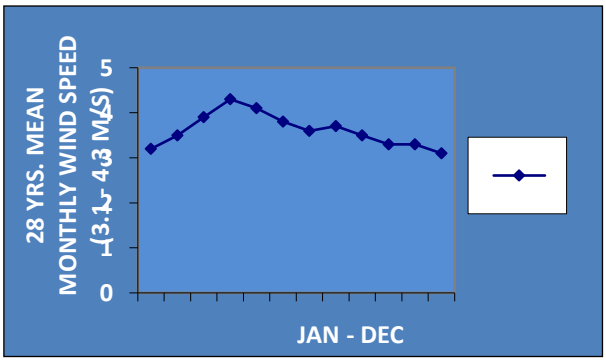


NIMET (1990 to 2014) are highlighted in (Fig. 7).

Figure 7b: Mean Month Minimum

Wind Speed and Direction

The mean monthly wind speed as obtained from NIMET Wind is strongest between March and May (3.9 – 4.3 m/s) and lowest in November through January (3.1 – 3.3 m/s). Generally, the wind in the proposed road construction area can be described as



moderate breeze. The Mean Monthly Wind Speed for Abuja FCT over a 25-year period (1990 – 2014) is shown as Fig 8.

Figure 8: Mean Monthly Wind Speed

3.2.3 Result of Soil and Water Studies

Soil Analysis

The results of the analysis of the soil samples collected on both the N5 and N2 proposed road constructions are presented in bar charts as Figures 9a-9f; below:

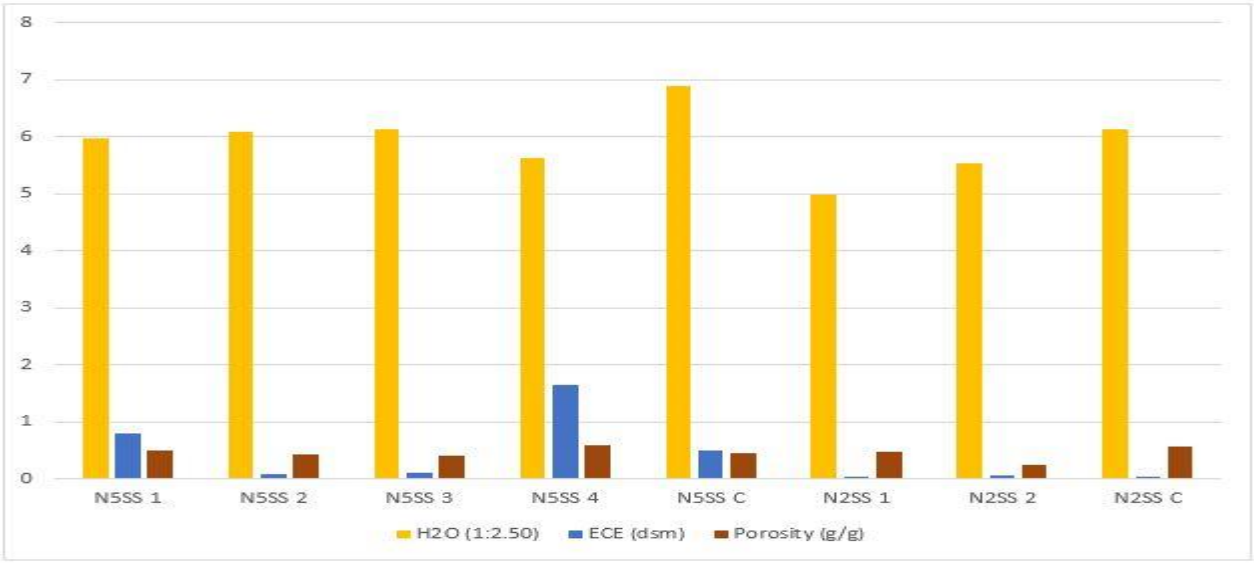


Figure 9a. Physio-Chemical Paremeter

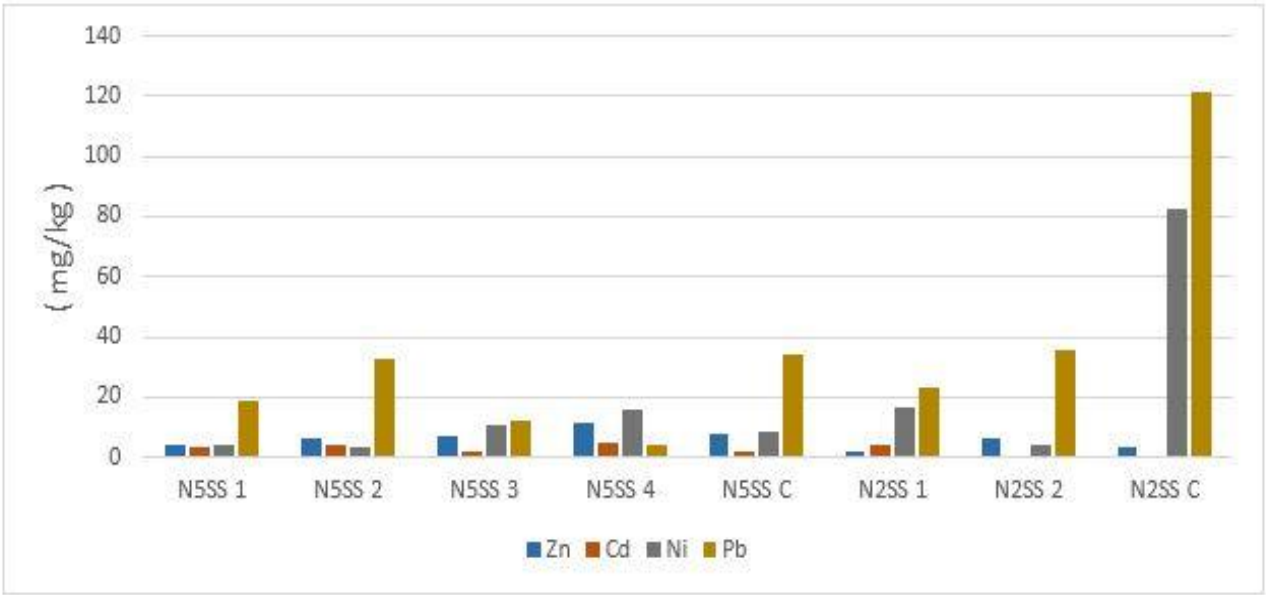


Figure 9b. Heavy Metals Parameters

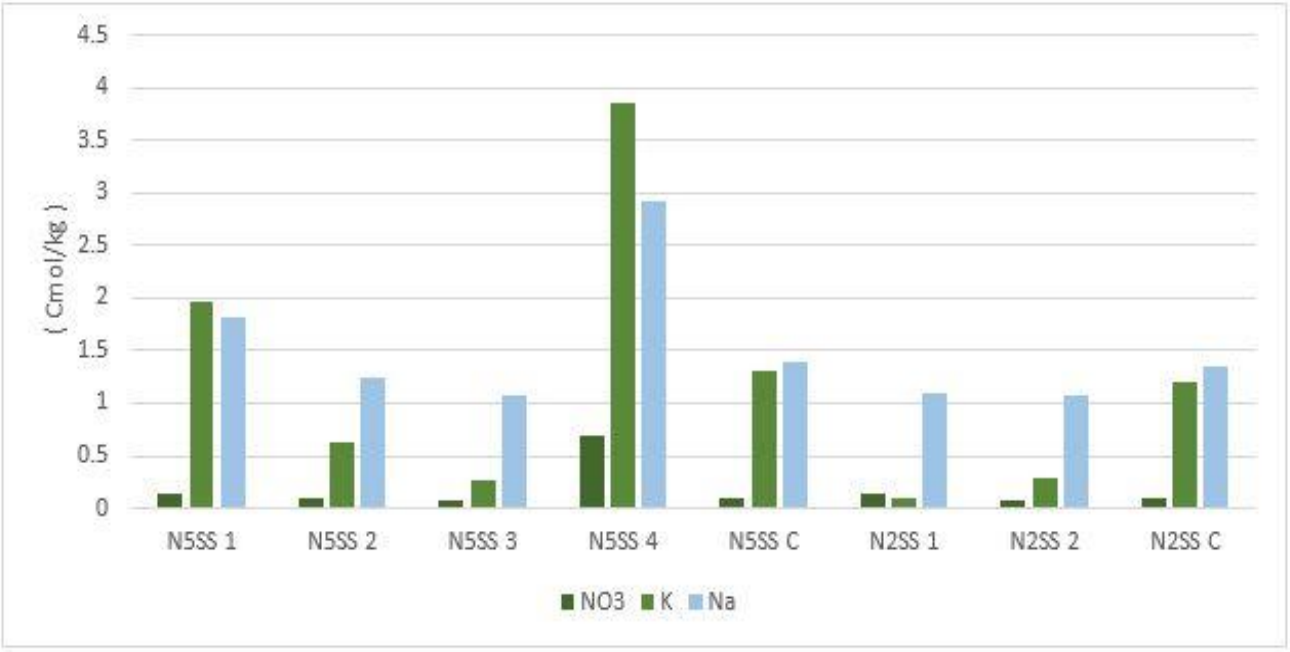


Figure 9c. Chemacl Parameters

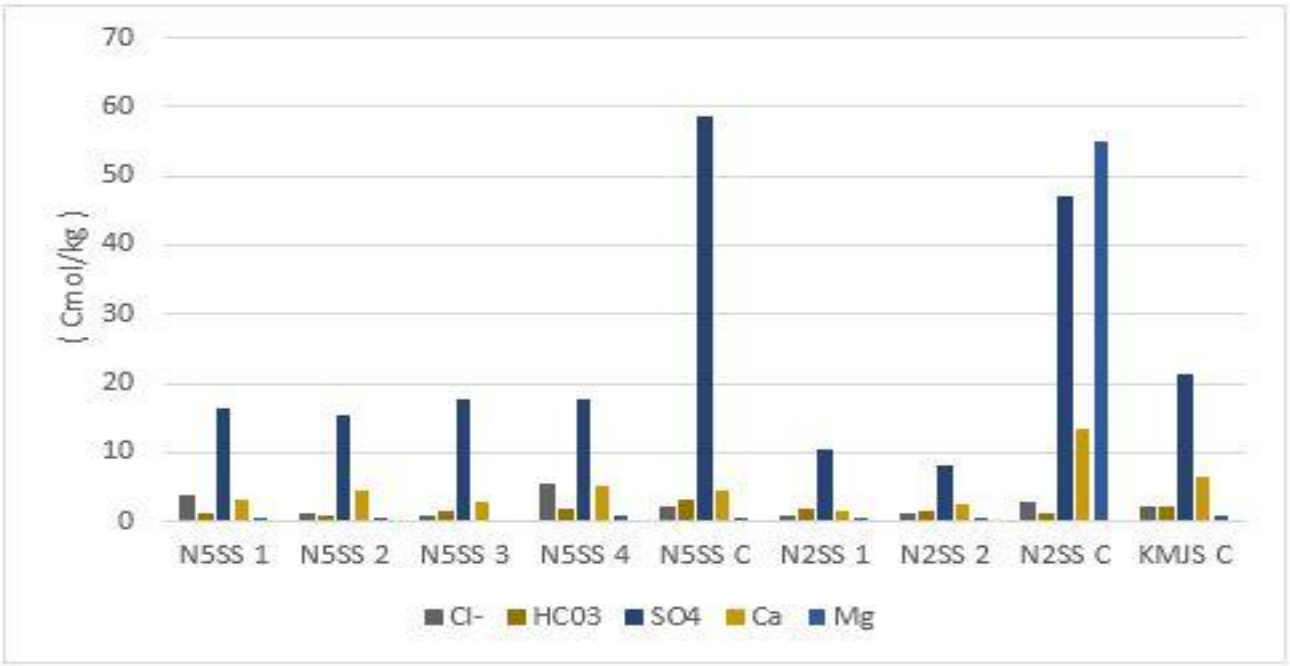


Figure 9d. Chemical Parameters

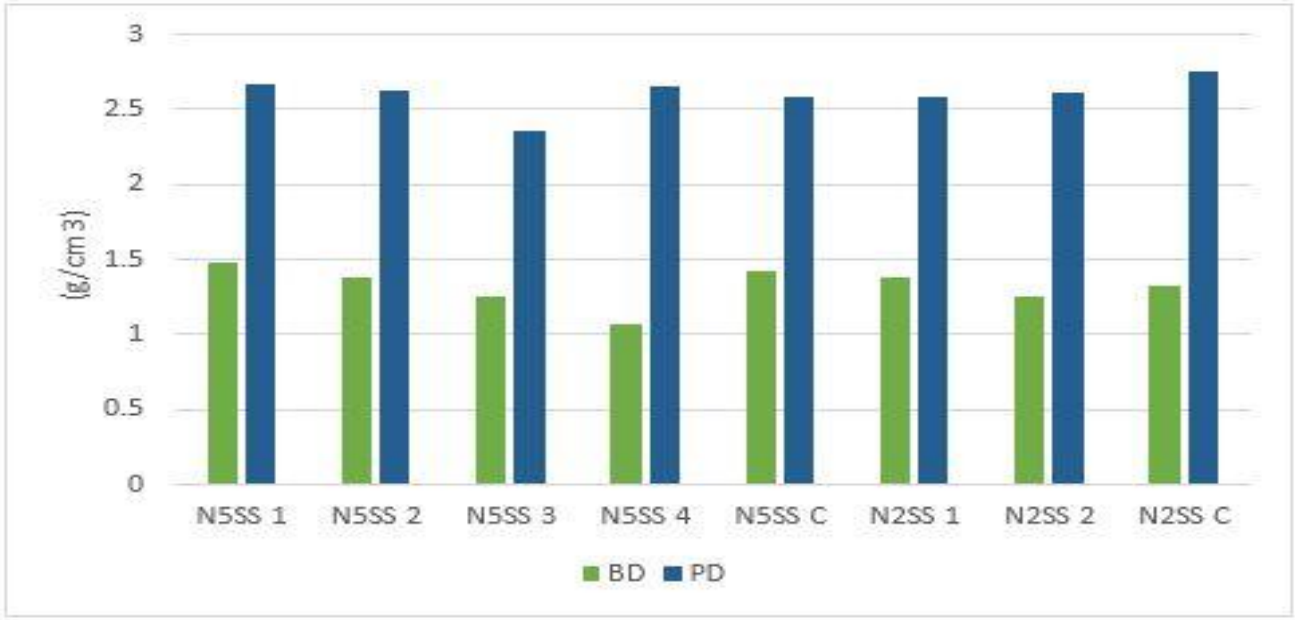


Figure 9f. Chemical Parameters

Water Analysis

The combined results analyses for the ground and surface water samples collected across the four project sites were plotted and presented in bar charts as Figures 10a -10e below:

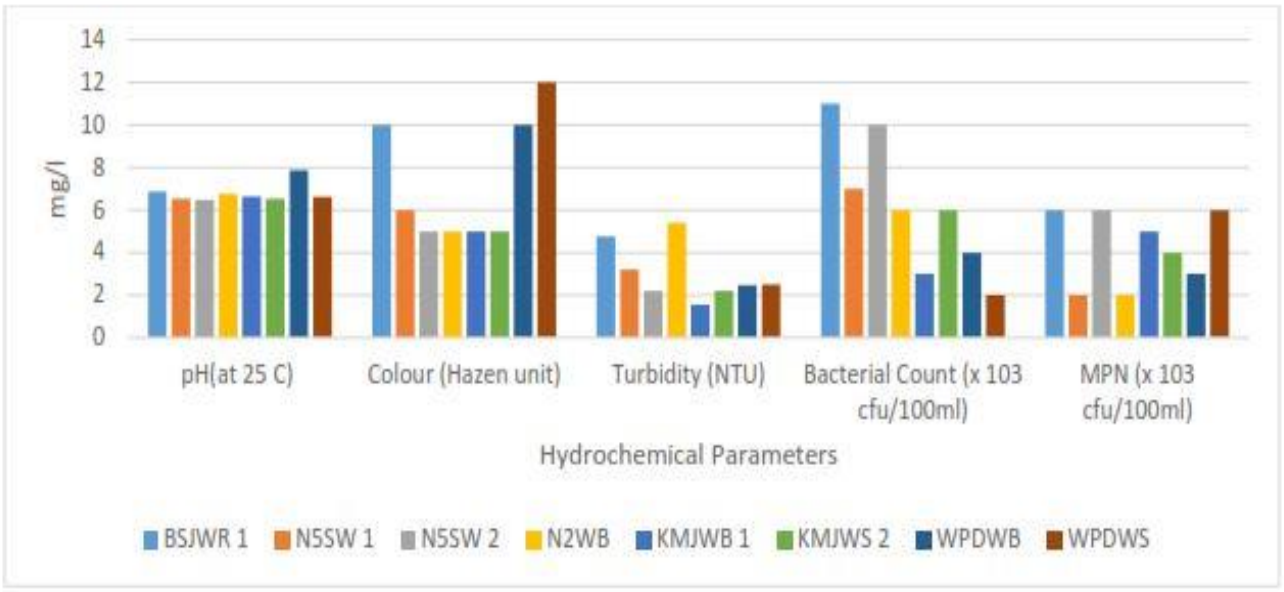


Figure 10a. Physio-Chemical Parameters

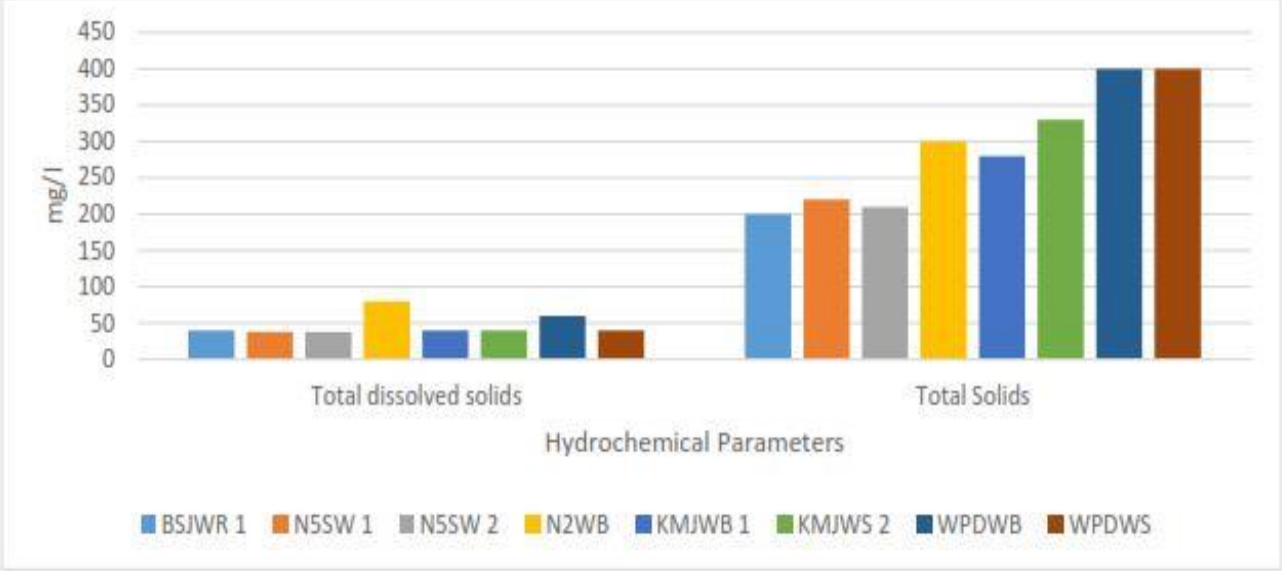


Figure 10b. Physio-Chemical Parameters

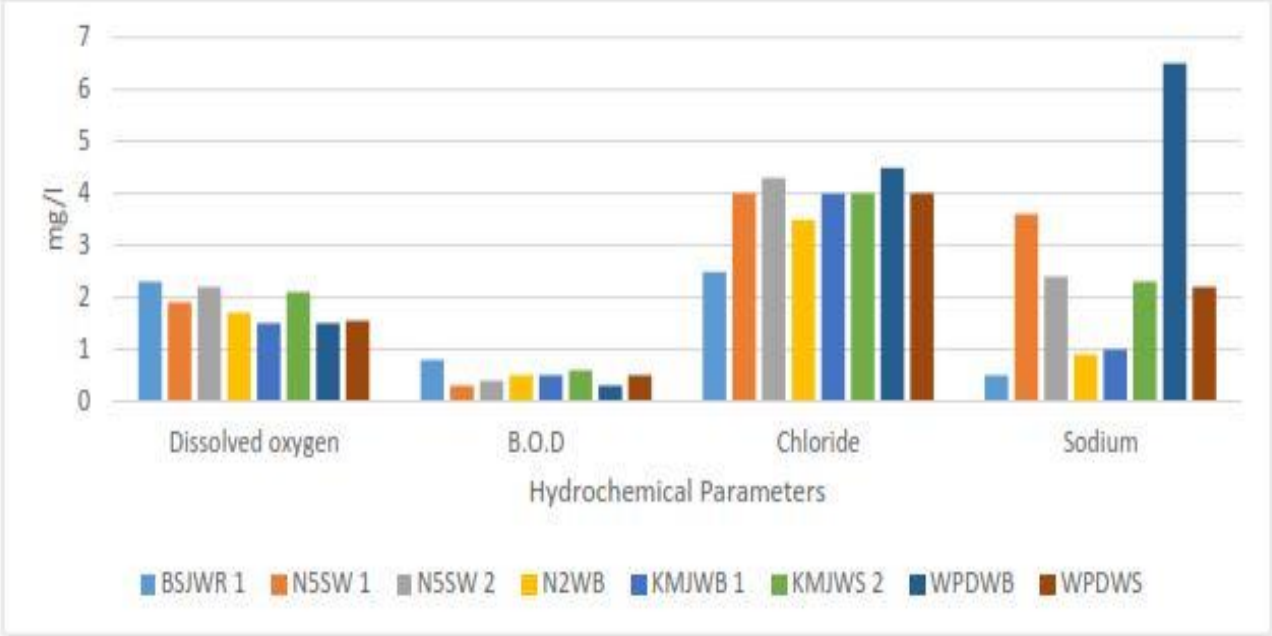


Figure 10c. Physio-Chemical Parameters

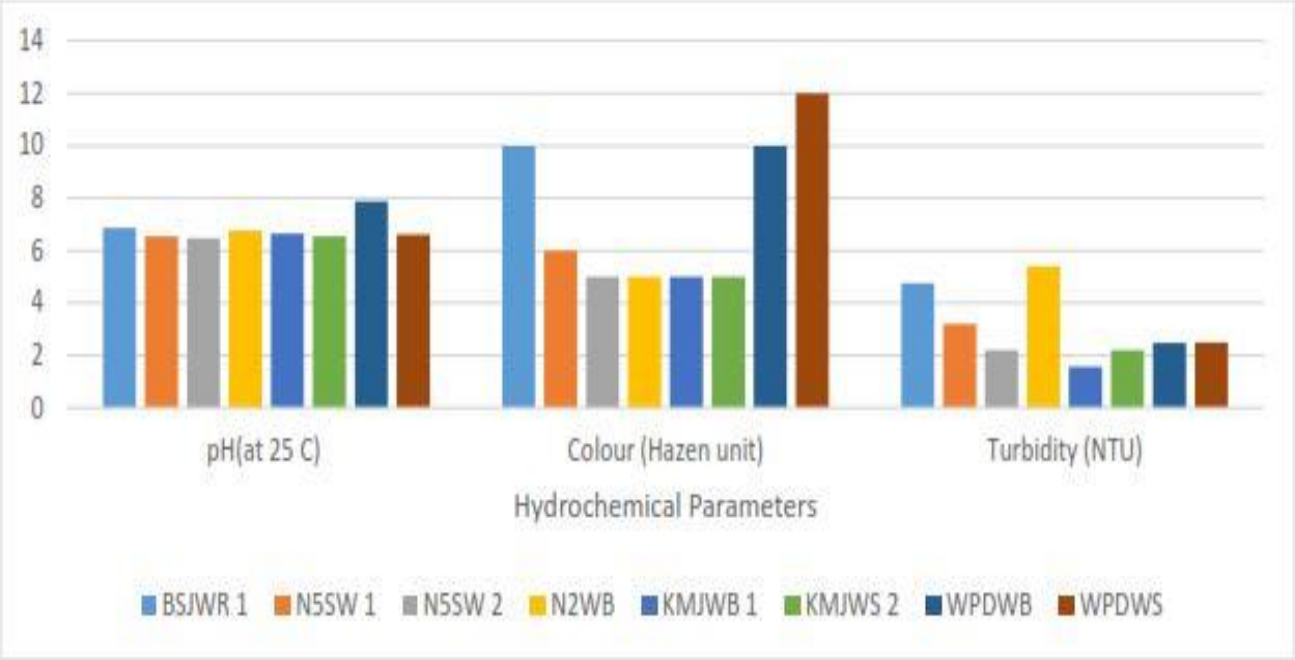


Figure 10d. Physio-Chemical Parameters

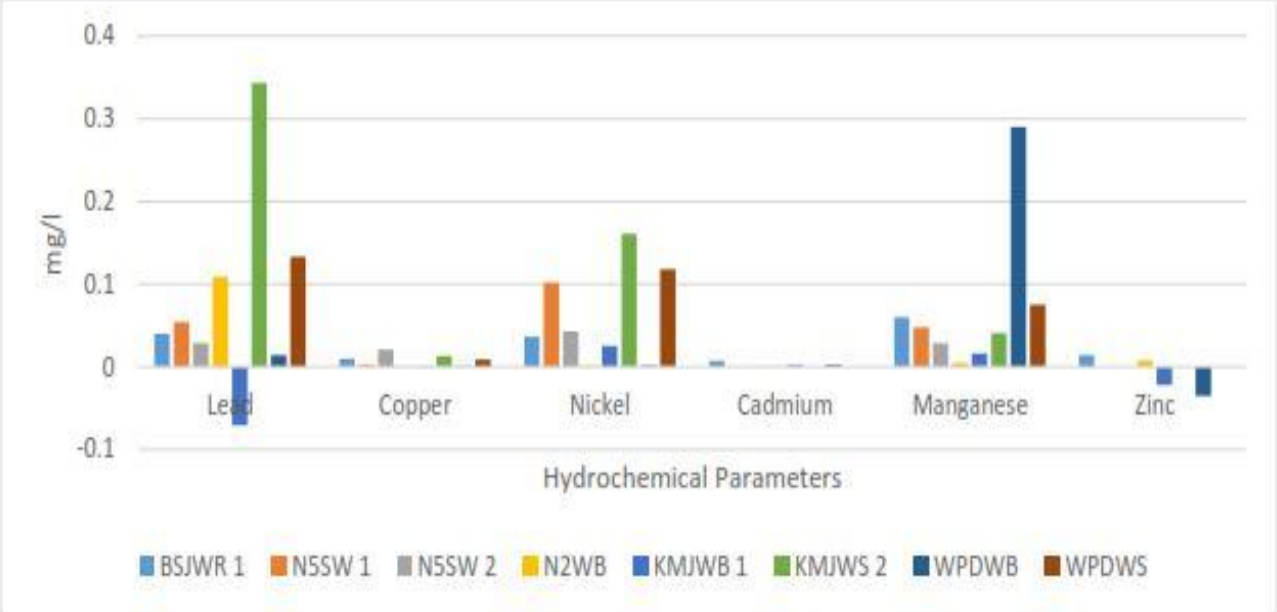


Figure 10e. Heavy Metal

SOCIO-ECONOMIC BASELINE OF THE PROJECT AREA

- The major occupations of the people of the host communities are civil service, farming, business and trading.

- Boreholes/wells are major sources of domestic water. The project contractor would source for water for construction outside the host communities to avoid competition with the host communities for water and the incidence of water pollution.
- The communities are cosmopolitan (natives and many settlers), and the major languages spoken by the people include English, Hausa, Gbagyi, Igbo, Yoruba etc. The predominant religion practices in the communities are Islam and Christianity. Cultural issues will therefore be given adequate consideration in implementing the project.
- Each of the communities has both primary and secondary schools located along the proposed project area. Therefore, it must be stated that the road construction will in one way or the other impact on the staff and children's health. Hence, health and safety issues during project implementation should be critically considered and measures put in place to address them responsively.
- Housing structures consists of block cement with zinc roof sheets and plastered mud walls with zinc roof sheets. Charcoal, firewood and kerosene are common sources of household fuel in the communities.
- Good practices for waste disposal were observed in some locations in the communities, but other people dispose their refuse by burning or using it as manure. Meanwhile, in the FCC areas waste are collected and dumped at designated dump sites.
- Primary healthcare facility is present in some of the host communities. This facility is not far from the residential areas. The primary health care facilities in these communities will not be overwhelmed by influx of labourer into the area, as the construction team may source for unskilled labour from the communities. This means that the facilities will be responding to the community people they already have on their list or record who may be working for the construction company.

A summary of the socio- economic statistics is presented on Table 11 below while the survey questionnaire is presented as Appendix 1.

Table 11. Socio – Economic Data of Project Host Communities

SN	Data Class	Dape Village	Karemo Sabo
1.	**Main Ethnic Group**	Gbagyi, Hausa, English, Igbo, Yoruba & others	Gbagyi, Hausa, English, Igbo, Yoruba & others
2.	**Religion**	Islam (55%) & Christianity (45%)	Islam (50%) & Christianity (50%)
3.	**Estimated Population**	9,000: Male 45%, Female 55%	12,000: Male 48%, Female 52%
4.	**Gender Disposition**	Recognizes equal Rights for male & female.	Recognizes equal Rights for male & female.
5.	**Major Occupation**	Farming (30%); Trading (40%); Public Service (30%)	Trading/business (55%); Farming (35%), Public service (10%)
6.	**Average Monthly Income (depends on farm yield & other income)**	₦ 8, 000 – ₦ 250, 000	₦15, 000 – ₦ 500, 000
7.	**Transportation System**	Bicycle, Motorcycle, Tricycle, Motor Car	Bicycle, Motorcycle, Tricycle, Motor Car
8.	**Electricity Source**	National Grid, Generators	National Grid & Generators
9.	**Cultivated Crops**	Cashew, sugar cane, Tomatoes, Pepper, Onion, Beans	Cashew, sugar cane, Tomatoes, Pepper, Onion, Beans
10.	**Industries**	AA Rano oil-Dape sector centre F. Maco Chris water-Dape village and Emmachico Block-Dape village	Local grain milling,
11.	**Educational Institutions**	▪ LEA primary school Dape, ▪ Sample Nursery/primary school Dape ▪ Upright Nursery/primary school Dape ▪ Equal Right Nursery/primary school Dape	LEA Primary School, Karemo
12.	**Healthcare Facility**	Access to Primary Healthcare Centre	Access to Primary Healthcare Centre
13.	**Common ailment**	Malaria, Typhoid, B.P & Diabetes, cholera	Typhoid, B.P & Diabetes
14.	**Environmental Problem**	Soil erosion and water pollution	Soil erosion and water pollution due to refuse dump
15.	**Toilet System**	Pit latrine & bush	Pit Latrine & bush
16.	**Waste Disposal**	On farmlands	On Open dump & farmlands
17.	**Household Fuel**	Firewood & Charcoal	Firewood, Charcoal & Kerosene
18.	**Potable Water Sources**	Pipe Born & Stream	Pipe Born & Borehole

3.3 PROJECT IMPACT ON THE AREA AND ENVIRONMENT

The positive impacts include the following:

- Improved standard of living for the host communities.
- Provision of all-weather access roads to boost access to economic opportunities and social services.
- Enhanced accessibility and commercial activities to facilitate economic integration at all levels.
- Development of roadside commercial activities in response to speculation that improved road will bring consistent access and greater visibility from more customers.
- Reduction in the tear and wear on vehicles resulting in improved travel and waiting times, increased frequency of transport services and reduced transport costs.
- The negative environmental and social impacts will be as presented on Table 12 below:

Table 12. Negative Environmental and Social Impacts

Environmental Impacts	Social Impacts
• Noise and vibrations from movement and operation of construction equipment and heavy-duty vehicles. • Ambient air deterioration from release of dusts and gaseous emissions. • Changes in the water quality of stream (Old Karemo stream) from storm water and construction waste • Potential fuel and oil spillages from base camps and construction equipment. • Solid waste generation from project activities. • Changes to the natural water flow leading to erosion and flooding • Potential reduction in arable lands due to un-reclaimed burrow pits. • Occupational, Health and Safety (OHS) risks for construction workers. • Community and Public Health and safety risks related to the project. • Potential impact on Physical and Cultural resources during excavation and construction activities. • Loss of flora within the project RoW from site clearance activities.	• Negative perception of community members due to presence of alien workers in the community • Increase in accidents/incidents from movement of heavy-duty machineries and construction activities • Grievances from community members which could occur from project drivers killing their animals • Labour influx which may affect cultural values due to foreign workers who are not aware of the indigenous customs. • Labour influx which can lead to risks of GBV/SEA. • Disruption of free flow of traffic along the RoW, especially the LIFE CAMP area along the 4.2km road and along EFAB estate during rush hours of morning & evening during the construction exercise • Potential for Child labour forced labour and poor work conditions. • Grievance between Project Affected Persons and Project Contractors. • Project security issues – Kidnappings, armed robbery attack, insurgency.

CHAPTER FOUR:
ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING PLAN

4.1 INTRODUCTION

The project is envisaged to be hugely beneficial to the communities along the corridors and the FCT at large. Potential positive impacts are already listed in Chapters 3. Meanwhile, severe negative impacts to communities and environments in the construction areas are not anticipated. The negative environmental and social impacts as listed on Table 12 in Chapter 3 which will be localized in spatial extent. The impacts can be shortened in duration and reduced or avoided through high level compliance with the implementation of the appropriate mitigation measures contained on Tables 13, 14 and15 below.

4. 2 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

Table 13. Environmental and Social Management and Monitoring Plan – Pre Construction Phase.

Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
A	**PRE-CONSTRUCTION PHASE**										
	Site Clearing and Mobilization										
Environmental Impacts											
1	Increase in amounts of fugitive dust, exhaust fumes and GHGs from movement of heavy-duty vehicles and equipment into work areas.	Sprinkling of water via spraying devices to limit dusts.	Contractor	300	Fugitive dust	Visual Observation	Minimal dust on project road	Along the road	Daily	Supervision / Environmental Consultant	300
		Ensure that vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES) as laid down in	Contractor	300	Greenhouse gases Vehicle emission	In-situ Air Quality. Measurement Vehicle emission testing (VET) and vehicle exhaust screenin	FMEnv air pollutants permissible limit	On-site and nearby community	Monthly	Supervision/ Environmental Consultant	

		the NESREA guidelines.				g (VES Report					
2	Loss of topsoil and soil compaction due to movement of vehicles to site and stacking of heavy-duty equipment	Limit zone of vehicle and equipment weight impacts (designate an area for parking and stacking equipment)	Contractor	200	Visible demarcation of vehicles and equipment limit zone	Visual observation Soil Compaction test	Visual observation Soil Compaction test	Project camp sites and equipment packing zones	Monthly	Supervision / Environmental Consultant/ FCDA Project Unit	200
	Leakages from stacked equipment and subsequent intrusion of oil and chemical substances into soil.	Ensure fastening of loose parts (bolts, nuts); Install impermeable surface at the limit zone to contain potential leakages	Contractor	300	Installation of impermeable platform at limit zone.	Project camp sites and equipment packing zones	Soil quality test	Project camp sites and equipment packing zones	Monthly	Supervision Environmental Consultant t/ FCDA Project Unit AEPB	
3	Increase in noise level above permissible noise level, (90dB) during movement	Equipment should be transported after the rush hours for workers (8.00am) & (4:00pm) / weekends when it will cause least disturbance Retrofit machines with soundproof	Contractor	-	Number and frequency of complaints in project area	In-situ measurement of noise level	Noise level test (Not to exceed 90dB(A) for 8 hours working period	2-3Km Radius of project site	As required	Supervision/ Environmental Consultant/ FCDA Engr. Unit	200
4	Displacement of soil fauna and damage to flora.	Limit vegetation clearing to minimum area required to create access path	Contractor	-	Radius of cleared path	Visual Observation	Evidence of re-vegetation	Community area	One-off	Supervision/ Environmental Consultant / AEPB	
5	Occupational accidents and injuries from the	• Provision of PPE to workers. • Worker Education • Incident/ac	Contractor	200	Contractors Compliance.	Routine inspection	Use of PPEs by Workers Training Records	Construction site	Daily	Supervision/ Environmental Consultant/	300

	use of machineries and equipment	cident reporting. • Provision of First Aid onsite • Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers • Any uncovered work pits should have appropriate signage and protection around them. • Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before • appropriate security measures in place to prevent harassment or kidnapping of workers (see appendix 6 for OHS Plan)								FCDA Engr. Unit AEPB	
6	Accidents involving vehicles or pedestrians during vehicle and equipment movement to the site.	Training of drivers on safe driving practices Install safety signage	Contractor	200	Accident Report	Site Inspection Consultations	Training Report Accident/ Incident Report	Routes through community to the sites School premises	Every 2 weeks	Supervision/ FCDA Engr. Unit AEPB	200

7	Creation, risks and management of Borrow Pits	Limit the need to dig excessive borrow pits Ensure not to exceed approved max. depth of burrowing Comply with the borrow pit management plan in Appendix 10.	Contractor	400	Contractors' Compliance	Inspections	Number of borrow pits incidents.	Borrow pit locations	Monthly	Supervision/ FCDA Engr. Unit AEPB Project Engineer	350
Social Impacts											
8	Delay in travel time along the proposed 7.2km road especially navigating the Karemo junction.	Movement of equipment and machinery should be limited, during peak hours Traffic/caution signs at strategic locations especially from Life camp junction to Efab.	Contractor	100	No of complaints received within the project area	Site visits and observation	Traffic signs Contractors compliance	Routes through community to the sites especially the Junctions	As required	FCDA Engr. Unit Project Engineer FRSCN	See A5 above
9	Nuisance to nearby residential areas and business premises	Retrofit with suitable cost-effective vehicle sound proofing materials/ technologies.	Contractor	-	Number and frequency of complaints in project area	In-situ measurement of noise level	Noise level test (Not to exceed 90dB(A) for 8 hours working period	2-3Km Radius of project site	Weekly	Supervision Consultant/ FCDA Engr. Unit AEPB	300
10	Uproar if equipment is not parked at designated location	Ensure equipment is taken straight to the construction Camp where this is not achievable as some point due to extreme condition;	Contractor	-	Complaints from residents	Site Inspection Consultations	Contractor's compliance	Routes through community to the parking Camp	One-off	Supervision Consultant/ FCDA Engr. Unit Project Engineer	See A

		adequate communication should be made to the relevant authority.									
11	Land Acquisition /transactional issues for borrow pits, camp site staging areas	Fair compensation for affected structures crops at current market value. Signing of agreement with local authorities and communities. Ensure the ownership of land is effectively established to mitigate the possibilities of taking land owned by women for public interest without ensuring the affected women are provided land for land replacement option.	Contractor	200	No of complaints received	Consultation Review Grievance redress Log	No of cases handled by the GRC	Project area of influence	Continuous	Supervision Consultant/ FCDA Engr. Unit	100
12	Labour Influx which could lead to Increase in sexual activities leading to possible spread of STDs/STIs in the project location	Awareness campaign on sexual diseases, and distribution of male and female condoms.	Contractor	400	Level of Awareness and Education No of new STI cases	Rapid health survey	Level of awareness and knowledge of Preventive measures. % of reported STI/ STD cases among workforce	Nearby communities Health care facilities	Twice during Construction	AEPB FCDA Engr. Unit	200
13	Potential risk of Sexual Exploitation and Abuse (SEA)/	All contractors' workers to sign Code	Supervision Consultant Contractor	500	Stakeholders concerns on risk of	Consultations	Signed CoCs with the FCDA	Project communities	Twice during Construction	Project Coordinator	500

	Gender Based Violence (GBV) Influx of workers (foreigners) to project location	of Conduct (CoC) (see appendix 8 for sample CoC) and be sensitized on zero tolerance for sexual integration with students/ community Community leaders/ women group/youth group to sensitize the community on appropriate conduct with contractors Appoint NGO at the state level to manage social risks associated with GBV/SEA in the project area Provide Referral centres for survivors of GBV/SEA	Management		GBV	GBV Incident Report	Conduct of sensitization campaigns			FCDA Engr. Unit Supervision Consultant	
14	Child labour and school drop out	• Ensure that children and minors are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured.	Contractor Supervision Consultant	200	Visual observation	Routine inspection	No. of cases observed & recorded	Project site	Daily	Supervision Consultant/ FCDA Engr. Unit Project Engineer	100
15	Land acquisition and economic displacement at Karemo Sabo Community (near	• Carryout & Implement stand-alone RAP	Contractor Grievance Redress Committee (GRC)	200	No of complaints received	Consultation Review Grievance redress	No of cases handled by the GRC	Project area of influence	Continuous	Grievance Redress Committee	300

	the drain channel after the mosque & football pitch) & at Dape (near the project start point few meters after life camp junction motor park).	for the project.				Log				FCDA Engr. Unit AEPB	
Sub Total				**3,500.00**							**2,850.00**

Table 14. Environmental and Social Management and Monitoring Plan - Construction Phase

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
B	**CONSTRUCTION PHASE**										
	Operation and movement of equipment/ Rehabilitation works										
Environmental Impacts											
1	Fugitive dust	Sprinkling of water during activities	Contractor	See A1	Fugitive dust	Visual Observation	Minimal dust	On-site	Daily	Supervision Consultant/ FCDA Engr. Unit & AEPB	100
	Release of exhaust fumes, hazardous gases (NOx, CO, SOx, SPM,), Oxides from machinery GHG Emissions	Fuel switching from high- to low-carbon content fuels (where available) can be a relatively cost-effective means to mitigate GHG emissions during this phase. Energy efficiency-Machines e.g. generator plants could be turned off when not in use, in order to reduce carbon emissions.	Contractor	See A1	Gaseous pollutants: SO2, NO2, CO2, CO,VOCs, H2S, TSP	In-situ Air Quality Measurement Vehicle emission testing (VET) and vehicle exhaust screening (VES Report	FMEnv air pollutants permissible limit	Project area	Every two months		
2	Pollution of the environment from open defecation by contractors' workers	Contractor to provide mobile toilets for workers Sensitize workers against open defecation	Contractor	400	Evidence of feacal waste within the project sites	Site inspection	Absence of feacal waste on-site	Camp sites and working zones	Weekly	Supervision Consultant/ & AEPB	200
3	Surface soil compaction from Movement of heavy vehicles/Stationary vehicles and equipment	Creation of limit zones Minimize compaction during stockpiling by working in the dry state Rip compacted areas to reduce	Contractor	200	Visible demarcation of vehicles and equipment limit zone	Visual observation Soil Compaction test	Visual observation Soil Compaction test	Project camp sites and equipment packing zones	Monthly	Supervision Consultant/ FCDA Engr. Unit & AEPB , Project	100

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
B	**CONSTRUCTION PHASE**										
		runoff and re-vegetate where necessary								Engineer	
4	Pollution of soil and groundwater contamination by oil spills, lubricants and other chemicals	All oil and lubricants should be sited on an impervious base and should have drip pans The storage area should be far from boreholes, all containers should be clearly labeled	Contractor	200	Soil quality parameters (especially hydrocarbon contaminants) Compliance with fuel storage procedures	In situ/ Laboratory Analysis Visual Observation	FMEnv soil pollutants permissible limit	Project areas	Twice during construction	FCDA Engr. Unit & AEPB	100
5	Vibrations to existing buildings and subsequent building collapse if not attended to	Mitigation at source (for all activities) A noise barrier or acoustic shield will reduce noise by interrupting the propagation of sound waves. Limiting operation to specific areas where work is carried out	Contractor	200	Presence of affected buildings	Visual inspection	Machinery fitted with acoustic shield	Project areas	Monthly	Supervision Consultant/ FCDA Engr. Unit & AEPB	100
6	Presence of construction waste on-site which can pollute the environment leading to community and public health issues.	Implement site-specific waste management plan in Appendix 5 Liaise with Abuja Environmental Protection Board for effective waste management and safe handling/disposal of waste.	Contractor	300	Presence of construction waste on-site	Site inspection	Compliance with the site waste management plan Good house keeping	Project areas	Weekly	AEPB, FCDA Engr. Unit & Project Engineer	200
7	Air quality deterioration	Suppress dust emission by sprinkling water	Contractor	300	Fugitive dust	Visual Observation	Emission of noxious gases	Location of work	Daily	Supervision Consultant/ FCDA Engr. Unit & AEPB	200
8	Increase in noise level above permissible noise level, (90dB) during construction activities and OHS issues	Adequate maintenance of equipment and machineries to reduce noise Retrofit machines with soundproof Implement OHS Plan in Appendix	Contractor	-	Number and frequency of complaints in project area	In-situ measurement of noise level	Noise level test (Not to exceed 90dB(A) for 8 hours working period	2-3Km Radius of project site	Weekly	Supervision Consultant/ FCDA Engr. Unit & AEPB	200

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
B	**CONSTRUCTION PHASE**										
9	Loss of Vegetation cover	Limit clearing to required road ROW Re-plant where it is relevant	Contractor	200	Vegetation cover within the area	Visual Observation	vegetation at the appropriate outside the ROW	Project ROW	Monthly	Supervision Consultant/ FCDA Engr. Unit & AEPB	100
	Chance Find during excavation	Adopt the chance find procedures in appendix 7	Contractor	-	Reports	Consultation	Compliance with chance find procedures	Project area	As required	ESO/SSO	-
10	Disruption in current flow of stream	Construct temporary diversions or re-channel stream temporarily	Contractor	200	Water quality parameters such as TSS, TDS, Conductivity, pH, DO, Oil/Grease	In-situ Water Quality Measurement	Routine testing procedures being conducted	Project Site	Daily	FCDA Engr. Unit & AEPB, Project Engineer	300
11	Creation, risks and management of Borrow Pits	Limit the need to dig excessive borrow pits Created borrow pits should have appropriate signage and protection around them. Ensure not to exceed approved max. depth of burrowing Comply with the borrow pit management plan in Appendix 10.	Contractor	200	Contractors' Compliance	Inspections	Number of borrow pits incidents.	Borrow pit locations	Monthly	FCDA Engr. Unit & AEPB Project Engineer	100
12	Risk of occupational accidents (OHS), Injuries and diseases	Implement project OHS Plan in Appendix 10. Provide and enforce usage of appropriate PPE. Demarcate/cordon off construction areas and, lit up adequately at night, Fence out danger zones and keep out of reach. Restricted access to be placed at construction sites using caution signs and manned	Contractor	See A5	HSE Plan Developed Compliance with HSE Plan	Consultations Accident Report	increase/decrease in Lost Time Injuries	Project area	Monthly	FCDA Engr. Unit	200

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
B	**CONSTRUCTION PHASE**										
		personnel Use caution tapes. Develop and implement visitor's management protocol Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers Any uncovered work pits should have appropriate signage and protection around them. Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before Appropriate security measures in place to prevent harassment or kidnapping of workers									
Social Impacts											
13	Delay in travel time along the proposed 7.2km road especially navigating into Karemo junction.	Movement of equipment and machinery should be limited during peak hours Traffic/caution signs at strategic locations especially Liman-Katagum junction. See appendix 12 for TMP	Contractor	200	No of complaints received within the project area	Site visits and observation	Traffic signs Contractors compliance	Routes through community to the sites especially the Junctions	As required	FCDA Engr. Unit & Road Marshals	300
14	Grievances and negative perception by community members	Conduct stakeholder's consultation with the host community at every phase of the project	Contractor FCDA	400	No of complaints by community persons	Consultations Review grievance log	Minimal number of reported cases	Host community	Every 2 months	Grievance Committees FCDA Engr.	300

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
B	**CONSTRUCTION PHASE**										
										Unit & AEPB	
15	Increase in sexual activities leading to possible spread of STDs/STIs from influx of workers (foreigners) to project location	Awareness campaign on sexual diseases, and distribution of male and female condoms.	Contractor	See A 11	Level of Awareness and Education No of new STI cases	Rapid health survey	Level of awareness and knowledge of Preventive measures. % of reported STI/ STD cases among workforce	Nearby communities Health care facilities	Twice during Construction	Supervision Consultant/ FCDA Engr. Unit & AEPB	See A 11
16	Potential risk of Sexual Exploitation and Abuse (SEA)/ Gender Based Violence (GBV) Influx of workers (foreigners) to project location	All contractors' workers to sign Code of Conduct (CoC) see appendix 8 for sample CoC) and be sensitized on zero tolerance for sexual integration with students/ community Community leaders/ women group/youth group to sensitize the community on appropriate conduct with contractors	FCDA GBV Specialist	See A 13	Stakeholders concerns on risk of GBV	Consultations GBV Incident Report	Signed CoCs with the SPIU Conduct of sensitization campaigns	Project communities	Twice during Construction	Supervision Consultant/ FCDA Engr. Unit & AEPB t	See A 13
17	Cultural integration may be affected by foreigners who do not understand the culture	Adequate sensitization of contractor workers on the cultures of the project area (dos and don'ts, festivals etc.)	Contractor, FCDA	300	No of complaints from the host community	Consultation Incident Report	Conduct of sensitization campaigns	Project Communities	One-off	FCDA Engr. Unit & AEPB	200
18	Conflicts between contractor and community members over labour intake	Good work enforcement program Grievance Redress Mechanism Regular consultations	Contractor Grievance Redress Committee (GRC)	200	No of complaints received	Consultation Review Grievance redress Log	No of cases handled by the GRC	Project area of influence	Continuous	Grievance Redress Committee, FCDA Engr. Unit	500
19	Increase demand on existing community health and sanitation infrastructure due to influx	Provide basic amenities (water, sanitation etc. to workers)	Contractor	500	No of amenities in worker's camp	Visual observation	Availability of all essential amenities in workers' camp	Workers camp site Host community	Monthly	Supervision Consultant/ FCDA Engr. Unit & AEPB	200

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (USD)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
B	**CONSTRUCTION PHASE**										
	of temporary workers										
20	Community and public health issues. (People in the project area may be exposed to vehicular or on-site accident)	Contractors should prepare and implement a Community Affairs, Safety, Health, Environment and Security (CASHES) Policy, to coordinate OHS issues during the construction phase. See Appendix 11 for sample CASHES Policy	Contractor	200	Accident /Incident Report	Reporting and feedback mechanism GRM	No of accidents reported	Project area of influence	Continuous	Supervision Consultant/ FCDA Engr. Unit & AEPB	100
21	Child labour and school drop out	• Ensure that children and minors are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured.	Contractor	See A 13	Visual observation	Routine inspection	No. of cases observed & recorded	Project site	Daily	Supervision Consultant/ FCDA Engr. Unit & AEPB	A 13
22.	Land acquisition and economic displacement at Karemo Sabo Community (near the drain channel after the mosque & football pitch) & at Dape (near the project start point few meters after life camp junction motor park).	• Carryout & Implement stand-alone RAP for the project.	Contractor Grievance Redress Committee (GRC)	See A 14	No of complaints received	Consultation Review Grievance redress Log	No of cases handled by the GRC	Project area of influence	Continuous	Grievance Redress Committee, FCDA Engr. Unit & AEPB	See A 14
Sub Total				**3,800.00**							**3,500.00**

Table 15. Environmental and Social Management and Monitoring Plan – Operation Phase

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
C	**OPERATION PHASE**										
	Demobilization of equipment and construction materials from the school										
Environmental Impacts											
1	Potential oil contamination of soil and water	Cart away all spoils through the relevant authorities Clean out impact areas	Contractor	500	Oil Spillages, Littered construction waste and spoilt equipment/parts	Site inspection	Good house keeping	Workers Camp site	Quarterly for one year	FCDA Engr. Unit, AEPB Project Engineer Supervision Cons.	200
2	Increase in vehicular movements will lead to increase in air pollution from exhaust fumes	In collaboration with the State Government, implement regular sensitization via mass media on the allowable vehicular emission limit and the need for regular vehicle maintenance and the effect of excessive emissions into the atmosphere Routine inspection of motorists' compliance	Contractor FRSC; VIO	1000	Gaseous Pollutants such as SO2, NO2, CO2, CO, VOCs, H2S, TSP, PM 10 and PM 2.5	In-situ measurement of air quality	General compliance	Project site	Quarterly	FCDA Engr. Unit & AEPB	300
3	The drainages may become	Routine maintenance of drainages	Contractor FCDA	500	Flow rate of water through	Visual observation	Implementation of proffered	Project site and communit	Quarterly	FCDA Engr. Unit	400

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
C	**OPERATION PHASE**										
	conveyors for surface debris and improperly disposed wastes during a heavy rain, leading to drainage blockage and disruption of free flow. This may result in stagnated water, and water contamination downstream.	Proper waste management system in the communities			the drainage systems Adequate waste treatment in the communities		mitigation	y		AEPB, & Project Engineer	
4	Possibility of culvert collapse, flooding, or erosion from post construction which may result from poor designs, non-compliance to designs, sub-standard materials, poor maintenance	To follow proper design and best available practices to access road construction Strict adherence to terms of reference and specifications of engineering design for bridge and road construction Adequate and regular maintenance	Contractor Project Engineer SMWHARD	300	Structural and performance integrity of hydraulic features		Efficient Durability of roads and hydraulic structures	Project Sites	Quarterly	FCDA Engr. Unit & AEPB	200
	Demobilization of equipment and construction materials from the school										
	Operation and use of rehabilitated facilities										
Social Impacts											
1	The rural communities will become more	The communities with government	NPF, FCT Command; Communit	500	Incidence of security breach	Routine interview	Absence of security threat	Communities along project path	Quarterly for 2 years	FCT Police Force	300

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
C	**OPERATION PHASE**										
	accessible and more exposed to people and activities from outside their communities including criminals, armed robbers, kidnappers and terrorist groups like Boko Haram etc.	support shall constitute community vigilante groups, mobilize the youths and request for police posts for regular surveillance of the communities. The design of local community alertness system shall be useful, to alert neighbours in case of invaders or criminals	y executives and Traditional Leaders								
2	Accidents involving vehicles or pedestrians are likely to occur as a result of increased vehicle density, operation and increased speed, as community roads	Adequate road signs for motorists and pedestrians Routine maintenance of roads. Routine inspection of motor-able roads and road users. Training of road users on interpretation of road signs	FRSC	1,000	Road accidents /animal crushing	Routine interview	No complaints from the community	Communities	Quarterly	Road Marshals	300
3	Discrimination against gender and vulnerable group Gender Based violence Grievance and conflicts amongst members	Continues sensitization and awareness program and ensure that community level programs allow for gender inclusiveness Reporting GBV, SEA VAC cases properly and	Community project monitoring committee	500	Reports and awareness	Number of cases indicated	General compliance	communities	Quarterly	NGO Women Affairs GBV/SEA Referral Units	200

Activity	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (USD)
C	**OPERATION PHASE**										
		timely Implement requirements of GRM that addresses such issues									
Sub Total				**4,300.00**							**1,900 .00**
TOTAL A+B+C				**11,600 .00**							**8,250. 00**

Note: *Overall, GBV risks in the project area might include Intimate Partner Violence (IPV), public harassment including physical harassment, verbal insults, rape, women and child trafficking. Targeted support to women in the construction areas could likely exacerbate these risks. Development and implementation of specific GBV risk prevention and mitigation strategies tailored to local contexts is critical in this road construction project. Guidelines for situation analysis of GBV and safe reporting guidelines in line with international best practices should be implemented. Further, all risks related to labour influx should be mitigated by the participation of project beneficiaries/communities and involvement of project contractors and contractors' workers and consultant employees in identifying mitigation and implementing measures. This should also include the development of mitigation instruments such as 'Labour Influx Management Plan' or Camp Management Plan.*

4.3 INSTITUTIONAL ROLES AND RESPONSIBILITIES

The successful implementation of this EMP depends on the commitment and capacity of various institutions and stakeholders to implement it effectively. Thus, the arrangement as well as the roles and responsibilities of the institutions and persons that will be involved in the implementation, monitoring and review of the EMP are presented on Table 16 below. Appendix 4 gives a detail general environmental management conditions during civil works.

Table 16. Institutional Arrangement for EMP Implementation.

SN	Category	Roles & Responsibilities
1	FCDA Engineering Unit	• Monitoring of project/contractor performance and taking appropriate action to ensure that EMP provisions are met. • Inclusion of relevant provisions in the contract. • Safeguards due diligence • Implementation of request for environmental and social protection.
2	FCDA Engineering Unit	**Environmental Safeguards** • Analyse potential environmental impacts. • Ensure that project activities that are implemented in accordance with best practices and guidelines • Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. **Social Safeguards** • Develop, coordinate and ensures the implementation of the social aspects of the proposed project. • Identify and liaise with all stakeholders involved in social related issues during the road construction. • Ensure that project activities that are implemented in accordance with best practices and guidelines • Ensure that GBV mitigation and response measures are in place & working correctly.
3	Tectonic Engineering Consult.	• Provide technical assistance, guidance and support during EMP development and implementation
4	AEPB	• Oversees environmental compliance at the FCT level Provision of advice on site assessment and monitoring of EMP implementation
5	Other relevant Government MDAs	• Relevant areas or resources under their jurisdiction or management are likely to be affected or implicated by the proposed project. • Participate in the EA processes and in project decision-making that helps prevent or minimize environmental and social impacts and to mitigate them.

SN	Category	Roles & Responsibilities
6	Project Host Communities	• Promote environmental and social awareness • Project Support amongst the various relevant grass roots interest groups.
7	CDA & CBO	• Ensure Community participation by mobilizing, sensitizing community members;
8	Contractor/ Tectonic Engineering Consult.	• Compliance to BOQ specification in procurement of material and construction • Follow the EMP provisions during project implementation • Ensure compliance with 'Chance find Procedures' • Establish and maintain communication with project host communities through a Community Liaison Officer.
9	Site Engineers/Supervisors	• Provide oversight function during site mobilization, construction and demobilization.
10	Supervision Consultant (Environmental and Social) Tectonic Engineering Consult. FCDA Engineering	• Prepare and implement environmental monitoring plan during construction • Supervise contractor performance of implementation of the Construction Campsite/Staging area Camp Management Plan/C-EMP • Report any incidents or non-compliance with the C-EMP to the FCDA • Ensure adequate training and education of all staff involved in environmental and social safeguard supervision •
11	NGOs/CSOs	• Assisting in their respective ways to ensure effective response actions during project implementation. • Awareness campaigns
12	Others/General Public	• Identify environmental and social issues that could derail the proposed project and support project impacts mitigation measures. • Awareness campaigns

4.4 IMPLEMENTATION SCHEDULE

The activities related to environmental and social management and monitoring must be integrated in the overall road construction schedule. The key elements of the implementation schedule are presented on Table 17 below.

Table 17. Tentative Implementation Schedule

N	Activity	Responsibility	Preconstruction	Construction	Operation / De-mobilization
Month			1	2	3
1	Clearance of EMP	FMEnv			
2	Inclusion of Environmental & Social Requirements in Bid Documents	FCDA			
3	Finalization of Engineering Designs	FCDA/Engineering Design Consultant			
4	Implementation of Environmental and Social Mitigation Measures	Contractor			
5	Supervising EMP Implementation	FCDA, Environmental Consultants			
6	Monitoring and Reporting on EMP Implementation	FCDA, Environmental Consultants, NGOs			
7	Environmental and Social Auditing	FCDA, Environmental Consultants, FMEnv, Abuja Environment Protection Board			

CHAPTER FIVE:

PUBLIC CONSULTATION

5.1 INTRODUCTION

Views of the project interest and affected persons have been fully considered during the preparation of this Environmental Management Plan (EMP). The findings and contributions shall continue to form a basis for further engagement in the implementation of the proposed road construction project. Different channels for communication and consultation such as meetings, filling of questionnaires, public readings and explanations of project ideas and requirements were used during the consultations. These strategies could also be used by the contractor during the implementation stage to gather on site information for daily, weekly and monthly work schedules for responsive project implementation and resources deployment. Publication in print and electronic media, preferably local newspapers, notice boards near project sites, posters in strategic locations and many public places may also be utilized. However, the choice of any means of communication must take into consideration the literacy levels in the rural communities while allowing enough time for responses and feedback. Information/messages should also be disseminated in local language(s).

Note that during the consultations to draw up this EMP, government agencies including the Ministry of Environment, the AMAC Council, and traditional rulers, community leaders, women and youths within the Project Communities (Dape, and Karemo Sabo) were involved. The all-inclusive strategy was to allow relevant groups and interests to be represented and considered. Such consultation may also be useful during the implementation to help keep all the stakeholders abreast of developments that may need to be considered along the project work.

STAKEHOLDER ENGAGEMENT PLAN

An elaborate strategy for engaging stakeholders throughout the lifecycle of the project is highlighted on Table 18. The highlight is a broad spectrum of activities and events that will occur at different stages of the life cycle of the project and the targeted stakeholders that are required to be engaged, and how they should be engaged. The aim is help the construction team possess a clear understanding of issues of engagement and then prepare an appropriate plan/guideline that the project developer and/or those carrying out services on its

behalf can follow to maintain social inclusion and responsiveness in the project implementation.

Table 18. Stakeholder Engagement Strategy

Project Phase	Project Activities	Target Group	Method
Preconstruction	▪ Disclosure of project information ▪ Identification of proposed project location and area of influence ▪ Scoping and study ▪ EMP disclosure	▪ Traditional rulers ▪ Community Union Chairman ▪ Affected/Benefitting communities ▪ NGOs, CBOs ▪ Area Council	▪ Invitation through village heads, youth leaders and head of association ▪ Distribution of background information document (BID) to the locals interpreted in local language ▪ Invitation through LGAs ▪ Disclosure of EMP at ACs, AEPB, FCDA, National & Local Dailies.
Construction	▪ Road construction – Civil Works ▪ EMP Implementation ▪ EMP Monitoring	▪ Traditional rulers ▪ Community Union Chairman ▪ Affected/Benefitting communities ▪ NGOs, CBOs ▪ Host Area Council Police,	▪ Invitation through the village heads, youth leader, and heads of MDAs ▪ Information via village messenger ▪ Distribution of fliers to the locals printed in English and Hausa languages and other prominent language in the areas ▪ Arrangement of monitoring responsibilities to stakeholder Agencies ▪ Follow up calls by FCDA/Consultant
Operation	▪ De-mobilization ▪ Audit/ Post construction evaluation ▪ Road Maintenance	▪ Traditional rulers ▪ Community union chairman ▪ Affected/Benefitting communities ▪ NGOs, CBOs ▪ Host Area Council	▪ Community based interview, questionnaire surveys by FCDA ▪ Invitation through the village heads, youth leader, and heads of MDAs ▪ Information via village messenger ▪ Arrangement of monitoring responsibilities to stakeholder Agencies ▪ Follow up calls by FCDA, Consultant

5.3 SUMMARY OF PUBLIC CONSULTATION IN EACH PROJECT HOST COMMUNITY FOR THE PROPOSED CONSTRUCTION OF N5N2, 7.2KM LIFE CAMP JUNCTION TO EFAB/KAREMO ROAD IN AMAC, FCT ABUJA.

Table 19 Summary of Public Consultation for Dape Community

Date and venue of Public consultation	Consultation was carried out on 18/01/2020 at the palaces of the village Head and chief of Dape	
Stakeholders in attendance	Village Head of Dape – **HRH ESU James Ibrahim Luko** Representatives of Dape Community Development Association and Youths, Representative of FCDA/Tectonic Engineering & Consult	
Language of communication	English and Hausa	
Introduction	The Team leader of EMP consultants introduced the road construction project to the community and solicited for their support to ensure the success of the project.	
Stakeholders perception about the project	The stakeholders expressed delight that they will be beneficiaries in the proposed project and pledged their support towards the success of the project. The Village Head described the road construction project as one that would touch the heart of the people and assured the EMP Team of maximum support. Concerns raised are presented in the section below:	
Sn	**Concerns Raised**	**How Concerns Were Addressed**
1	The project contractor should give due cognizance to native customs and traditions in the execution of the projects.	The project will be carried out in a socially responsible manner with cognizance of native customs and traditions.
2	Eligible persons from the community should be considered for employment during the execution of the project.	The project contractors are encouraged to employ workers from the host communities especially for non-skilled labour requirements of the project.
3	Road accidents should be prevented during construction using adequate signs and public sensitizations.	Adequate sensitization will be carried before and during project implementation. Work areas will be cordoned off. Safety officers of the project contractors would be on ground during work activities.
4	Fear that government will demolish the entire area in the name of the project. Worries over if there will be or what will be the compensation for land or assets that will be impacted by the project.	The road will be restricted to its right of way RoW, FCDA are already assessing the area and will duly consult with the people before work starts

Table 20. Summary of Public Consultation for Karemo Sabo Community

Date and venue of Public consultation	Consultation was carried out on 18/12/2019 and 18/01/2020 at the palaces of the village Head and chief of Karemo Sabo
Stakeholders in attendance	Village Head of Karemo Sabo – **HH** Representatives of Karemo Sabo Community Development Association and Youths, Representative of FCDA/Tectonic Engineering & Consult
Language of communication	English and Hausa
Introduction	The Team leader of EMP Consultants introduced the road construction project to the community and solicited for their support to ensure the success of the project.
Stakeholders perception about the project	The stakeholders expressed delight that they will be beneficiaries in the proposed project. The Village Head described the road construction project as an important one but that they still have mixed fillings and would want to consult further with his people and superior authority. Concerns raised are presented in the section below:

SN	Concerns Raised	How Concerns Were Addressed
1	The village Head asked for any official document from FCDA for necessary mandate	The village Head was assured of a letter to that effect will be made available to him
2	Fear that government will demolish the entire village in the name of road construction. Concern for compensation for the people for their land or assets that will be impacted by the project.	The road will be restricted to its right of way RoW, which terminate in the community FCDA are already assessing the area and will duly consult with the people before work starts

5.4 Pictures of Consultations

Consultation with chief of Dape community

Consultation with village head of Karemo Sabo

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APPENDIX 1 SOCIO ECONOMIC ASSESSMENT INSTRUMENT

SPECIMEN QUESTIONNAIRE ON SOCIO ECONOMIC CHARACTERISTICS OF SETTLEMENT(S)

SECTION A

FCDA is conducting an Environmental Impact Assessment of a proposed Road Construction PROJECT located in ----------Area Council of ----------
This is to minimize/reduce the impact of the road project in the surrounding environment.

Please, take time to complete this questionnaire. The questionnaire will NOT be used to provide basis for gain or compensation to any individual or the community. So kindly provide realistic answers as close to correct situation as possible.

SECTION A

1. EIA project----------
2. Date: ----------
3. Name of community /Group of communities. ----------
   ----
4. Name of LGA/AC: ----------
   State: ----------
5. Name of the major community association: ----------
   ----
6. Name of Executive Member of the Association: ----------
   Chairman: ----------
   Vice chairman: ----------
   Secretary: ----------
7. Function of Association
   i.----------
   ii. ----------
   iii. ----------

SECTION B

HISTORY, TRADITIONAL AND ADMINISTRATIVE STRUCTURE OF COMMUNITY/GROUP OF COMMUNITIES

8. Is the village part of a clan? Yes/No
   Name of clan: if yes: ----------
9. Name the ethnic group (s) that founded the village/Community
   I. ----------
   Ii----------
10. When was village/ Community founded? ----------
11. Who is the overall/Highest traditional and Administrative ruler of the community?
    Title: ----------
    Name: ----------
12. Where does he reside? ----------
13. Traditional chiefs of the village /group of villages. Provide Titles, Name and Rank (after the highest traditional ruler)
    I. ----------
    Ii----------
    Iii----------
14. Is there a Council of Chiefs: Yes/No?
15. State Functions of Council of Chiefs
    I----------
    Ii----------
    Iii----------
16. Is there a village head? if Yes
    Name----------
    Title----------

SECTION C

CULTURAL, RELIGION AND ARCHAEOLOGY

17. Complete

Name of shrine/Deity Worshipped in community		Location e.g. House, farm, road junctions etc.	Material used for worshipping	Time of year/Frequency for worshipping
1				
2				
3				

18. Name of sacred forests and their locations

	Name of Sacred forests	Locations

19. Religious and social festivals celebrated by community.

	Name of Festival	Time of year celebrated
i		
ii		
iii		

20. Name forest reserve (s) within the near community

I----------

21. Name lakes:

I----------

Ii----------

22. Name rivers/streams
23.

I----------

Ii----------

24. Name sites of archaeological interest e.g. for digging ground to study culture of area.

---

25. Name two major social clubs in community.

I----------

Ii----------

Name community –based improvement schemes/organization including community bank or monthly contributions paid per household:

I----------

Ii----------

26. Give name & type of religion observed in the community

	Religion	
i	Islam	
ii	Christianity	
iii	Traditional	
iv	Others	

SECTION D
DEMOGRAPHY

27. Give estimate of:
a. Village population: Male---------- Female---------- Children---------- Total
b. Ethnic population of the community:
c.

S/N	Ethnic group	Total Population

1		
2		
3		
4		
5		
6		
7		
8		

28. Age distribution. Give estimate of age groups in community

	Male	Female	Total
Number below 10 years			
Number between 10-20 years			
Number between 21-30 years			
Number between 31-40 years			
Number between41-50 years			
Number 50 years and above			
Total			

Gender Issues

29. Do you think males and females should have equal rights?
    1. Yes
    2. No

30 Do you think it is alright for husband and wife to have equal say on important decision in the house?
    1. Yes
    2. No

31 Do you think that parents should encourage their daughters to aspire for professional position in life?
    1. Yes
    2. No

32. If you were to choose, what sex of children would you prefer?
    1. Male child
    2. Female child
    3. Both

33. Do you think women should have same opportunities as men in leadership?
    1. Yes
    2. No

34. Do you think a woman can make good decisions on important matters?
    1. Yes
    2. No

Household Facility Ownership

35. Which of these facilities (in good working condition) do you own?

Radio		
Television		
Refrigerator		
Telephone		
GSM Phone		
Wristwatch/clock		
Bicycle		
Motorcycle		
Motor car		
Other (specify)		

Transportation

36. What is the major means of transportation in the community?

Mode of Transport	
Motor car	
Bicycle	
Motorcycle	
Others specify	

Means of Communication

37. Which of these telecommunication services are available in your community or what means of communication is in use? Tick

1. MTN
2. GLO
3. ETISALAT
4. MULTI-LINKS
5. STARCOM
6. OTHERS/Means of Com: specify ----------

SECTION E

ECONOMY/OCCUPATION

38 Occupation/Employment Profile of community and income

Occupation type	Number of people	Amount earned per month	Remark
Farming			
Trading			
Casual laborers			
Chemist storekeepers			
Contractors			
Craft making			
Canoe building			
Domestic servant /Houseboy/H. girl			
Drivers (commercial motor)			
Drivers (Okada)			
Canoe ferrying			
Electrician			
Food cooking for selling			
Firewood collection for sale			
Fishing activities			
Hunting			
Local gin brewing for sale			
Lumbering/timber extraction			
Livestock breeding for selling			
Mechanic			
Medical doctor			
Native doctor			
Night watchman/security			
Nursing			
Public servant/LGA worker			
Privately employed			
Sand collection/selling			
Teaching			
Trading/petty selling /marketing			
Unemployed			
Total			

39. Major crops grown in community.

i---------- iv---------- vii----------

ii. ---------- v.---------- viii----------

iii---------- vi. ---------- xi----------

40. Major Livestock bred in community.

i---------- iv---------- vii----------

ii.---------- v.---------- viii----------

41. Fishing Equipment

a. Cast Net ---------- d. Fish fences----------

b Hooks on thread and stocks---------- e. Fishponds----------

c. Basket traps----------

f. Poisoning fish with chemicals----------

42. What is the average or range of income of the following Categories of people in your community per annum? a. Age group of 25-35 ……..

b. Age group of 35-45…….

c. Age group of 45-55……

d. Age group of 55-60…….

e. Age group of 60 above……

43. a Are there people with disability in your community and what form of disability are they that reside in the community?

……

……

b. state if any platform exists to protect their rights?

SECTION F

INDUSTRIAL

42. Name companies/industries present in the area.

Name		Address or location
a		
b		
c		
d		
e		
f		

44. Name and address/locations of hotels and guest house present within or near the community

a ----------

b ----------

c ----------

45. Name of banks in or near community/communities:

a ----------

b ----------

c ----------

d ----------

SECTION G

46. **EDUCATION**

Name, address and ownership of educational institution in the area (Schools)

Name and address /locations of:

Nursery/Primary

a ----------

b ----------

c ----------

d ----------

Secondary/Commercial

a ----------

b ----------

Technical school

a ----------

b ----------

SECTION H

47. **HEALTH FACILITIES**

a. Is there a health care facility in your community?

1. Yes
2. No

b. What kind of health facility do you have?

1. First aid
2. Clinic
3. Health Centre
4. Maternity ward

5. Hospital

c. Does the health facility have qualified health personnel?
   1. Yes
   2. No

d. Does it have adequate medical supplies?
   1. Yes
   2. No

e. What are the sources of the medical supplies?
   1. _____
   2 _____
   3. _____
   4. _____
   5. _____

f. How long does it take to reach the facility from your house?
   1. <15min
   2. 15 – 30min
   3. 30 – 45 min
   4. >60min

g. Do you visit the clinic whenever you or any other member of your household falls sick?
   1. Yes
   2. No

h. If No to question 77, why is it so?
   1. Poor and inadequate drugs
   2. Too far from my house
   3. Health staff over-stretched
   4. Too expensive
   5. Others (specify)_____

i. Which diseases are most prevalent in your community?
   1. _____
   2 _____
   3. _____
   4. _____
   5. _____

48 State any major environmental problems that are envisaged with the proposed road project on the area. Tick, where appropriate.

i. Flooding: _____
ii. Deforestation: _____
iii. Wildlife disappearance: _____
iv. Air pollution: _____
v. Soil erosion: _____
vi. Solid waste disposal: _____
vii. Water pollution: _____
xiii. Unfertile soil: _____
ix. Plant/crop diseases: _____
x. Water supply: _____
xi. Others: _____

49. What type of sanitary facility is available to households in your communities?
   1. Pit latrine
   2. Near bush
   3. Water closet
   4. Other (specify)_____

50. How does this household dispose of its rubbish (solid wastes?)
   1. Collected by Government
   2. Buried by household
   3. Public approved dump
   4. Unapproved dump site
   5. Dispose to farmlands

6. Burning
7. Family Refuse Dump

SECTION I

Energy Sources

51a. What type of energy (source) and Fuel do you use in your house?

1. Electricity
2. Gas
3. Kerosene
4. Candle
5. Solar
6. Other (specify)…….

b

1. Firewood
2. Kerosene
3. Animal dump
4. Sand dust
5. Cornstalk
6. Rice Chaff
7. Charcoal
8. Sugarcane wastes
9. Others (specify)_____

Water Supply

52. Which of these water sources is available to you for both domestic and livestock consumption?

1. Pipe bone
2. Borehole
3. Open well
4. Stream
5. Earth dam
6. Other (specify)_____

53. How long does it take you to reach the source (to and from)?

1. <20min
2. 20 – 40min
3. 40 – 60min
4. >60

SECTION H

Environmental Impact of the Project on Community

54. How do you think the proposed project will affect your community base on the following?

		Adverse	Decrease	Increase	Positive	Beneficial	None
1	Population of community						
2	Employment opportunities						
3	Income						
4	Traditional rulers/village headship						
5	Settlement pattern						
6	Sacred shrine						
7	Medicinal plants						
8	Religious worship						
9	Sacred forest						
10	Water bodies						
11	Festivals/celebrations						
12	Ethnic composition						
13	Age distribution of comm.						
14	Fisheries						
15	Wildlife						
16	Farming						
17	Companies/other estates						
18	Educational institutions						

19	Literacy level of community						
20	Housing						
21	Transport						
22	Electricity supply						
23	Roads and drainage						
24	Health institutions						
25	Water						
26	Land						
27	Air quality						
28	Communication system						
29	Fuel for households						
30	Community security						

55. Kindly state what are yours/community concerns or fears about the proposed project?

……
……
……
……

APPENDIX 2 ATTENDANCE/COMMUNITY CONSULTATION

DAPE COMMUNITY

Name Dape	Kingdom / Company	Phone NO.
1. JAMES I. LUKO	Chief of Dape	08026697807
2. Emma .S. Haruna	madaki of Dape	08112497938
3 HALIRU. GIMBA Shabienu	Sarkin Yarki	09051256934
4 Joseph Galadima	John	0813868[illegible]73
5 Zafani Ya Kumi	Sarakin Samari	08153680811
6. SALISU MUHAMMAD Sunu	danmasani	08181117322
7 AJAYI DAWUDA	Dogari P. A	08135819970
8 Baru monday	Sakoma 1	07085261646
9. Ismaila Mohammed	Tectonics	08030380595
10 Adamu Abdulhadi Bappah	Tectonics	07036142087
11- Khalid Jibril	Tectonics	07030078448
12- Taofiq Abdulkarim	Tectonics	0803514[illegible]

APPENDIX 3. WASTE MANAGEMENT PLAN

A sample Waste Management Plan is presented below.

Aspects	Waste Types	classification	Proposed Reuse/Recycling /Disposal
Demolition / Site Clearing	Vegetation (logs, mulched timber, weeds)	General solid waste (non-putrescible)	Beneficial -reuse onsite for erosion and sediment control and Landscaping mulch. Offsite re-use as millable timber Weeds buried on site
	Concrete, asphalt and gravel	General solid waste (non-putrescible	Recycling of concrete for use in access tracks, landscape mounds and other applications where suitable. Recycling of asphalt pavement in new asphalt pavement (if applicable)
	Scrap metal	General solid waste (non-putrescible)	Recycling
Bulk Earthworks	ENM (Excavated Natural Material) Potentially Contaminated Soils VENM (Virgin Excavated Natural Material)	If material is taken off site classification will be carried out, based on soil tests carried out pre-construction	Beneficial reuse onsite (such as noise mounds). Balance cut and fill earthworks, where possible, to optimise reuse. Offsite disposal at an approved facility
Road Construction	Steel Reinforcing	General solid waste (non-putrescible)	Recycling
	Conduits and pipes	General solid waste (non-putrescible)	Disposal
	Concrete (solids and washouts) and asphalt	General solid waste (non-putrescible)	Disposal
	Timber formwork	General solid waste (non-putrescible)	Disposal/recycled where applicable
	Packaging Materials, including wood, plastic, cardboard and metals	General solid waste (non-putrescible)	Disposal
	Empty oil and other drums	General solid waste (non-putrescible)	Disposal
	Metals and electrical cabling	General solid waste (non-putrescible	Disposal
Compounds and Workshop Operation	Waste generated by the maintenance of equipment including air and oil filters and rags	General solid waste (non-putrescible)	Disposal
	Tyres	Special waste	Disposal
	Oils, grease, fuel, chemicals and other fluids	Liquid	Recycling/Disposal where applicable
	Batteries	Hazardous waste	Recycling
	Radiator Fluid	Hazardous waste	Disposal
	Hydraulic fluid	Hazardous waste	Disposal
	Domestic waste generated by workers	General solid waste (putrescible)	Disposal
	Sewage	General solid waste (putrescible)	Disposal
Office operation	Paper, cardboard and plastic	General solid waste (non-putrescible)	Recycling
	Glass bottles and aluminium cans	General solid waste (non-putrescible)	Recycling
	Ink cartridges	General solid waste (non-putrescible)	Recycling
	Food Waste	General solid waste	Disposal

APPENDIX 4. PROJECT OCCCUPATIONAL HEALTH AND SAFETY (OHS) PLAN

In order to maintain the desired health safety standards, it is necessary to actively pursue an accident prevention program through all levels (from management through all employees). Health and safety are functional responsibilities of each supervisor.

Health and safety are of vital interest to everyone in the company. Compliance with safety and health rules is taken very seriously. This means that failure to comply is enough ground for disciplinary action or for termination of employment. The goal is to protect employees from injury while at work. This must receive top priority from everyone.

General Workplace Safety Rules

a) Report unsafe conditions to your immediate supervisor.
b) Promptly report all accidents/injuries/incidents to your immediate supervisor.
c) Use eye and face protection where there is danger from flying objects or particles or from hazardous splashes.
d) Dress properly. Wear appropriate work clothes, gloves, and shoes or boots. Loose clothing and jewellery shall not be worn.
e) Operate machines or other equipment only when all guards and safety devices are in place and in proper operating condition.
f) Keep all equipment in safe working condition. Never use defective tools or equipment. Report any defective tools or equipment to immediate supervisor.
g) Properly care for and be responsible for all personal protective equipment (PPE). Wear or use any such PPE when required.
h) Lockout or tag out or disconnect power on any equipment or machines before any maintenance and adjustments are made.
i) Practice good housekeeping always.
j) Training on equipment is required prior to unsupervised operation.
k) Compliance with all governmental regulations/rules and all company safety rules is required.

Inspection Guideline

This listing includes items and categories for health and safety inspections on the job. It provides a guideline of areas to be surveyed or developed into a checklist for use during the inspection.

i. First aid safety and health equipment.
ii. Posters, signs required by Workers' Safety and health and safety practices.
iii. Accident reporting records.
iv. Employee training provided, such as health and safety talks, worker orientation.
v. Protective guards and devices - availability, use, proper maintenance and operating condition.
vi. Housekeeping, maintaining clean work areas free of trash/debris accumulation, tripping and slipping hazards.
vii. Lighting: for adequacy and safety.
viii. Sanitation: water, toilets for cleanliness and proper operation.
ix. Noise hazards, hearing protection.
x. Availability of personal protective equipment: Hard hats/head protection, respirators, fall protection equipment, safety belts, lifelines, safety shoes, eye protection, gloves.
xi. Fire protection, prevention and control, use of fire protection equipment.
xii. Temporary buildings, trailers, sheds.
xiii. Open yard storage.
xiv. Storage of flammable and combustible liquids including service and refuelling areas for vehicles.
xv. Temporary heating devices.
xvi Fall protection requirements: In place and in use.

xvii. Electrical system and devices; condition and use of cords; ground fault protection or assured grounding conductor protection.
xviii. Materials - handling equipment and elevators.
xix. Hazard communication program and material safety data sheets (MSDS).
xx. Excavations and trenches: protective systems.
xxi Other items as appropriate.

APPENDIX 5. SAMPLE CHANCE FIND PROCEDURE FOR THE PROTECTION OF PHYSICAL CULTURAL RESOURCES.

The Federal Ministry of Culture and Tourism is responsible for the protection of Physical Cultural Resources. Chance find procedures will be used as follows:

a) Stop the construction activities around the chance find.
b) Delineate the discovered site or area.
c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the equivalent take over.
d) Notify the supervisory Engineer who in turn will notify the FCDA and FPMU who in turn will notify the national authority responsible for Antiquities immediately (within 24 hours or less).
e) Responsible local authorities and the national authority for Antiquities would oversee protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the national authority of Antiquities (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values.
f) Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding are irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
g) Implementation for the authority decision concerning the management of the finding shall be communicated in writing and
h) Construction work could resume only after permission is given from the responsible authority for Antiquities concerning safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts, when applicable.
During project supervision, the FCDA and FPMU shall monitor the above regulations relating to the treatment of any chance find encountered.

APPENDIX 6. CODE OF CONDUCT FOR CONTRACTORS

Individual Code of Conduct

Preventing Gender Based Violence and Violence Against Children

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

I agree that while working on the project I will:

- Consent to police background check.

- Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
- Not engage in sexual favours—for instance, making promises or favourable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behaviour.
- Unless there is the full consent[1] by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
- Attend and actively partake in training courses related to HIV/AIDS, GBV and VAC as requested by my employer.
- Consider reporting through the GRM or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

Regarding children under the age of 18:

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

Use of children's images for work related purposes

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

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

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

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

Sanctions

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

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

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

Signature: _____

Printed Name: _____

Title: _____

Date: _____

APPENDIX 7. ANALYSIS RESULTS OF SOIL, AIR QUALITY, NOISE AND WATER

S/N	PARAMETERS	UNIT	N5SS1	N5SS2	N5SS3	N5SS4	N5SSC
1	Class & Texture	%	Loam	Clay Loam	Clay Loam	Clay	Sandy Clay
2	Clay	%	12.00	11.00	9.00	8.00	40.00
3	Silt	%	42.00	46.00	38.00	30.00	11.00
4	Sand	Ratio of 1:2.50	34.00	26.00	28.00	20.00	50.00
5	H2O	dsm	4.56	4.86	5.86	6.18	5.14
6	Ece	g/Cm3	0.05	0.08	0.80	0.08	0.10
7	BD	g/Cm3	1.15	1.33	1.48	1.38	1.25
8	PD	g/g	2.38	2.74	2.67	2.63	2.36
9	Porosity	Cmol/Kg	0.59	0.49	0.68	0.45	0.66
10	Cl-	Cmol/Kg	5.90	3.50	3.40	3.70	2.1
11	HC03	Cmol/Kg	1.23	2.2	1.33	1.45	2.3
12	SO4	Cmol/Kg	56	76.21	71.2	16	21.45
13	NO3	mg/kg	0.08	0.08	0.05	0.08	0.09
14	TP	mg/kg	611.08	834.65	715.41	670.70	671.72
15	Fe	mg/kg	1165.00	1233.50	944.75	1303.75	471.00
16	Mn	mg/kg	212.00	236.50	215.00	208.25	312.23
17	Cr	mg/kg	0.00	91.75	90.00	194.00	182.75
18	Cu	mg/kg	35.50	44.50	31.00	24.50	344.73
19	Zn	mg/kg	13.00	27.75	0.00	13.00	4.25
20	Cd	mg/kg	0.65	0.51	0.24	0.67	0.56
21	Ni	mg/kg	70.00	95.00	63.00	75.00	16.50
22	Pb	Cmol/Kg	55.75	56.75	54.75	42.25	18.88
23	Ca	Cmol/Kg	42.00	11.00	6.00	7.00	6.3
24	Mg	Cmol/Kg	0.76	0.12	0.26	0.78	0.98
25	K	Cmol/Kg	1.15	1.23	1.34	1.34	0.63
26	Na	%	1.09	2.10	1.35	1.67	1.06
27	Total bacteria count	cfu/gm	2.9×10^6	1.3×10^6	2.3×10^6	1.8×10^6	2.3×10^6
28	E. coli count	cfu/gm	0	0	0	0	0

29	Coliform count	cfu/gm	0	0	0	0	0
30	Salmonalla count	cfu/gm	0	0	0	0	0
31	Total fungal count (yeast/moulds)	cfu/gm	0	1.7×10^4	4.0×10^4	1.0×10^4	1.8×10^6
	Sample Coordinate		**N9°04'11.6" E 7°16'56.5"**	**N 9°04'12.2" E 7°23'06.1"**	**N 9°04'22.5" E 7°22'35.2"**	**N 9°04'14.7" E 7°22'06.3"**	**N 9°04'07.6" E 7°24'12.6"**

COLLECTION (N2) ROAD

S/N	**PARAMETERS**	**UNIT**	**N2SS1**	**N2SS2**	**N2SSC**
1	Class & Texture	%	Sandy Loam	Sandy Loam	Clay Loam
2	Clay	%	16.00	18.00	10.00
3	Silt	%	8.00	8.00	26.00
4	Sand	Ratio of 1:2.50	76.00	74.00	40.00
5	H2O	dsm	4.98	5.53	6.12
6	Ece	g/Cm3	0.05	0.05	0.03
7	BD	g/Cm3	1.38	1.25	1.33
8	PD	g/g	2.58	2.62	2.76
9	Porosity	Cmol/Kg	0.47	0.24	0.58
10	Cl-	Cmol/Kg	0.70	1.20	2.80
11	HC03	Cmol/Kg	2.00	1.40	1.22
12	SO4	Cmol/Kg	10.58	8.23	47.02
13	NO3	mg/kg	0.14	0.07	0.10
14	TP	mg/kg	804.84	1162.54	536.56
15	Fe	mg/kg	1296.50	633.00	522.00
16	Mn	mg/kg	515.23	514.13	74.00
17	Cr	mg/kg	19.40	21.28	29.50
18	Cu	mg/kg	10.50	13.25	40.75
19	Zn	mg/kg	2.25	6.25	3.50
20	Cd	mg/kg	3.75	0.75	0.35
21	Ni	mg/kg	16.50	4.30	82.75
22	Pb	Cmol/Kg	23.03	35.78	121.50
23	Ca	Cmol/Kg	1.53	2.43	13.25

24	Mg	Cmol/Kg	0.67	0.43	55
25	K	Cmol/Kg	0.10	0.28	1.20
26	Na	%	1.10	1.07	1.34
27	Total bacteria count	cfu/gm	5.7×10^6	1.5×10^6	3.9×10^6
28	E. coli count	cfu/gm	0	0	0
29	Coliform count	cfu/gm	0	0	0
30	Salmonalla count	cfu/gm	0	0	0
31	Total fungal count (yeast/moulds)	cfu/gm	0	7.0×10^4	0
	Sample Coordinate		**N 9°03'43.9" E 7°24'11.7"**	**N 9°03'14.4" E 7°24'14.6"**	**N 9°04'33.3" E 7°24'27.9"**

AIR QUALITY AND NOISE LEVEL RESULTS FOR ARTERIAL (N5) ROAD

PARAMETERS	FMEnv LIMIT	N5NA1	N5NA2	N5NA3	N5NA4	N5NAC
Temperature 0C	NS	39	35	36	36	38
Total Particulate (TP) g/m3	250	PM 2.5=25 PM 10=116	PM 2.5=10 PM 10=52	PM 2.5=13 PM 10=68	PM 2.5=11 PM 10=60	PM 2.5=11 PM 10=60
Nitrogen (IV) Oxide (NO2) mg/m3	0.085	0	0	0	0	0
Sulphur (IV) Oxide mg/m3	0.5	0	0	0	0	0
Carbon (II) Oxide mg/m3	5	0	0	0	0	0
Ammonia (NH3) mg/m3	5	0	0	0	0	0
Hydrogen sulphide (H2S) mg/m3	0.008	0	0	0	0	0
Methane CH4 mg/m3	NS	0	0	0	0	0
Oxygen percentage	NS	20.9	20.8	20.9	20.9	20.9
Carbon (IV) Oxide mg/m3 C02		375	346	347	341	347
Humidity		27	26	28	35	31
Mean Noise Level (dBA)		59.9	60.7	60.7	64.6	76.0
Sample Coordinate		**N9°04'12.1' E007°23'46.3"**	**N9°04'12.4" E007°23'040"**	**N9°04'22.4" E007°22'34.9"**	**N9°04'15.1" E007°22'06.0"**	**N9°04'05.2" E007°24'09.1"**

COLLECTOR (N2) ROAD

PARAMETERS	FMEnv LIMIT	N2NA1	N2NA2	N2NAC

Temperature 0C	NS	33	35	37
Total Particulate (TP) g/m3	250	PM 2.5=6 PM 10=31	PM 2.5=5 PM 10=26	PM 2.5=5 PM 10=27
Nitrogen (IV) Oxide (NO2) mg/m3	0.085	0	0	0
Sulphur (IV) Oxide mg/m3	0.5	0	0	0
Carbon (II) Oxide mg/m3	5	0	0	0
Ammonia (NH3) mg/m3	5	0	0	0
Hydrogen sulphide (H2S) mg/m3	0.008	0	0	0
Methane CH4 mg/m3	NS	0	0	0
Oxygen percentage	NS	20.9	20.8	20.8
Carbon (IV) Oxide mg/m3 C02		332	335	338
Humidity		13	11	11
Wind Speed		2.9	1.4	1.6
Mean Noise Level (dBA)		68.1	58.35	67.25
Sample Coordinate		**N9°03'47.3'' E007°24'13.2''**	**N9°03'13.9'' E007°24'13.0''**	**N9°03'31.5'' E007°24'27.1''**

WATER ANALYSIS RESULTS

SN	PARAMETER	UNITS	RESULTS		
			N5 Arterial Road (Old Karemo Stream)		**N2 Collector Road (Borehole)**
			Up stream	**Down stream**	**N9°03' 25.0'' E007°24'10.7''**
			N9°04' 26.3'' E007°22'31.5''	**N9°04' 12.3'' E007°22'31.5''**	
1	pH (at 25°C)	-	6.54	6.47	6.76
2	Colour	Hazen unit	6.00	5.00	5
3	Total dissolved solids	mg/l	38.00	38.00	80
4	Turbidity	NTU	3.20	2.20	5.41
5	Total Solids	mg/l	220.00	210.00	300
6	Total Suspended Solids	mg/l	0.67	0.20	120
7	Total Hardness (as $CaCO_3$)	mg/l	8.15	7.32	20.2
8	Calcium Hardness	mg/l	1.18	0.91	14.2
9	Magnesium Hardness	mg/l	1.51	1.45	6
10	Alkalinity	mg/l	12.00	15.00	18
11	Acidity	mg/l	3.00	2.00	2

12	Dissolved oxygen	mg/l	1.9	2.2	1.7
13	B.O.D	mg/l	0.30	0.40	0.5
14	C.O.D	mg/l	50.00	20.00	50
15	Chloride	mg/l	4.00	4.30	3.49
16	Bacterial Count	cfu/100ml	7×10^3	10×10^3	6×10^3
17	MPN	cfu/100ml	2×10^3	6×10^3	2×10^3
18	Sodium	mg/l	3.60	2.40	0.9
19	Phosphate	mg/l	1.43	1.07	21.54
20	Sulphate	mg/l	17.63	24.22	2.68
21	Nitrate	mg/l	0.50	0.50	0.36
22	Iron	mg/l	4.59	5.18	0.1079
23	Lead	mg/l	0.05	0.03	0.1085
24	Copper	mg/l	0.00	0.02	0.0003
25	Nickel	mg/l	0.10	0.04	0.0015
26	Cadmium	mg/l	0.00	0.00	0.0004
27	Manganese	mg/l	0.05	0.03	0.005
28	Zinc	mg/l	0.00	0.00	0.0076

APPENDIX 8. BORROW PIT MANAGEMENT PLAN

Development Phase	Activities	Potential Environmental Effects	Mitigation Technologies
Site layout/Site preparation	• Timber clearing • Vegetation removal • Soil and overburden removal	• Soil erosion • Habitat loss	• Retain vegetation to maintain slope stability • Maintain natural drainage patterns • Maintain vegetation buffer zones to protect water bodies • Construct ditches to direct runoff away from site • Locate the development in a well-drained area • Salvage and safely store organics, topsoil, and overburden for use in reclamation
Operations/ Monitoring	• Blasting • Stockpiling • Crushing • Access road maintenance	Soil erosion and sediment deposition	• Limit sediment movement using silt fences or straw bales • Use riprap to reinforce drainage channel corners and water discharge points • Re-vegetate where required to stabilize slopes
		Water quality impacts: ○ Silt ○ Fuel ○ Blasting residue	• Limit sediment movement or use setting ponds before discharging • Use proper fuel containment and handling techniques, and have spill kits accessible • Use proper explosives handling techniques to minimize wastage
		• Water Ponding ○ Permafrost	• Minimize sources of in-pit water by diverting surface water away from the development area

		degradation	• Place ice-rich material to thaw in a location where melt water will not re-enter pit • Limit pit or quarry depth
		• Dust generation	• Spray water and use dust skirts on conveyors to minimize dust

APPENDIX 9. SAMPLE COMMUNITY AFFAIRS, SAFETY, HEALTH, ENVIRONMENT AND SECURITY (CASHES) POLICY STATEMENT.

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

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

APPENDIX 10. TRAFFIC MANAGEMENT PLAN

Design and layout of Road Systems
The Site Manager & Employed Staff Must: -
a) Plan traffic routes to give the safest route between places within the project route
b) Make traffic routes wide enough for safe movement of the largest vehicle using them.
c) Ensure all drops and falls are adequately protected.
d) Avoid traffic routes passing close to vulnerable areas such as fuel tanks.
e) Ensure there are designated safe areas for loading, unloading and plant maintenance.
f) Avoid sharp corners or blind bends, if these cannot be avoided install mirrors.
g) Road crossings and junctions should be clearly signed and marked.
h) Make entrances and gates wide enough.
i) Set speed limits and clearly mark on traffic routes; (5mph).
j) Give prominent warning of limited headroom and overhead cables.

Deliveries
Deliveries will not be permitted between the hours of 07:00 – 09:30 and 15:30-19:00 respectively. This information MUST be transmitted to all sub-contractors.

Pedestrians
For pedestrians, the Site Manager & employed staff will:
a) Provide separate routes for pedestrians and where needed provide suitable barriers.
b) If traffic routes are used by both, they should be wide enough.
c) Provide suitable well marked crossing points.

Signage
All signage wherever possible should be of standard road traffic sign design to avoid confusion.
a) Suitable warning signs should indicate potential hazards on traffic routes. This will include road junctions, sharp bends, crossings, blind corners and steep gradients.
b) Similar signs may be necessary to inform pedestrians of potential hazards.
c) Where signs need to be visible at night, they will need to be illuminated and / or reflectorized.

Control of Traffic Movements on/off site

• Designated competent persons will be tasked with the role of Traffic Marshall. These Marshalls will be responsible for the management of traffic movements on and off site. They will ensure the interface between the site vehicles and the public is controlled.
• All Traffic movements will be booked to site by the project manager and the site TMP will be communicated to the drivers.
• Traffic Marshalls will be distinguishable from other trades by way of their labelled PPE. Their job role will be written on their 'hi' visibility vests or jackets.

Emergency Action Plan
• In case of a fire or other serious emergency on the site vehicles are to be left, in their current positions and all staff, visitors, site users, are to walk to the designated emergency meeting point, standing clear of the road way ensuring not to delay access by the emergency services.
• The Site Manager and Health and Safety Manager or Officer will monitor the vehicle movements on site reporting any near misses that may occur.
• Where near misses are noted. Then the Health and Safety Manager/Officer will review the traffic management plan and make necessary changes.

APPENDIX 11. SAMPLE CAMP MANAGEMENT PLAN

Company X (the Company) has developed this Camp Management Plan as part of its Environmental and Social Management Plan (EMP) outlining a range of mitigation measures designed to avoid or reduce undesired camp management impacts during construction. This document establishes a basis and template for use by the Contractor(s) to develop their own plans outlining not only mitigation measures but to also incorporate the roles and responsibilities described in the EMP.

The objectives of the Camp Management Plan are:

- Avoid or reduce negative impacts on the community and maintain constructive relationships between local communities and workers' camps; and
- Establish standards on worker welfare and living conditions at the camps that provide a healthy, safe and comfortable environment.

This Plan should be read in conjunction with other environmental and social management plans (EMPs), if available including:

- Traffic Management Plan
- Security Plan
- Stakeholder Engagement Plan

Legal Requirements and Grievances

The Contractor is required to operate within the parameters of the Nigeria Labour Law and the International Labour Organization guidelines. The World Bank Performance Standards are applicable to RAAMP and its sub projects. Furthermore, the Grievance Redress Mechanism contained in this ESMF is required to be adhered to by the Contractor.

Contractor personnel shall conduct regular safety walks and an HSE committee will track performance against requirements stipulated in this plan. The Contractor will also have its grievance mechanism developed for the project.

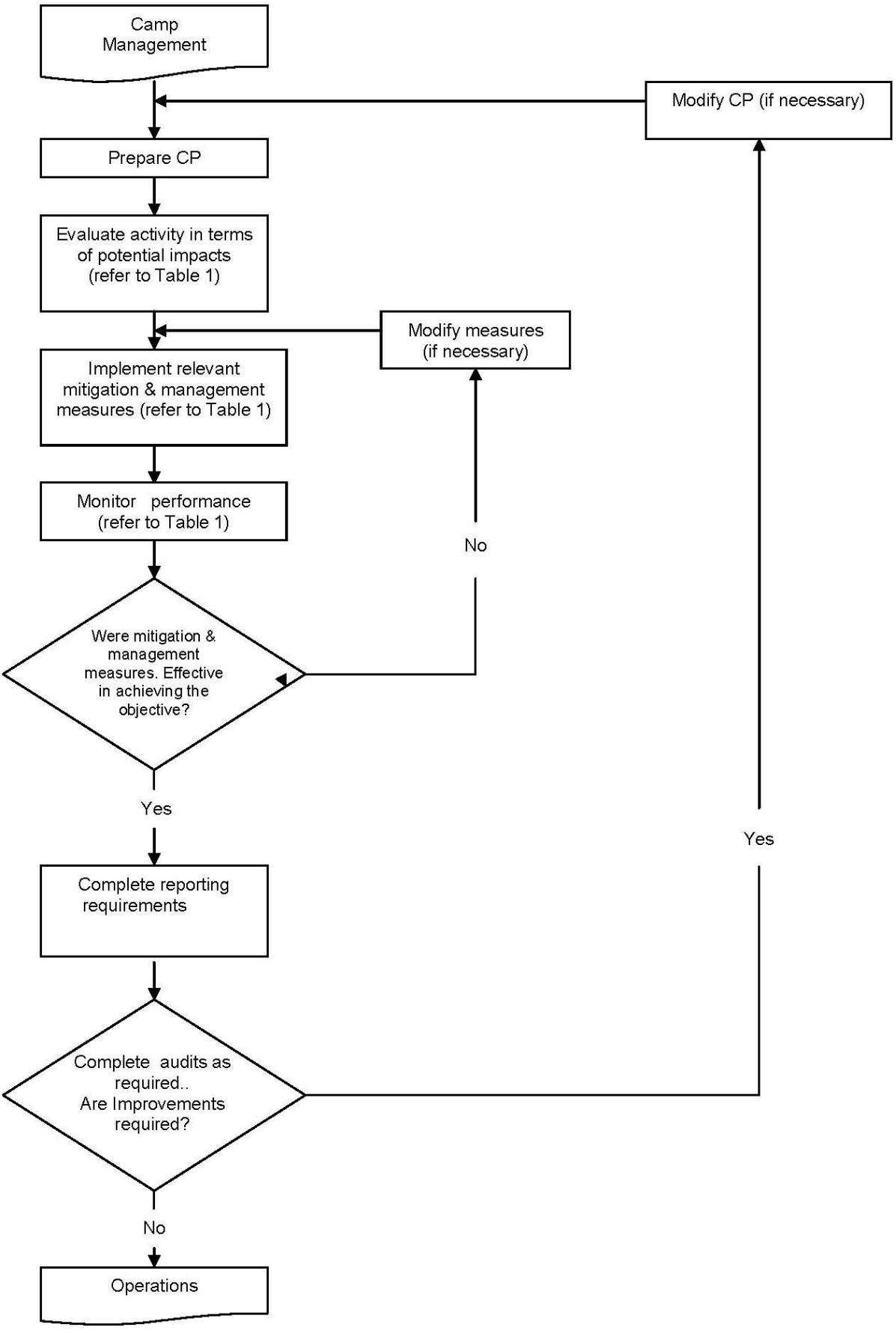
Additionally, Contractor would be required to sign and acknowledge the Code of Conduct and agree to abide by its provisions.

Management and Monitoring
Figure 1 presents a flow chart summarising key management steps associated with implementation and review of this Plan, including steps to allow for continued improvement. Table 1 presents a summary of the potential impacts related to camp activities, together with mitigation and management measures to avoid or reduce these impacts, and the monitoring required to assess the performance of these measures.

The Contractor shall develop a Contractor Plan which shall, as a minimum, incorporate the camp management measures described in Table 1. The Contractor shall not be limited to these measures.

Monitoring to be undertaken as part of this Plan is described in Table 1. The Contractor is responsible for developing area or site-specific procedures for the monitoring program (where necessary) based upon the final design details of the infrastructure

CAMP MANAGEMENT PROCESS



MANAGEMENT AND MONITORING

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
Community Relations	Unauthorised movements of construction workers (during and after working hours) could result in trespassing, damage to local land and property and create amongst residents a sense of their privacy being invaded. Residents may feel vulnerable and there may be increasing incidents of crime and or violence (GBV etc) and threats to the safety of community members. Disparity of pay, increase in disposable income and potential availability of illegal substances, illicit or culturally inappropriate lifestyle choices, leading to increased tension between local communities and the workers at camps.	1. Contractor shall enforce a 'closed' camp policy unless otherwise agreed and approved by Company. Workers will comply with the agreed camp closure hours. 2. Contractor shall implement suitable measures to maintain the closed camp policy which may include perimeter security fences, security controls and guard houses, monitoring transfer of goods into and out of camps for contraband and stolen goods. Contractor should refer to the Project Security Management Plan. 3. Contractor, as appropriate, shall provide adequate recreation facilities for workers to reduce incentive for leaving camps during leisure time. 4. Contractor shall limit workers' interaction with the community when outside the camp e.g., by organising transport directly to and from the worksite. 5. If community members or local businesses express grievances in relation to camp related activities/operations, the Project shall respond to the grievance in accordance with the Grievance Redress Mechanism contained in the ESMF. 6. FCDA may request that camp related activities/operations be amended to address community grievances. Contractor shall comply with these requests. 7. Workers shall abide by camp rules which include a disciplinary process to be developed by the contractor once appointed. 8. The Project shall, be cognisant of the environment in which it works and shall, where practicable, respect local cultural events such as religious events, funerals and the like. 9. The Project shall provide training to all workers on camp management including: a. A briefing on camp rules, including closed camp policy, behaviour between fellow workers and the community. b. Procedures for dealing with camp related complaints, worker issues and community issues and c. Community relations orientation. The objective of this orientation will be to increase awareness about the local area and cultural sensitivities.	1. Monitoring 2. Verification 3. Verification 4. Verification 5. Notification 6. Verification 7. Verification 8. Verification 9. Verification	1. On-going 2. Every 3 months 3. Every 6 months 4. On-going 5. On-going 6. On-going 7. Every 3 months 8. On-going 9. Every 3 months	1. Contractor 2. Contractor 3. Contractor 4. Contractor 5. Contractor and FCDA 6. Contractor and FCDA 7. Contractor and FCDA 8. Contractor and FCDA 9. Contractor and FCDA

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
Health	Potential interaction between workers, persons engaged in illicit activities and the community increases the risk of spreading communicable diseases, particularly in more remote communities. Camp operations have the potential to develop favourable conditions for pests and disease, which could impact the health of workers and the community, as well as affect community livelihoods (e.g. rodent infestation affecting crops).	1. Contractor shall comply with the Minimum Health Requirements for Project Execution and the Community Health and Safety Management Plan which set out requirements and management measures on controlling communicable diseases within camps and to outside communities 2. Contractor shall enforce the closed camp policy to limit interaction with community 3. The Contractor shall develop a Pathogen and Pest Management Plan to prevent pathogens and pests from entering the camps and spreading outside the camps. 4. Posters and informational sessions will be conducted to raise awareness among the workforce and communities locally around the worker camps.	Verification	1. Every three months 2. On-going 3. Every three months	Contractor
Waste management, pollution and environmental impacts	Camp has the potential to have off site pollution impacts from waste disposal, emissions and spills. Camp operations may also cause environmental issues including deteriorating water quality, erosion, sedimentation, noise and air quality issues. These factors have the potential to affect the community if not adequately managed.	1. Contractor shall exercise all reasonable due diligence to conduct its operations in a manner that will minimize pollution. 2. Contractor shall comply with the Waste Management Plan and Hazardous Materials Management Plan which define requirements to contain, transport, handle and dispose of camp wastes and hazardous materials to avoid impacts to human health and the environment. 3. Contractor shall also apply appropriate mitigation measures as contained in this ESMF.	1. Verification 2. Verification 3. Notification	On-going	Contractor
Community resources	• Any infrastructure, services or resources used by camps (e.g. water abstraction) that result in reductions/ shortage/interruptions for the local community will have a negative impact. • There is potential for social envy and increased resentment from the community towards the Project and project team if camp facilities are perceived to be superior to those in the community. Services of note include camp health facilities, power supply, clean running water. Restricted ability to access these services may increase frustration at the level of the services available to them.	1. Contractor shall utilise water sources for camp use in a manner that minimises impacts on local supply and use. Where necessary, water supply should be sought outside of the community source(s). 2. The Project shall routinely monitor quality and supply of water source used by camp through quarterly sampling exercises. 3. Contractors shall be encouraged to extend Corporate Social Responsibility projects to host communities.	1. Verification 2. On-going 3. Verification	1. Prior to establishing the camps 2. Every 3 months 3. Annual	1. Contractor 2. Contractor 3. Contractor & FCDA
Procurement and supply of goods	Increased demand for food and other provisions may deplete natural resources	The Project shall not purchase products in the local community unless through formal contracts with approved suppliers.	Verification	On-going	Contractor

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	e.g. agriculture, fisheries, etc. potentially causing shortages of supply in the local community, and/or increasing the price of goods, affecting affordability for local communities.				
Camp location	• Siting of camps may result in displacement of residents, loss of productive lands and the resources upon these lands. Camps may also restrict or impede access to areas for the local community. • Construction camps may result in a noticeable increase in traffic, noise, air emissions and light intrusion which could negatively affect the amenity and lifestyle of nearby communities and pose a potential safety issue.	1. Potential camp locations will be selected in consultation with FCDA and affected communities will be subsequently consulted. Necessary permits will be obtained from the relevant Local Authorities for the approved camp location. 2. The Project shall refer to those Environmental & Social Management Plan's (EMP) that include mitigation/avoidance measures that relate to the local community, including: • Noise and Vibration Management Plan. • Air Emissions Management Plan; and • Waste Management Plan.		1. Prior to establishing the camp 2. On-going	Contractor and/or Company
Labour Influx	There is a likelihood of influx of non-local labour into areas around the construction camps. However, people from outside of the local area may migrate into existing settlements or develop new settlements in proximity to camps and the Project area. Labour Influx can result in disputes and sometimes violence between the new settlers and the resident community. Migrants moving into existing settlements may increase demand and inflate prices for housing, goods and services. Increased population and development of new and uncontrolled settlements increase pressure on infrastructure, services and resources. Major labour influx related risks include workers' sexual relations with minors and resulting pregnancies, presence of sex workers in the community, the spread of HIV/AIDS, sexual harassment of female employees, child labour and abuse, increased dropout rates from school, poor labour practice and lack of road safety.	• Contractor shall enforce a 'closed' camp policy. This is intended to deter individuals setting up near camp. • Contractor shall develop a Labour Influx Management Plan. • Contractor is to coordinate with Local government to ensure that no illegal and unsafe settlements develop. • Contractor shall ensure adherence to labour influx management plan.	Verification	On-going	Contractor and FCDA
Worker welfare and living conditions	Construction workers living in camps may encounter stresses and discomforts that negatively impact their health and welfare.	Contractor shall comply with minimum standards for camp buildings, facilities and services in line with the Bank standard or as contained in the Project Invitation to Tender (ITT)	Verification	On-going	Contractor

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	These stressors or discomforts may be caused by Poor living conditions (accommodation, ablution and sanitary, health, recreation catering and laundry).	requirements.			
	Cultural issues (nationality, religion, discrimination, GBV and harassment, etc.).	• Contractor shall ensure that applicable ESMF mitigation measures for specific issues are applied. • Contractor may provide prayer rooms and other facilities, as necessary and to the extent practicable, to satisfy the religious needs and customs of its workforce. • Contractor's personnel shall not engage in any discrimination, GBV, SEA or harassing behaviour. Contractor shall establish an Equal Opportunity Policy to promote non-discrimination in accordance with Labour and Worker Conditions Management Plan. • Contractor shall implement a worker grievance procedure to address grievances between workers. .	Verification	On-going	Contractor
	Mental health issues (morale, isolation, family attachments, boredom).	1. Camps will be treated as closed camps. Camp rules in relation to alcohol consumption and drug prohibition will be complied with. 2. Contractor shall provide recreational facilities where practicable. 3. Contractor will provide counselling for all workers, with no discrimination by race, sex or religion.	Verification	1. On-going 2. Every 6 months	Contractor
	Personal security (crime, and emergencies).	• Camps will be controlled by security to avoid intrusions from outside community. • Work Site Security Plan to be developed by Contractor shall include security measures to be provided at the camps which may include fencing, locks, alarms, pass card systems, badge and pass system, access points, safe transport of personnel as appropriate. • Contractor shall develop an Emergency Response Plan that meets requirements set out in ITT package	Verification	Prior to establishing camp	Contractor
	Environmental stress (climate, noise etc.).	Contractor shall comply with Minimum Health requirements for Project Execution including the following: • Accommodation will be designed to suit climatic conditions. • Accommodation and surroundings shall be constructed so that noise does not interfere with sleep to the extent that is reasonably practicable; and • Health and hygiene inspections shall be carried out.	Verification	On-going	Contractor
Decommissioning	Decommissioning of camps has several potential impacts: • Local employment and provision of local goods and services at camps will no longer be required.	• Contractor is to follow retrenchment procedure contained in Labour and Worker Conditions Management Plan (if available) • Where Community requests, some infrastructure and services may be retained as advised by the FPMU and the World Bank:	Verification	On-going	Contractor and FCDA

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	• Locals employed and previously accommodated in camps will no longer have access to services and benefits available at camps (e.g. health services, recreation facilities); and • Infrastructure which provides benefits to communities may no longer be maintained (e.g. roads, camp boreholes) and may be decommissioned and removed.	○ Disturbed areas will be reinstated. ○ Where practicable, Contractor will return camp areas to former landforms. ○ No facilities will be maintained in or near especially environmentally or socially sensitive areas; and ○ Where there are negative consequences of induced access, the facility will also be decommissioned, and the area reinstated.			

APPENDIX 12 EMERGENCY RESPONSE PLAN

Communication Systems

An important key to effective emergency response is a communications system that can relay accurate information quickly. To do this, reliable communications equipment must be used, procedures developed, and personnel trained. It is a good idea to have a backup system in place, in case the system is rendered useless by the emergency. For example, telephone lines may be cut.
The type and location of emergency communication systems must be posted on the project. This will include location of telephones, a list of site personnel with cellular phones or two-way radios, and any other equipment available.

Administration of the Plan

The task of administering and organizing the plan is vital to its effectiveness. The person who has this task shall be the Site Manager assisted by the Safety Manager/Officer. It is his/her task to ensure

- that everyone clearly understands their roles and responsibilities within the emergency response plan (a chart may be helpful in this regard)
- that emergency resources, whether people or equipment, are kept at adequate levels in step with the progress of the project.

It is particularly important to review the emergency plan on a regular basis and especially after an emergency has occurred. Changes may be necessary where deficiencies became apparent as the plan went into operation.

Emergency Response Procedure

An emergency can be reported from any source—a worker on site, an outside agency, or the public. Remember that circumstances may change during the course of an emergency.
The following list covers basic actions to take in an emergency. These steps apply to almost any emergency and should be followed in sequence.

- Stay calm.
- Assess the situation.
- Take command.
- Provide protection.
- Aid and manage.
- Maintain contacts.
- Guide emergency services.

Debriefing and Post-Traumatic Stress Procedure

Once the emergency is over, the attitude should not be "Okay, let us get back to work" or "Let us go home." Some of the people involved may need assistance to recover. In some cases, professional counselling may be needed. Debriefing is necessary to review how well the plan worked in the emergency and to correct any deficiencies that were identified. Debriefing is critical to the success of future emergency response planning.