MINISTRY OF WATER AND ENVIRONMENT

DIRECTORATE OF WATER DEVELOPMENT RURAL WATER SUPPLY AND SANITATION

INTEGRATED WATER MANAGEMENT AND DEVELOPMENT PROJECT (IWMDP)

ENVIRONMENTAL AND SOCIAL IMPACT STATEMENT

FOR GOBORO RURAL GROWTH CENTRE WATER SUPPLY AND SANITATION PROJECT IN YUMBE DISTRICT

DEVELOPER

Ministry of Water and Environment

P.O Box 20026

Tel+256414505942/+2564144505945

Email mwe@mwe.go.ug or ps@mwe.go.ug

Kampala

PREPARED BY:

INTERFACE CONSULTING LTD

Plot 64, Kanjokya Street, Kololo

P. O. Box 24701 Kampala

Tel: +256393262434; +256772748308

Web: www.interface.co.ug

ESIA TEAM

Name	Qualifications	Role on Project Team	Signature
Mr Oluka Moses **CC/EIA/105/24**	BURP, MSc, CEP	EIA Team Leader / Environmental and Natural Resource	
Mr Kato Dennis **CC/EIA/211/24**	BSc, CEP	Environmentalist	
Ms Rasheedah Agero **CC/EIA/271/24**	BSc, CEP	Environmentalist	
Contributing Experts			
Eng. Victor Male		Water and Sanitation	
Ms Kasande Glorious		Sociologist	
Kasozi Martin		RAP/Social Development Expert	
Wycliffe Ogello		GIS Specialist/Landuse Expert	
Joseph Odeke		Hydrogeologist	
Nelson Droruga		Water/Wastewater Specialist	
Brian Baguma		Surveyor	
Joseph Biribonwa		Valuer	
George Bogere		Economist	
Phillip Nyenje		Water Resources Expert	
Salma Abdat		Environmentalist	
Olivia Ashaba Ahebwa		Environmental Engineer	
Patrick Eyamu Sami		Ass. GIS Specialist	

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AIDS	Acquired Immune-Deficiency Syndrome
AOI	Area of Influence
CAO	Chief Administrative officer
CBD	Convention on Biological Diversity
CBOs	Community-Based Organisations
CDO	Community Development Officer
CITES	Convention on International Trade in Endangered Species
CSEAP	Construction Social and Environmental Action Plan
dBA	Decibel Amperes
DDP	District Development Plan
DEA	Directorate of Environmental Affairs
DLGs	District Local Governments
E	Easting
EA .	Environmental Assessments
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EI	Environmental Inspector
EMMP	Environmental Mitigation and Monitoring Plan
EMP	Environmental Management Plan
EMP	Environmental Management Plan
ENR	Environment and Natural Resources
EO	Environmental Officer

EOC	Equal Opportunities Commission
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessments
ESIS	Environmental and Social Impact Statement
ESMF	Environment and Social Management Framework
ESMP	Environmental and Social Management Plan
GBV	Gender-Based Violence
GOU	Government of Uganda
GPS	Global Positioning System
HS&E	Health, Safety and Environment
HH	Household
HSMP	Health and Safety Management Plan
IWMDP	Integrated Water Management and Development Project
IWRM	Integrated Water Resource Management
MoGLSD	Ministry of Gender, Labour and Social Development
MWE/MoWE	Ministry of Water and Environment
N	Northing
NEA	National Environment Act
NEMA	National Environment Management Authority
NHPC	National Housing and Population Census
NPHC	National Population and Housing Census
OP	World Bank Operation Policy
OS	Operational Safeguard
OSH	Occupational Safety and Health

OSHA	Occupational Safety and Health Administration
PAP	Project Affected Person
PDO	Project Development Objective
RA	Risk Assessment
RGC	Rural Growth Centre
SEA	Sexual Exploitation and Abuse
SPP	Source Protection Plans
SEAP	Social and Environment Action Plan
TOR	Terms of Reference
UBOS	Uganda Bureau of Standards
VAT	Value Added Tax
WB	World Bank
WBG	World Bank Group
WHO	World Health Organisation
WSS	Water Supply System
WSP	Water Source Protection
UNHCR	United Nations High Commissioner for Refugees

EXECUTIVE SUMMARY

Background

The government of Uganda (GoU) through the Ministry of Water and Environment (MWE), with financial support from the World Bank, under the Integrated Water Management and Development Project (IWMDP) is undertaking Water and Sanitation sub-projects in small towns and rural growth centres. The Project Development Objective (PDO) is to improve access to water supply and sanitation services, capacity for integrated water resources management and the operational performance of service providers in project areas.

The proposed interventions in the IWMDP will contribute to the achievement of National Development Plan III objectives, Vision 2040 and achievement of the Sustainable Development Goals, SDG#3 - ensuring healthy lives and promoting well-being for all at all ages, SDG#4 - ensuring availability and sustainable management of water and sanitation for all and SDG#10 - reducing inequalities within and among countries.

The Project focuses on three strategic areas: (i) delivering necessary Water and Sanitation Services (WSS) infrastructure and catchment management measures in targeted areas; (ii) supporting water-related institutions (MWE, local government, and service providers) to establish and consolidate operational efficiency and service quality in small towns and rural areas; and (iii) strengthening national and regional capacity to improve Integrated Water Resource Management (IWRM). The Project comprises four components: Component 1–WSS in Small Town & Rural Growth Centers which covers Support to Small Town & Rural Growth Centres and Support to Refugee & Host Communities; Component 2–WSS in Urban Large Towns; Component 3–Water Resource Management and, Component 4–Project Implementation & Sector Support. Sub-components.

Component 1: provides support activities designed to improve the sustainable provision of water supply and sanitation services to refugee settlements and host communities. The sub-component will target the districts of Yumbe, Arua, Moyo (including Obongi district newly created from Moyo), Adjumani in West Nile, Lamwo in Northern and Kiryandongo in Central Uganda, where about 70 per cent of the refugees in Uganda are being hosted.

To address the water supply gap in Yumbe, 6 solar-powered piped water supply systems and 22 toilets have been proposed. These water supply and sanitation infrastructure will be implemented as part of the strategy to improve access to clean water, improved sanitation and hygiene in the refugee host communities. Under the IWMDP, funds have been reserved for the preparation of the Environmental Social Impact Assessment (ESIA), Water Source Protection (WSP) and Resettlement Action Plan (RAP) feasibility study, engineering design under consultancy services, construction works as well as the implementation of full-scale source protection measures

Project Location

The proposed project will be located in Goboro Rural Growth Centre, Kochi Sub-County Yumbe District. The villages that fall in the project area are Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi and Wadri

Proposed project infrastructure

The proposed project infrastructure will comprise two boreholes (Maru and Malanga Borehole) at coordinates E326248.67, N 404043.691 E 326805.097, and N401692.818 respectively.

At the borehole site, a pump house installed with solar energy will be constructed together with the water treatment plant. Water will then be pumped through a transmission line to the storage reservoir proposed site next to the Goboro Catholic Church behind UNCR Transit and Reception Centre in Maru village from where water will be distributed by gravity to the project area villages of Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi and Wadri

According to the feasibility study report, the following components of the water supply system have been designed to meet the system output capacity of $512m^3$/day. The engineering design involved hydraulic designs and sizing of the system components with due consideration of best practices.

The borehole pump station shall comprise the wellhead in the middle of a 2x2m concrete platform and a 45 m^2 blockwork structure housing the pipework fittings and electrical controls. The pump station will be situated on a 10,000 m^2 site that is enclosed with a 2.1m high concrete post and chain link fence. The entire transmission pipe network is of a total length of 6,655 m.

The operational setup of the water supply system necessitates the construction of several buildings, encompassing:

1. **Pump Houses:** A pump house with an area of 60 m^2 at the borehole station will be established.
2. **Chemical Dosing House:** A building measuring 3.0 x 6.0m will be erected at the water reservoir site, designated for housing chlorine dosing equipment and chemical storage.
3. **Staff House (Optional):** An optional residential building covering an area of 96 m^2 will be available to accommodate two staff members.
4. **Office and Laboratory Building:** A comprehensive building spanning 110 m^2 will be constructed to serve as an office, laboratory, and tools store.

Water distribution points will be established at each of the key institutions within the rural growth centre. These shall include; Goboro Primary, Goboro HC II, Goboro Market, Goboro mosque, Goboro Church Uganda, Goboro UNHCR Refugee Reception Center and Goboro Military Barracks. According to the feasibility study, a water-borne toilet is proposed at Goboro trading Centre

The following equipment will be used during the construction of the piped water and sanitation project:

- Excavator - for digging trenches for pipelines and reservoirs.
- Backhoe loader - for excavating and loading materials.
- Dump truck - for transporting materials like sand, gravel, and pipes.
- Bulldozer - for clearing land and levelling the ground.
- Wheel loader - for moving materials around the construction site.

- Compactor - for compacting soil and materials.
- Concrete mixer - for mixing concrete for foundations and structures.
- Crane - for lifting heavy materials and equipment.
- Welding machine - for welding pipes and structures.
- Pump - for dewatering trenches and pumping water during construction.
- Generator - for providing power to construction equipment and tools.
- Surveying equipment (theodolite, level, GPS) - for surveying and layout of the project.
- Pipe cutting and threading machine - for cutting and threading pipes to size.
- Jackhammer - for breaking concrete and rocks.
- Shoring equipment - for supporting trenches and excavations.

Approximately 200 personnel will be for the Goboro RGC piped water supply and sanitation project, 70% shall be from the local community. The project will abide by World Bank safe guard standards, Ugandan labour laws, and environmental, health, and safety guidelines

Project Need and Justification

The implementation of the Goboro Rural Growth Centre piped water supply and sanitation Project will result in several environmental and social impacts that require an Environmental and Social Impact Study. Furthermore, the project falls under the Fifth Schedule of the National Environment Act No. 5 of 2019 as amended, which lists projects to be considered for ESIA. Section 19 (3) of the National Environment Act No. 5 of 2019 as amended made the utilization of water resources, water supply and sanitation facilities mandatory for Environmental and Social Impact Assessment for all projects or policies that may, are likely to or will have significant impacts on the environment so that adverse impacts can be identified, avoided, reduced, mitigated or compensated for based on the mitigation hierarchy.

According to the World Bank's Operational Policy 4.01 on Environmental Assessment, an Environmental and Social Impact Assessment (ESIA/ESMP) is mandated for projects that are identified to have potential adverse environmental and social effects. Given that the planned project activities are anticipated to present site-specific environmental and social risks and impacts, conducting an ESIA aligns with the policy requirements outlined in OP 4.01.

It's also essential to consider the World Bank project categorization, which may further guide the assessment process and associated mitigation measures. This categorization helps determine the level of scrutiny and attention required based on the potential environmental and social impacts of the project.

Therefore, this ESIA study seeks to ensure compliance of the project with applicable national and World Bank environmental and social safeguard policies, while also providing the overall framework for addressing social and environmental risks.

The purpose of this project is to increase sustainable access to safe water and basic sanitation in the rural growth centre in the selected refugee-hosting districts. The following benefits are expected to accrue from this project;

a) Reduction in the prevalence rates of waterborne diseases, especially cholera, dysentery and diarrhoea;

b) A significant reduction in health costs and time for collecting water which translates into substantial savings for rural households;

c) The easing of the burden of fetching water which is one of the most arduous tasks for women and young girls in rural areas;

d) The development of income-generating activities for women given the free time accruing from the reduced burden of fetching water;

e) An increase in the enrolment ratio, especially for girls, and in the female literacy rate;

f) The reduction in social conflicts related to water use;

g) The efficient management and maintenance of water supply and sanitation facilities;

h) Human capacity building and the creation of jobs in water management through the involvement of private operators in the construction, management, repair and maintenance of water supply facilities.

Study approach and Methodology

The ESIA study followed the process as outlined in the National Environment Management Authority (NEMA) Guidelines for Environmental Impact Assessment in Uganda, 1997 (NEMA 1997)

The study was preceded by the internalization of the Terms of Reference and formulation of appropriate data collection tools. It assessed each of the activities of the project covering physical, biological, socio-economic (including occupation health and safety); and socio-cultural environment as detailed herein. It determined and listed potential direct and indirect environmental impacts for each of the planned activities; evaluated and recommended mitigation measures for negative/adverse impacts.

The methodology used included; a scoping study, Literature review, Stakeholder consultations /engagements, socio-economic survey, Water resources assessments, Biodiversity studies on flora and fauna, Baseline noise assessments, Mapping and photography, Visual observations, Impact screening, Impact assessment, evaluation and analysis.

The EIA study was based on data collected along the proposed project route (project sites) as well as review of documents provided by the Developer and those from other sources such as Feasibility and Preliminary Design Report Goboro Rural Growth Center, July 2023, Environmental and Social Management Framework (ESMF), World Bank Safeguards policies, IFC Environmental Health and Safety Guidelines for Water and Sanitation Projects, and other documents provided by district staff on project location such as District Development Plans, District state of environment and health reports, among others. Other documents reviewed include relevant National Household survey reports, regulations and legal frameworks impacting the water and sanitation sector.

Consultations with stakeholders constituted a major part of the ESIA methodology in information gathering. Stakeholder perceptions, views and concerns were collected through focus group discussions, meetings and personal interviews with Yumbe District Local Government officials, Kochi Sub-County officials, UNHCR, Office of the Prime Minister and Goboro local community members.

Policy, Legislation and Regulations

Several national policies and legislation e.g. the National Environment Policy (1994), Water Policy (1999), National HIV/AIDS Policy (2007), Policy on Conservation and Management of Wetland Resources (1995), The constitution of the Republic of Uganda (1995), National Environment Act No.5, 2019, Water Act (Cap 152), Occupational Health and Safety Act (2006), Local Government Act (1997), Physical Planning Act (2010) as amended 2020 etc. World Bank Safeguard policies such as OP/BP 4.01 - Environmental Assessment, OP/BP 4.04 - Natural, OP/BP 4.11 - Physical Cultural Resources, OP/BP 4.10 - Indigenous Peoples, OP/BP 4.12 - Involuntary Resettlement were also reviewed

Relevant National environmental regulations were also reviewed including some international protocols that Uganda is a signatory to.

Environment Baseline

The Project area (Kochi Sub-County) is generally flat (plateau) with Hills at Anji in Katoro village Kochi Parish. The area drains in a westerly direction towards the Nyawara Stream.

The topography of the project area is in such a way that the land scape gently slopes westwards enabling gravity flow of water from the reservoir tank (raised section of area) to the lower areas of Bulibui, Busia, Lobanga, Malanga, Maru West, Maru.

The Sub- County soils are generally considered moderately fertile with shallow soil depths of 30cm and easily nutrient weathered and leached. It generally has loamy soils which are fairly fertile, especially along valleys. Some alluvial deposits found on the lower portions of the slopes are relatively more fertile. Predominant soils are ferralitic and sand bags are the soil type most widely spread covering large.

The climate of Yumbe district is tropical with moderate rainfall and temperature. The district experiences extreme seasonal variation in monthly rainfall. The district receives an average total rainfall of 1250mm. The area experiences two seasonal rainfall, light rains between April and October. The wettest months are usually July to November with over 120mm/month. The period December-February is a long dry with less than 60mm/month. The rains are associated with the northerly and southerly movements of the inter-tropical front. Mean monthly evaporation ranges from 130 mm to 180 mm.

The landscape setting for Goboro RGC is defined by a modified landscape with extensive subsistence croplands, bushland/grassland, shrubs and plantation agriculture. In general, most of

The primary tree species dominating the project site include *Combretum adenogonium, Maytenus senegalensis,* with scattered occurrences of P*iliostigma thorningii, Isoberlinia doka, Daniehcliveri,* and *Afzelia Africana*. As for herbs, *Asparagus africana* is prevalent, while *Panicum deustum* and *Hyperrhenia ruffa* are the most abundant grass species. Human activity has significantly reduced the natural vegetation cover in the project corridor, resulting in small patches of transitional vegetation surrounded by extensive degraded habitats resembling wooded grasslands. The project area has undergone considerable modification, with domesticated animals such as cattle, goats, and sheep also present.

Social Economic baseline

According to the 2014 National Housing and Population Census results (2014), the proposed project area of Goboro RGC had a population of 2,128. With a district population growth rate of 5.5% the project area is estimated to have a population of 5,235 by 2023

The district has an average household size of 7.6 persons with a total fertility rate of 6.7 children per woman. 70.3% of the population in the District are married Adults and 26.1% of the females aged 50 and above are widowed. This implies a relatively large household size in the project area, which is associated with less wealth and high poverty levels according to the 2015 National Household survey reports (UBOS, 2015).

Settlement in the project area was observed to be very sparse with mild concentration around trading centres such as Goboro, Wadri and Lobanga. The low population in the area has largely influenced its sparse distribution. Observed population concentrations were noted to be influenced by the ease of access to socio-economic infrastructure mainly schools, health centres and markets.

Based on the Household survey, the primary economic activity of household heads in the project area is subsistence farming which employs 79.2% as temporary employment by fellow members of the community. Only 3.96% of the household heads had a monthly salary. Findings of the socioeconomic household survey indicated that the majority of the households in the project area get their water from the public bore hole (89.11%) and swamps (4.95%). These two sources are used alternatively depending on the seasons.

The land in the project area is mainly communally owned and governed by the customary system of land tenure.

Project Impacts

Potential positive impacts during construction

The following positive benefits are expected to accrue from this project during construction;

- Creation of local employment opportunities
- Increased market for agricultural produce and local goods
- Increased income to Material/ Equipment Suppliers and Contractors
- Improved Skills for Local Communities
- Economic growth

- Increased Revenue to the government

Potential negative impacts during construction

The major negative risks and impacts associated with the proposed Goboro RGC Water and sanitation project are summarised in the Impact/risk mitigation (Chapter 8) and the Social and Environmental Management and Monitoring Plan section (Chapter 9). The most significant environmental and social impacts, rated as of medium significance and higher, are:

- The loss of crops and trees along the right of way which is not the road reserve
- Construction activities like excavations and vehicle movements during construction are likely to generate noise levels beyond the current levels. Exposure of communities and workers to high noise levels can be a health concern.
- The influx of people and the increase in social disruption and human health issues, related specifically to GBV Child abuse, the influx of people and HIV/AIDS, with which specific management is required to guide social interaction during the construction period
- Excavations, construction activities, and transportation of workers and equipment may pose occupational and community safety risks
- Disruption of birds and invertebrates during the clearing of vegetation for the project activities
- Discrimination against women and girls for employment opportunities
- Land take for the borehole sites, pumphouse water treatment site access routes and water reservoir tank

The mitigation measures for the above-listed potential impacts include: Proper containment and re-use of cut and spoil/excavated soils for backfilling the excavated pits, hoarding off of key construction sites like intake sites, water storage sites, provision and enforcement of adequate and appropriate personal protective wear, The affected property and crops/trees shall be compensated in line with the approved RAP, Communities in the project area should be engaged and sensitised about all the components and requirements of the project. After construction, there should be landscaping and then grass left to recolonize the disturbed area naturally. MWE in collaboration with the local authorities shall undertake catchment management activities to support local environmental protection programs including support of afforestation initiatives to enhance tree cover areas as a way of reducing project footprint. Movement of equipment (vehicles, contractors and the entire construction crew) must follow designated pathways or agreed-upon access roads to avoid unintended damages to fauna. The affected sites should be restored to almost their original position. Trenching, pipework laying as well as well as backfilling will be done concurrently. For open pits, the contractor shall ensure that every evening, they are covered while being secured with warning tape.

Following construction, rehabilitation of all areas disturbed during the construction phase and that are not required for regular maintenance operations shall be undertaken to desired ecological conditions and all exposed areas shall be re-vegetated using indigenous species. To minimize

interference with traffic, digging trenches and piping across roads shall be conducted in hours with less traffic preferably on weekends and the contractor shall develop and implement a traffic management plan. To mitigate social impacts, workers shall as much as possible be recruited from the project area, and develop and implement a comprehensive stakeholder management and engagement plan, Structures like shrines and graves should be avoided as much as possible, and all public institutions like schools and health centres in the project footprint should be connected to the water supply and requirements for vulnerable groups(like child protection and prevention of GBV) should be mainstreamed and integrated into project activities.

The Project will be implemented by MoWE through its regional entities (WMZs, WSDFs) in close collaboration with Yumbe District local governments and their partner (e.g., private sector operators). The assessment ascertained that the beneficiary communities and District Local Government do not have sufficient capacity in terms of equipment, personnel and funds to monitor the implementation of the project. The contractors may also need awareness and training in the environmental and social aspects of the project. The ESMF also recommended capacity building in environmental management at the district and sub-district levels and refresher training at the National level as well.

Monitoring of ESMP implementation

- Environmental monitoring shall be undertaken at different levels as described below:
- Surveillance: Undertaken by the Supervision Engineer on behalf of MWE.
- Quarterly Monitoring: Joint by all relevant stakeholders at various levels.
- Audit activities: To be done by a NEMA registered Environmental Auditor.
- Spot checks: By Supervising Engineer, MWE, Contractor, District Leadership, NEMA. Management and monitoring will be under the Northern Umbrella organization which is under the urban water and sewerage department of the Ministry of Water and Environment. The Umbrella organization has vast experience in managing piped water supply and sanitation facilities across the country. With vast experience, the umbrella organization can effectively plan and manage budgets agreed upon within a contract framework.

Routine inspections will cover environmental and social management on the site, with daily, weekly, monthly, and quarterly inspections to identify issues and ensure maintenance. Contractors shall prepare monthly and quarterly reports, verifying activities in line with Ugandan laws, regulations and World Bank Safeguard policies. Critical incidents will be reported to MWE within 24 hours and to the World Bank within 48 hours.

To fulfil the Contractor's contractual reporting requirements, either a stand-alone Monthly Environment and Social report shall be generated, or the Contractor's Monthly Progress Report shall adequately cover safeguards. The report will outline various actions made to manage the project's environmental and social components following the terms of the contract, Ugandan laws, norms, plans, and policies, as well as World Bank Safeguard policies. The supervising consultant will also need to confirm and approve this report. Planning is usually done continuously for the

management of environmental aspects. To that end, each month's success report ought to include a plan for the upcoming month's social and environmental events.

The estimated cost of ESMP implementation during the construction phase is **440,800,000** Uganda Shilling

Conclusions and Recommendations

The proposed Goboro RGC water supply and sanitation system is not foreseen to cause irreversible environmental and social impacts. A comprehensive environmental and social assessment has been carried out and adequate mitigation measures have been devised for all the project phases, including pre-construction, construction and operation. The ESIA Report for Goboro Water Supply and Sanitation System is therefore recommended for approval by NEMA.

1 INTRODUCTION

1.1 Project Background

The government of Uganda (GoU) through the Ministry of Water and Environment (MWE), with financial support from the World Bank, under the Integrated Water Management and Development Project (IWMDP) is undertaking Water and Sanitation sub-projects in small towns and rural growth centres. The Project Development Objective (PDO) is to improve access to water supply and sanitation services, capacity for integrated water resources management and the operational performance of service providers in project areas.

The proposed interventions in the IWMDP will contribute to the achievement of National Development Plan III objectives, Vision 2040 and achievement of the Sustainable Development Goals, SDG#3 - ensuring healthy lives and promoting well-being for all at all ages, SDG#4 - ensuring availability and sustainable management of water and sanitation for all and SDG#10 - reducing inequalities within and among countries.

The Project focuses on three strategic areas: (i) delivering necessary Water and Sanitation Services (WSS) infrastructure and catchment management measures in targeted areas; (ii) supporting water-related institutions (MWE, local government, and service providers) to establish and consolidate operational efficiency and service quality in small towns and rural areas; and (iii) strengthening national and regional capacity to improve Integrated Water Resource Management (IWRM). The Project comprises four components: Component 1–WSS in Small Town and rural Growth Centers which covers Support to Small Town and rural Growth Centres and Support to Refugee and host Communities; Component 2–WSS in Urban Large Towns; Component 3–Water Resource Management and, Component 4–Project Implementation & Sector Support. Sub-components.

Component 1: provides support activities designed to improve the sustainable provision of water supply and sanitation services to refugee settlements and host communities. The sub-component will target the districts of Yumbe, Arua, Moyo (including Obongi district newly created from Moyo), Adjumani in West Nile, Lamwo in Northern and Kiryandongo in Central Uganda, where about 70 per cent of the refugees in Uganda are being hosted.

To address the water supply gap in Yumbe, 6 solar-powered piped water supply systems and 22 toilets have been proposed. These water supply and sanitation infrastructure will be implemented as part of the strategy to improve access to clean water, improved sanitation and hygiene in the refugee host communities. Under the IWMDP, funds have been reserved for the preparation of the Environmental Social Impact Assessment (ESIA), Water Source Protection (WSP) and Resettlement Action Plan (RAP) feasibility study, engineering design under consultancy services, construction works as well as the implementation of full-scale source protection measures.

Under the IWMDP, funds have been provided for Environmental and Social Impact Assessment (ESIA), Resettlement Action Plan (RAP) and Source Protection Plans (SPP).

To address the water supply and sanitation gap in Goboro RGC, solar powered piped water supply system with groundwater sources, elevated water storage steel tanks and distribution pipe to a radius of at least 2km network capable of meeting the daily drinking water needs of at least 5,000 people have been proposed. For purposes of this report, the environmental and social aspects presented are for Goboro RGC.

1.2 Current water supply and sanitation in Yumbe District

1.2.1 Water supply

According to the Yumbe District Development Plan (2021–2025), 48% of the district's fresh water supply is found underground, indicating that the district depends on subterranean water supplies. It is noteworthy that the percentage of people who lack access to safe water varies by area, with Kerwa (30%), Midigo (31%), Kuru (40%), Kei (43%), Kululu (44%), and Ariwa (45%) having the least amount of access. Deep boreholes provide 71% of safe water sources; other methods include shallow wells, springs, piped water (tap), and rainfall collecting. In rural areas, the average functionality of the current water supply infrastructure is 82%. People frequently turn to unprotected sources when there aren't enough safe water sources in an area, which increases the risk of waterborne illnesses and reduces consumption. Rainwater collection is seldom ever used.

Table 1-1: Current Water Supply Coverage by sub-County

S/N	*SUB COUNTY*	*PROJECTED POPULATION 2020*	*PEOPLE SERVED*	*SAFE WATER COVERAGE*
1	Apo	54,958	28,200	51.3
2	Drajini	42,719	28,300	66.2
3	Lodonga	44,484	23,500	52.8
4	Kei	62,490	25,300	40.5
5	Kululu	50,486	21,600	42.8
6	Kuru	55,782	20,300	36.4
7	Midigo	50,016	21,050	42.1
8	Kerwa	44,131	21,000	47.6
9	Odravu	57,783	31,050	53.7
10	Ariwa	32,834	14,400	43.9
11	Romogi	62,372	28,500	45.7
12	Kochi	56,488	29,100	51.5
13	Yumbe town council	47,544	26,850	56.5
	Aringa	**662,087**	**319,150**	**48.2**
	Rural water	**614,543**	**292,300**	**47.6**
	District	**662,087**	**319,150**	**48.2**

Source: DWO-Annual Report 2019

1.2.2 Sanitation facilities

According to Yumbe District Development Plan (2021-2025), latrine coverage stands at 78.1% down from over 80% in 2019/2020. However, the hand washing coverage in the whole district stands at 72.9% up from about 50% in the previous years.

1.3 Feasibility study

The feasibility study recommended two boreholes, Maru and Malanga, drilled in 2018 and 2021 with sustainable yields of 13 and 17 m^3/hr, respectively, to meet Goboro RGC's existing water supply needs. These boreholes are located in the villages of Malanga and Maru in the Kochi Sub-County. The combined yield of the boreholes is sufficient to meet the anticipated water demand for the suggested piped water supply system for Goboro RGC. Pump houses and chemical dosing houses will be located at each intake site, with solar energy and a backup generator powering the pump house.

1.4 Project location and infrastructure

1.4.1 Location

The proposed project will be located in Goboro Rural Growth Centre, Kochi Sub-County, Yumbe District. The villages that fall in the project area are Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi and Wadri.

Table 1-2: Goboro Project Area and Population

District	Sub County	RGC	Location Coordinates	Villages	The population as of Oct. 2022	Number of Households
Yumbe	Kochi	Goboro	Zone: 36N 327809.00 m E 402266.00 m N	Bulibui	332	75
				Busia	484	60
				Gaga	425	210
				Kelunya	224	64
				Lobanga	500	53
				Malanga	684	65
				Maru	1,399	95
				Maru West	230	52
				Monigochi	287	38
				Wadri	397	76
Total population					**4,963**	**788**

Source: feasibility study

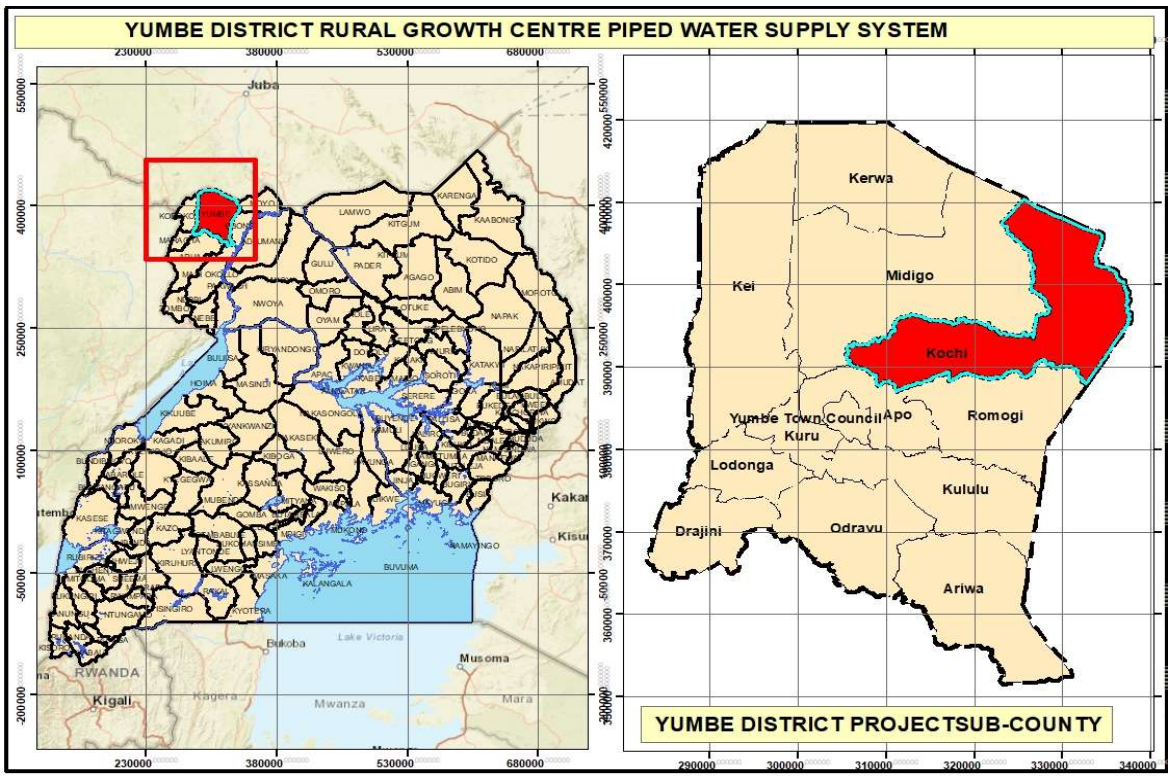

Figure: 1-1: Project Location Map

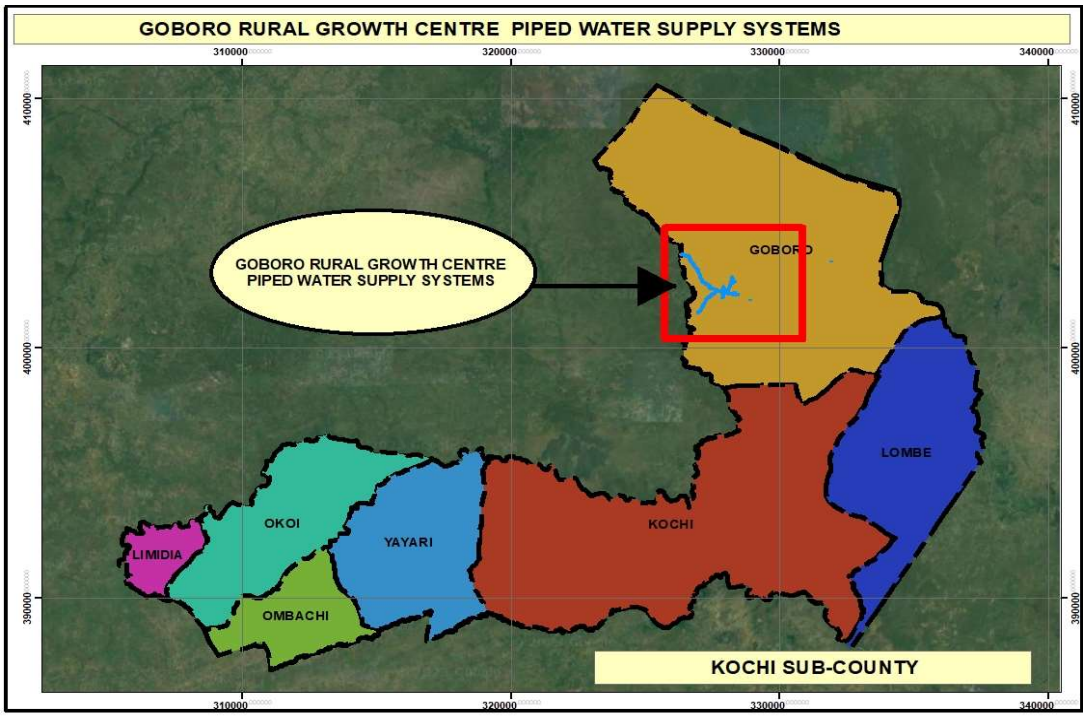

Figure: 1-2: Goboro Rural Growth Centre Piped Water Supply Systems in Kochi Sub-County

1.4.2 Proposed project infrastructure

Two boreholes (Maru and Malanga Borehole) at the borehole site, a solar-powered pump house, and a backup generator make up the planned project infrastructure. Following the pumping of water through a transmission line, the water will be gravity-fed into the project area villages of Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi, and Wadri. The storage reservoir is located behind the UNCR Transit and Reception Center, behind the Goboro Catholic Church.

Every major institution in the rural growth centre will have a water distribution station set up. These will consist of Goboro Barrack Military, Goboro Primary, Goboro HC II, Goboro Market, Goboro Mosque, Goboro Church Uganda, and Goboro UNHCR Refugee Reception Center. As stated

Table 1-3: Goboro Borehole location

Facility	GPS Coordinates	
 Maru Borehole (DWD 69427) Yield: (14 m^3/h)	Easting	Northing
	326248.67	404043.691
	Easting	Northing
	326805.097	401692.818

Malanga Borehole(DWD 89640) Yield: (18 m^3/h)

Proposed Tank /Reservoir site

Easting	Northing
328360.01	402687.67

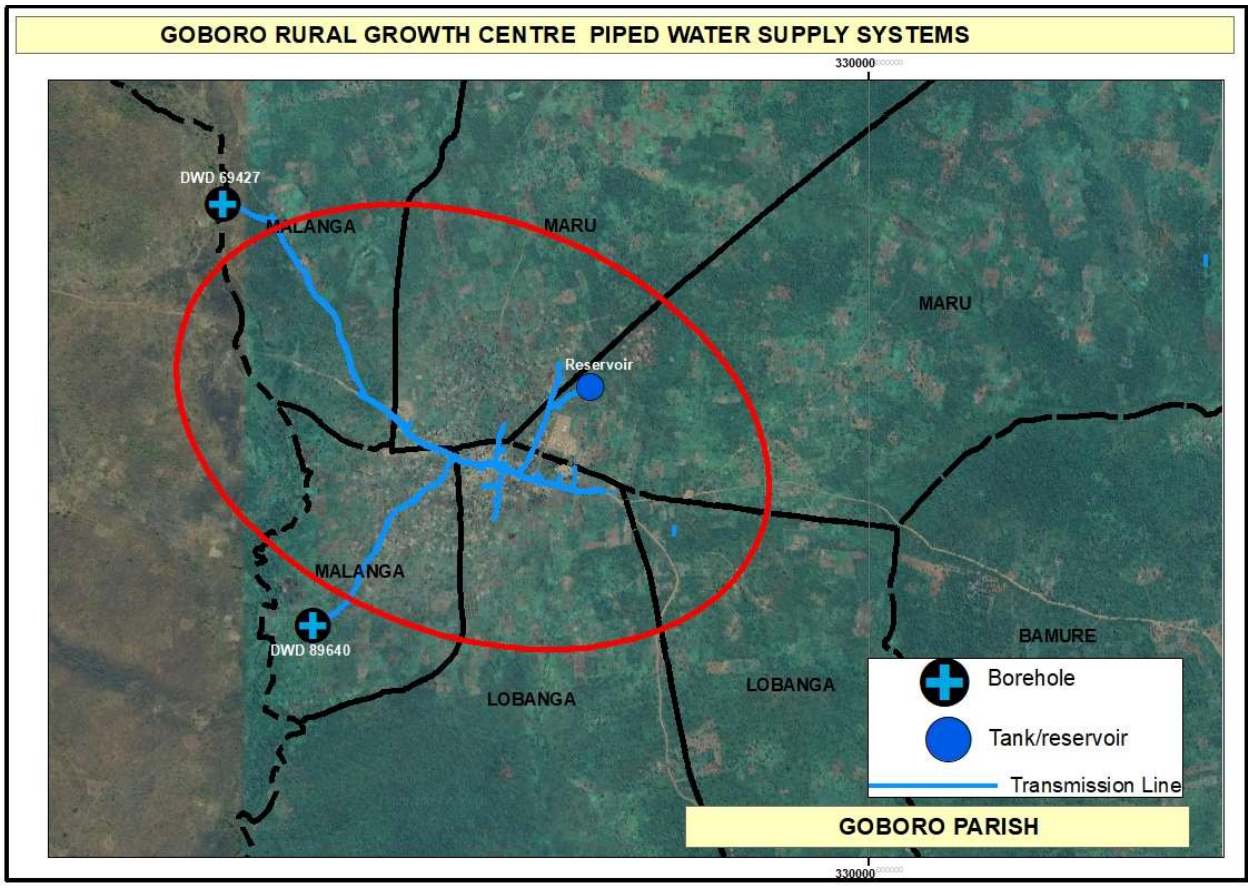

Figure: 1-3: General overview of Goboro Rural Growth Centre Piped Water Supply Systems coverage

1.4.3 Location of the Borehole sites

a.) **Maru Borehole**. Maru Borehole is located in Maru Village at coordinate E: 326248.67, N:404043.691 (WGS 84-UTM) next to Nyawara Stream. The source is currently used by UNHCR as their main water source

b.) **Malanga Borehole: The** Malanga Borehole site is located in Malanga village **at coordinate E: 326805.097, N: 401692.818 (WGS 84-UTM) about 300 m away from Nyawara Stream.**

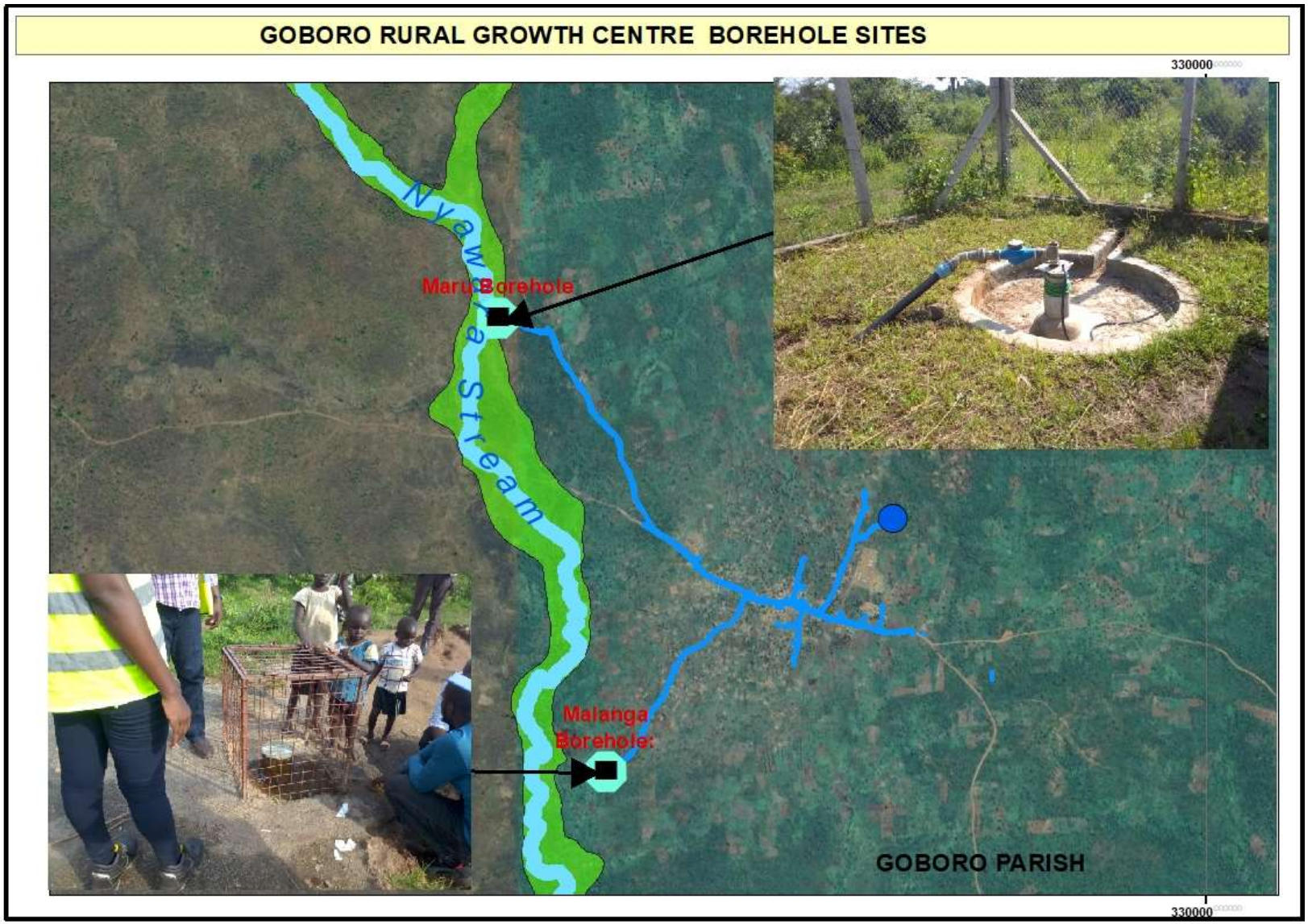

Figure: 1-4: Geographical location of the borehole sites

1.4.4 Location of the water reservoir

One reservoir tank will be used to supply water to the whole project area. The reservoir will be situated around 900 meters from Goboro Main Trading Center in Maru Village, behind the UNHCR Refugee Reception Center. The coordinates of the site are E: 328360.01, N: 402687.67. Open grassland with sporadic trees can be found here.

It is not anticipated that any highly conservation-valued flora would be replaced by the construction of the reservoir tank. An aerial Google map showing the reservoir tank's position is shown in Figure 1-5 below.

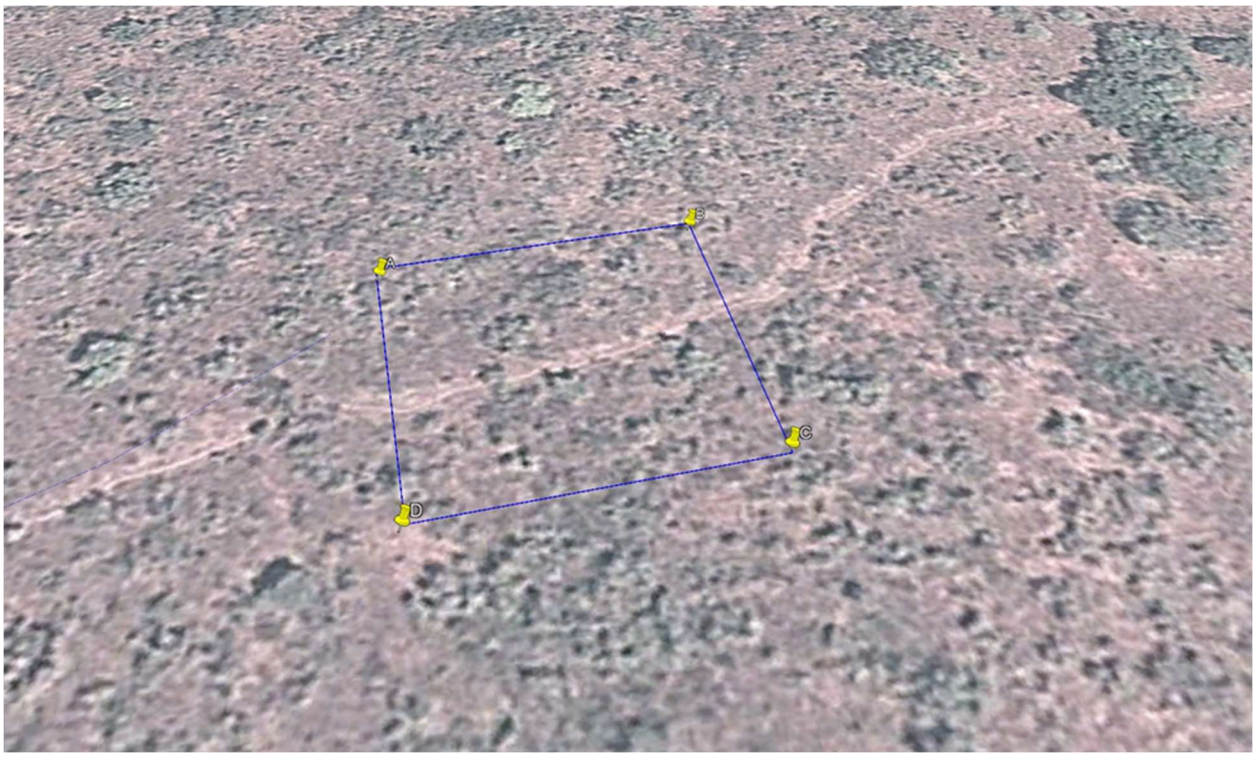

Figure: 1-5: Aerial view showing the proposed location of the water reservoir

1.4.5 Location of Water transmission & distribution route(s)

Within the project area, the water transmission and distribution routes will primarily follow the road reserves of the current access roads, particularly Midigo Road and Malanga Access Road.

Water will be distributed to different homes and institutions in the beneficiary centres via several T-offs installed along the transmission pipe.

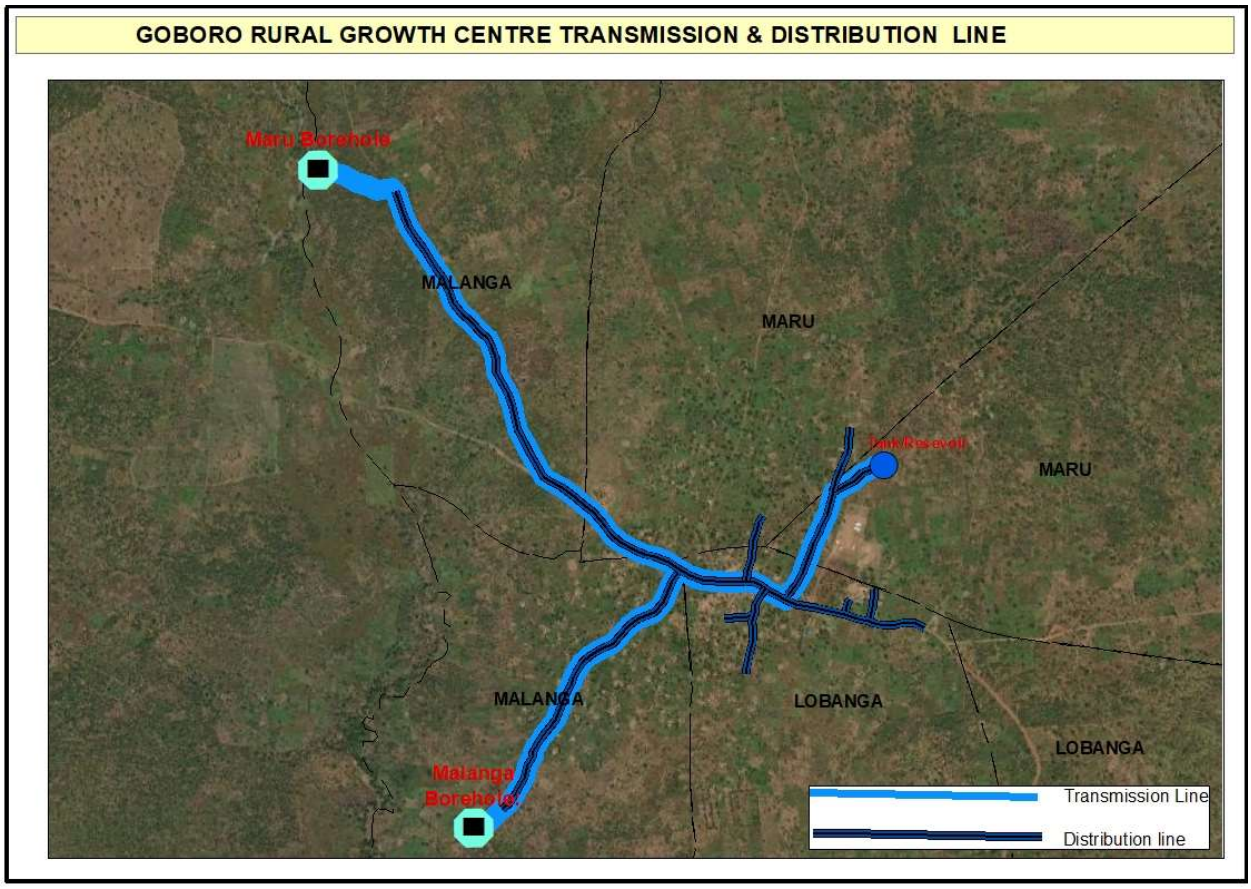

Figure: 1-6: Water transmission and distribution route

1.5 The Developer Contact Details

Table 1-4: Contact details of the project developer

Definition	Details
Client (Project proponent)	The Permanent Secretary Ministry of Water and Environment of Uganda (MWE)
Contact Details	Ministry of Water and Environment, Directorate of Water Development, Rural Water Supply Department, Plot 3-7, Kabalega Crescent Road, P.O. Box 20026, Kampala, Email: ps@mwe.go.ug / mwe@mwe.go.ug, Telephone: +256 41 4505942.
Funding Agencies	World Bank and GOU

1.6 Project Cost

The cost estimate for the proposed works for Goboro RGC piped water supply and sanitation system is **UGX 5,956,076,898** Uganda Shillings Only

1.7 Project Need and Justification

The purpose of this project is to increase sustainable access to safe water and basic sanitation in the rural growth centre in the selected refugee-hosting districts. The following benefits are expected to accrue from this project;

i) Reduction in the prevalence rates of waterborne diseases, especially cholera, dysentery and diarrhoea;

j) A significant reduction in health costs and time for collecting water which translates into substantial savings for rural households;

k) The easing of the burden of fetching water which is one of the most arduous tasks for women and young girls in rural areas;

l) The development of income-generating activities for women given the free time accruing from the reduced burden of fetching water;

m) An increase in the enrolment ratio, especially for girls, and in the female literacy rate;

n) The reduction in social conflicts related to water use;

o) The efficient management and maintenance of water supply and sanitation facilities;

p) Human capacity building and the creation of jobs in water management through the involvement of private operators in the construction, management, repair and maintenance of water supply facilities.

1.8 The Need for Environmental Impact Assessment

The implementation of the Goboro Rural Growth Centre piped water supply and sanitation Project will result in several environmental and social impacts that require an Environmental and Social Impact Study. Furthermore, the project falls under the Fifth Schedule of the National Environment Act No. 5 of 2019 as amended, which lists projects to be considered for ESIA. Section 19 (3) of the National Environment Act No. 5 of 2019 as amended made the utilization of water resources, water supply and sanitation facilities mandatory for Environmental and Social Impact Assessment for all projects or policies that may, are likely to or will have significant impacts on the environment so that adverse impacts can be identified, avoided, reduced, mitigated or compensated for based on the mitigation hierarchy.

The World Bank Operational Policy (OP 4.01) on Environmental Assessment emphasizes public disclosure. Sections 14 & 15 of these procedures require an assessment for category 'A and B' projects. Category A includes projects expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented. Category B includes

Projects expected to have limited adverse social and/or environmental impacts that can be readily addressed through mitigation measures. Category C includes Projects expected to have minimal or no adverse impacts, including certain financial intermediary projects.

The proposed Water and sanitation project is categorized as "B" because it will have limited adverse impacts on the community and the general environment that can be addressed through the proposed mitigation measures.

Furthermore, the World Bank's OP 4.01 Environmental Assessment requires ESIA/ESMP to be undertaken for projects that are considered to pose negative environmental and social impacts. Since the proposed project activities are likely to pose site-specific environmental and social risks ESIA is required as per OP 4.01 policy requirements

Therefore, this ESIA study seeks to ensure compliance of the project with applicable national and World Bank environmental and social safeguard policies, while also providing the overall framework for addressing social and environmental risks.

1.9 Purpose and Objective of the ESIA

The broad objective of the environmental and social impact assessment was to identify potential positive and negative environmental and social impacts on the social and bio-physical environment before, during and after the construction of the proposed project.

Section 110 (1) of the National Environment Act, 2019 outlines the purpose of environmental and social assessments, which is to evaluate environmental and social impacts, risks or other concerns of a given project or activity, considering the environmental principles set out in section 5(2).

The development of the water supply and sanitation system is anticipated to have significant impacts on the bio-physical and social environment, and thus the need to evaluate them so that appropriate safeguards are proposed to eliminate and/or minimize them. The main purpose, therefore, is to evaluate the project components, activities and facilities and determine whether it can proceed without unacceptable environmental impacts. This will be achieved by identifying any potentially significant risks to the environment associated with the proposed project and evaluating and suggesting the corresponding safeguards or prevention/mitigation measures.

2 STUDY APPROACH AND METHODOLOGY

2.1 Overall Approach

The ESIA followed the process as outlined in the National Environment Management Authority (NEMA) Guidelines for Environmental Impact Assessment in Uganda, 1997 (NEMA 1997) The assessment methods used to conduct the assessment are detailed below:

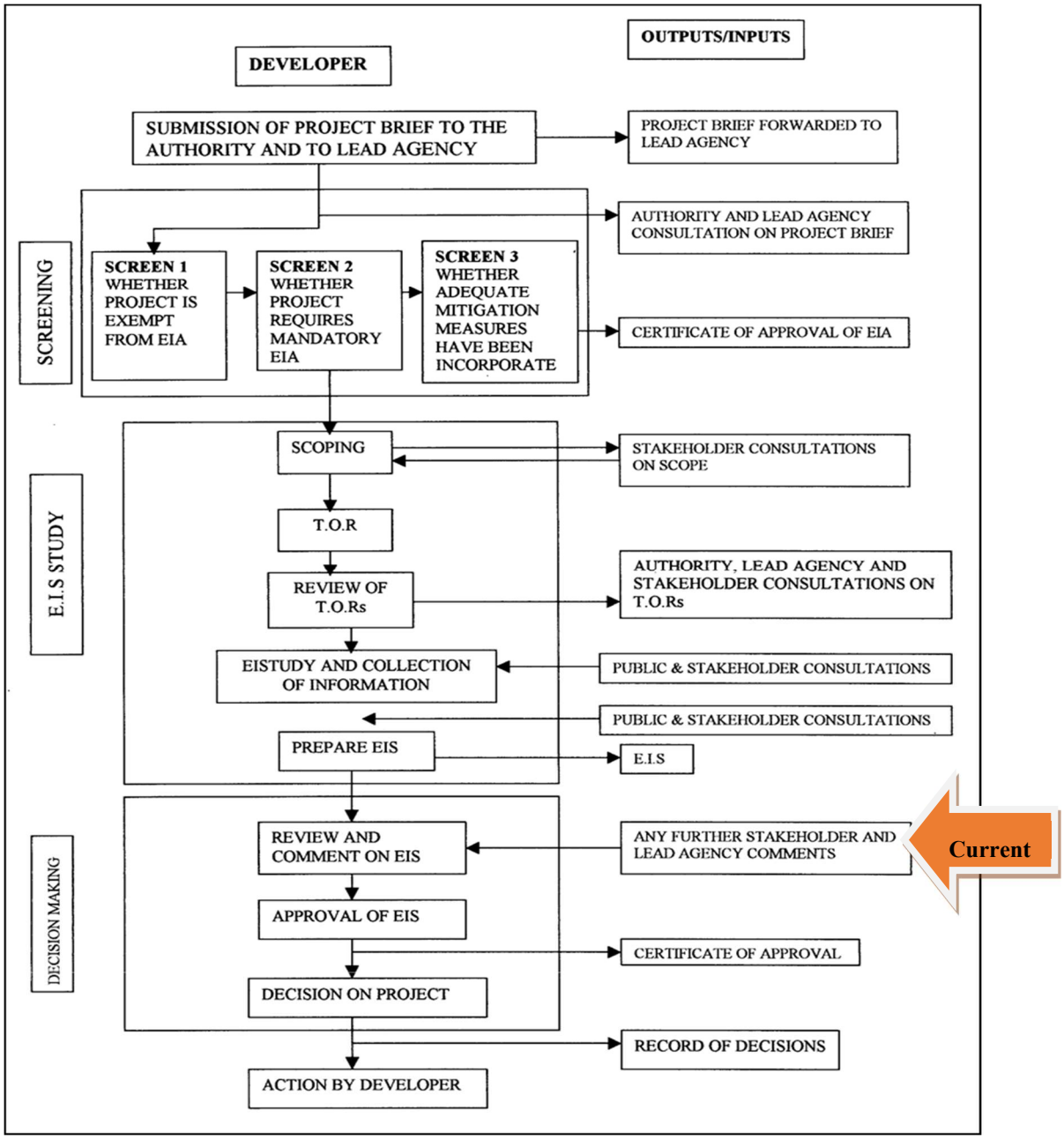

Figure 2-1: ESIA Process in Uganda

2.2 Field visit

This was the initial site acquaintance visit whose main aim was to understand the project area, identify constraints, and develop impressions on topography, soils, existing developments and the practicality of developing water and sanitation infrastructure within the proposed area. It also marked the major inception meeting with representatives of the project proponent and local administration offices represented in the area to pave the way for further involvement of their officers in subsequent meetings and consultations.

The main objective of these meetings was to agree on expectations of the assignment, its execution procedure, focal and reference points of the proposed project and the work plan. An inception report for the study was prepared at this stage.

Plate 2-1: Meeting with Yumbe District Local Government

2.3 Scoping Study

An essential element of the ESIA is the environmental scoping study which was undertaken following World Bank OP. 4.01 and the ESIA Regulations,2020. A scoping study was undertaken to determine the extent and approach of the ESIA at an early stage in the planning process, identify the important issues to be examined during the ESIA, and thus develop the Terms of Reference (ToR) for the ESIA. The TORs were subsequently approved by NEMA on 9th June 2023 following consultation with lead agencies (Appendix 1- NEMA Approval Letter for TOR).

2.4 Literature Review

The goal of the literature research was to ascertain the project's legal requirements in relation to all pertinent laws. It also aimed to provide insight into the present situation in the field by referencing the evaluation of projects that were similar to it and other successful initiatives.

The team examined a variety of documents during the ESIA process, including those from the Developer and other sources, including Feasibility Studies, Detailed Engineering Design Reports, IFC Environmental Health and Safety Guidelines for Water and Sanitation Projects, World Bank

Safeguards policies, and additional documents from Yumbe district regarding the project's location, including District Development Plans 2020/21-2024/25 and district state of the environment and health reports.

The National Household Survey reports, the National Housing and Population Census (UBOS, 2014), the Environmental and Social Safety Measures Policy 2018, the National Household Survey reports (UBOS, 2020) The IWMDP Project Appraisal Document, 2018 Policies, rules, and legal framework pertinent to the water and sanitation sector are included in the Environmental and Social Management Framework (ESMF) for the Integrated Water Management and Development Project (IWMDP).

2.5 Public /Stakeholder Consultation and Participation

Public/stakeholders' participation is concerned with involving, informing and consulting the public in planning, management and other decision-making activities for the project. Public participation ensures that due consideration is given to public values, concerns and preferences when decisions are made. It encompasses the public actively, sharing in the decisions that government and other agencies make in their search for solutions to issues of public interest

Public consultation in this project was done with the following aims:

a) To inform the community and other stakeholders about the proposed project and its objectives.

b) To seek views, concerns and opinions of the local community and other people around the area concerning the project.

c) To establish if the local people foresee any positive or negative environmental effects from the proposed project and if so, how they would wish the perceived impacts to be addressed.

d) Propose and discuss solutions and mitigation measures to the potential negative impacts and various concerns development.

The following principles were taken into consideration during stakeholder engagement:

a) **Openness and life-cycle approach**: Public consultations for the proposed project were arranged during the whole life-cycle, carried out openly, free of external manipulation, interference, coercion or intimidation;

b) **Informed participation and feedback:** Information was provided to and widely distributed among all stakeholders in an appropriate format; opportunities were provided for communicating stakeholders' feedback, for analyzing and addressing comments and concerns;

c) **Inclusiveness and sensitivity:** Stakeholder identification was undertaken to support better communications and build effective relationships. The participation process for the projects was inclusive. All stakeholders at all times were encouraged to be involved in the consultation process. Equal access to information was provided to all stakeholders.

d) Special attention was given to vulnerable groups, in particular women, youth and elderly

Stakeholder consultations were carried out during the assessment process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line

with the statutory consultation requirements under World Bank environmental and social safeguards policies, as well as the first schedule of the ESIA Regulations for Uganda.

Data on the potential environmental and social impacts, stakeholder perceptions, views and concerns were collected through focus group discussions, community meetings and personal interviews with the target audience including but not limited to all communities in all the benefiting trading centres and villages of Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi and Wadri. Based on the proposed borehole sites, and proposed transmission line corridor, the PAPs were identified with the assistance of the Chairpersons Local Council One (LC-1).

The emphasis of the consultations was laid on environmental and social concerns expected in the process of laying transmission and distribution water pipes within the project area, obligations of the various parties in mitigating the various impacts anticipated and the procedure for operating the water and sanitation project among others.

Discussions with the proponent and consultation with relevant officials at the district and sub-county were held. Similarly, verbal interviews with key project beneficiaries and key stakeholders were carried out. Consultations were conducted at the National and Local levels. Consultations were held with the Office of the Prime Minister, Ministry of Water and Environment Directorate of Water Development Rural Water Supply and Sanitation sector, Yumbe District Local Government, Kochi Sub-County officials, LC1 chairman of project villages and their respective local community members.

2.6 Field Surveys Methods

Flora

To study the vegetation structure and composition of Goboro RGC, a methodology combining field observations and sampling was employed, guided by a Global Positioning System (GPS Garmin 62CSx) to locate plots along the proposed project pipeline alignment, borehole sites, and reservoir site. The systematic sampling technique was used, ensuring each unit had an equal probability of inclusion in the sample. The first unit was selected using random numbers, and subsequent units were selected automatically according to a predetermined pattern. Plots were placed within 30m limits, alternating along the proposed transmission and distribution routes. Standard nested circular plots were established at 0.5 km intervals along water transmission and distribution lines from the boreholes to the reservoir site.

A random sampling technique was applied to sample vegetation at the proposed reservoir, borehole site, trading centres and access roads. The circular plots consisted of a 10m radius plot for trees with a diameter at breast height (DBH) of ≥10 cm, a 5m radius plot for lianas, shrubs, and trees with a DBH ≤ 10cm but ≥2.5 cm, and a 2m radius plot for all grasses and herbs. Specimens of plant species that could not be immediately identified were collected, photographed, and pressed

on-site for further confirmation at the Makerere University Herbarium (MHU), where identification and archiving were conducted.

2.6.1 Field survey methods for fauna

Herptiles.

a) Visual Encounter Survey (VES) method

Herptiles (Reptiles and amphibians) were surveyed using the Visual Encounter Survey (VES) method. Random search during VES increases the chances of finding animals in addition to covering a wider survey area. The water line was used as a transect and VES for reptiles was conducted following the water line visually searching for animals. This method involved a search on the ground, in the leaf litter, along the river and in proximity gardens and encountered species were noted. Species were assessed against the IUCN Red List to understand their conservation status.

b) Interview with Local People

Reptile surveys for this assignment were also conducted through interviews with local people, asking them about physical signs (skin shades and colour, prints, bones, faecal samples etc.) of Reptile presence within the area.

c) Sampling design

Herptiles were sampled along the proposed water lines covering a sampling width of 30m from the edge of the road along the proposed line because herptiles are highly mobile animals. The sampling interval was determined by the spatial distribution of the chosen habitats.

2.6.2 Air Quality surveys

This assessment focused on the Criteria Air Contaminants (CAC) and Greenhouse Gases, which reflect the project emissions of concern for human and environmental health. Major sources of outdoor air pollution in the project area will be vehicular traffic and human and economic activities.

Air pollutants considered in the assessment included Particulate Matter of both inhalable particle sizes between PM10 and below PM2.5, Nitrogen Dioxide ($^{NO2)}$, Carbon Monoxide (CO), Volatile Organic Carbons (VOCs) and Carbon dioxide (CO^2).

MX6 Multigas Monitor Industrial Equipment was used to measure air quality parameters. Air quality measurements were taken on the Carbon dioxide, Carbon monoxide, Nitrogen Oxides (NOx), Volatile Organic Carbons (VOCs) and Carbon dioxide (CO2) Suspended Particulate Matter (SPM) was sampled using a Hand-held laser particles counter. Model 3887, which sucks and filters particles from a known volume of the air sample. Particle sizes of 0.3µm, 0.5 µm, and 5.0 µm are measured and the results of concentration are displayed on the screen and recorded accordingly. The principle involved in the Suspended Particulate Matter (SPM) sampling method

is that the particles are filtered from the known volume of an air sample by a suction apparatus. The results of the concentration of particulate matter are displayed on the screen and recorded.

All measurements were taken during the day, a state that generates varying readings from nighttime readings due to influencing environmental seasonal or human factors such as existing economic activities, human or vehicular movements, wind velocity and high or low temperatures. Measurements at the intake site (borehole site and pump house site, sample sites along the transmission route and the proposed site at the reservoir tank were taken accordingly. MX6 Multigas Monitor Industrial Equipment was used to measure air quality parameters.

Air quality measurements were taken on the selected trading centres and project route for Carbon dioxide, Carbon monoxide, Nitrogen Oxides (NOx), Volatile Organic Carbons (VOCs) and Carbon dioxide (CO2) Suspended Particulate Matter (SPM) was sampled using a Hand-held laser particles counter. Model 3887, which sucks and filters particles from a known volume of air sample. Particle sizes of 0.3μm, 0.5 μm, and 5.0 μm are measured and the results of concentration are displayed on the screen and recorded accordingly. The principle involved in the Suspended Particulate Matter (SPM) sampling method is that the particles are filtered from the known volume of an air sample by a suction apparatus. A total of eleven (11) points were sampled along the transmission line, the proposed intake points and reservoir tanks.

Spot measurements were undertaken during the field survey and measurement lasted 20 minutes at each air quality monitoring location during which GPS coordinates were taken and maps developed. All field data was recorded using a standard data capture form. All conditions (such as vehicle traffic, human activity, motor engines running, and weather) during measurements were also recorded. Measurements at the intake site (borehole site and pump house site, sample sites along the transmission route and the proposed site at the reservoir tank were taken accordingly

2.6.3 Noise assessment Survey

Noise pollution is defined as unwanted sounds or sounds that are loud or unpleasant. Sounds are considered noise pollution if they adversely affect wildlife, or human activity or are capable of damaging physical structures regularly.

In addition, it is considered noise pollution if sound disturbs any natural process even if the sound does not occur regularly. Noise from various sources intrudes unreasonably into the daily activities of human beings and animals creating adverse effects.

The sound level was measured by using Precision Integrating Sound Level Meter Type: 4 in one Digital Sound Level Meter, Model CEM DT 8820 (range 35 – 130 dBA) for noise, (-20 – 75 ºC) for temperature, (25% - 95%) relative humidity and (0 – 20000 LUX) for light intensity.

The charged sound level meter was adjusted for slow time response. Baseline noise measurements were undertaken at locations along the project area with potential receptors. A total of eleven (11)

points were sampled along the transmission line, the proposed intake points and reservoir tank were taken accordingly.

The sound levels were measured with maximum and minimum recordings taken for the particular site and respective average sound levels were calculated as the final readings. Data obtained from baseline noise monitoring was processed and presented according to the analysis and compared with the maximum permissible noise levels.

2.6.4 Biodiversity Inventories

A comprehensive study on plant species and families within the project area was carried out and recorded. The survey approach involved on-site assessment of the biological environment to collect current information to inform suggestions of mitigation measures for impacts associated with the development. The approach included the following:

a) Review of the inception report and any available literature on the biological baseline conditions of the project area and its immediate environs
b) on-site assessment to get the most up-to-date information.

Field visits were conducted to collect current information on the project's area of interest. This information focused on the study of the biological (flora and fauna) conditions of the proposed project area. The data collected was vital for the identification of impacts on the biological environment. A local guide rendered support and helped assist with the field surveys.

The site was walked slowly, observing the vegetation types, flora and fauna. Global Positioning System (GPS) was used to localize all the records of flora and fauna made in the area. Information gathered included, but was not limited to: Langdale-Brown et al. (1964) on vegetation classification, Kalema & Beentje (2012) and IUCN (2023) on the conservation status of Uganda plants. A description of the vegetation was done, species identified, and voucher specimens collected for verification of some species.

Sampling locations followed pre-determined geo-referenced the proposed site alignments that were varying in length and width. Each geo-referenced site was considered an independent transect along which the surveys were conducted to record observed plant species. The sampling conformed to the general baseline (gradsect) (Wessels et al. 1998) that enabled the traversing of existing vegetation types. Site-specific vegetation descriptions to determine habitat types were based on species dominance and floral features such as herbs, shrubs and trees along the transects.

Upon a comprehensive identification of the flora records and habitat type determination, analysis of likely impacts to the vegetation and flora was also assessed visa-viz the anticipated project activities. Also of interest was the occurrence of invasive species in or near the project area, and the proximity of the study area to other ecologically sensitive features.

Under the IFC’s (2012) approach, three classes of habitat are recognized: Modified Habitat; Natural Habitat; and Critical Habitat.

Modified Habitat contains a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified Habitats may include, for example, areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands.

Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

- Habitat affected by human activities is typically still considered Natural Habitat if such activities:
- Form part of a long-term pattern of traditional use, to which native species assemblages have adopted;
- Are no longer prevalent and the habitat supports a mature and diverse community of predominately native species; or
- Have not profoundly affected the habitat`s ability to recover its former ecological characteristics.

Critical Habitats are defined as areas with high biodiversity importance or value, including:

a.) Habitat of significant importance to Critically Endangered or Endangered species, as listed in the IUCN Red List of Threatened Species or equivalent national approaches;
b.) Habitat of significant importance to endemic or restricted-range species;
c.) Habitat supporting globally or nationally significant concentrations of migratory or congregation species;
d.) Highly threatened or unique ecosystems; and
e.) Ecological functions or characteristics that are needed to maintain the viability of the biodiversity values described above in (a) to (d).

Habitat condition was assessed mainly by considering aspects of functionality, threats and intensity of anthropogenic impacts. These aspects would be used to determine if restoration of poor-quality habitat is feasible and to identify areas of good-quality habitat that should be avoided by the project.

Species of conservation concern were checked against the IUCN Red List database, the Uganda Red List, and published literature. Invasive species were also checked against the global invasive database and the national invasive species lists. Protected plant species were also checked against the reserved species list published by the National Forestry Authority.

Fauna Species

Mammals

The surveys for this report were conducted to attempt to address key issues pertaining to the proposed water and sanitation project's potential effect on biodiversity, including such issues as:

- Habitats and ecosystems
- Potential effects of the project's construction and operation on woodlands and bushland
- Construction and operation of water and sanitation facilities and
- Potential induced effects on the general landscape by construction and operation of the water and sanitation facility in the areas
- Species of concern

Surveys for large mammals were largely opportunistic, that is, tracks and signs (spoor or faecal material), observation, and informant interviews with local people. Informant interviews with local people were the main methods used along the pipeline route.

Mammals were surveyed by looking for their signs – faecal materials, prints and trucks and through interviews with members of the local community. In the project area, a total of 8 individuals were interviewed about mammal occurrence and frequency of encounters.

Because the project area was largely devoid of the herbaceous layer, it was not practical to survey for small mammals. The surveys were therefore limited to medium-sized and large mammals. Even for these, the nature of the habitat was limiting and they could not be observed. The majority of the mammal records were therefore primarily based on interviews, observations of signs and in a few cases the species were seen.

2.6.5 Mapping and Photography

Spatial Data for the project site was captured using Global Positioning Systems (GPS), and maps were processed and generated using Geographic Information Systems (GIS). Photographs of vital importance and concern on the site's status quo, stakeholders' meetings and the surrounding environment were taken using digital cameras to record empirical evidence as presented in the various sections of the report.

2.6.6 Geotechnical Soil tests

The geotechnical investigations were carried out by the design consultant (Kaaga and Partners) as a prerequisite for the designs following approval of the draft design of the proposed water supply system.

The scope of the investigation comprised;

- excavated 1 No. test-pit at the reservoir tank site to a depth of 1.0m, excavated 1 No. test pit at the borehole site to the depth of 0.5m,
- collecting disturbed and undisturbed soil samples at the mentioned depths,
- conducting Dynamic Cone Penetrometer (DCP) at the existing ground and 0.5m (borehole) and 1.0m (reservoir) depth in each of the test pits for the covered Regional Growth Center of Goboro in KochiS/C in Yumbe district,

- determining the level of ground water encountered in each trial pit, and laboratory analysis of retrieved soil samples.

2.6.6.1 Methodology of the Geotechnical Survey

The field exploratory activities were conducted in accordance with BS EN 1997-2:2007, "Part 2: Ground investigations and testing". The key activities comprised; excavating one (1 No.) test pit at the reservoir tank site to a depth of 1.0m, excavating one (1 No.) at the borehole site to the depth of 0.5m, soil sampling (retrieving both disturbed and undisturbed soil samples), description of soil properties, conducting Dynamic Cone Penetrometer(DCP) at the existing ground and 0.5m (borehole) and 1.0m(reservoir) depth in each of the test pits for covered Regional Growth Center of Kochi, logging and establishing the occurrence of groundwater in each trial pits where encountered, laboratory analysis of retrieved soil samples. The test pit positions were predetermined as enumerated by the coordinate's locations below;

Table 2-1: Test pits Locations

RGC	**Reservoirs**		**Boreholes**	
	E	**N**	**E**	**N**
Goboro 1	328238.0	402984.3	326235.2	403994.7
Goboro 2	328238.0	402984.3	326768.8	401632.5

Furthermore, the soil samples collected are as indicated below. It should be noted that the undisturbed soil sample at the Goboro reservoir was not taken since the soils were non-cohesive.

Table 2-2: Soil samples

RGC	**Reservoirs Soil Samples**		**Boreholes Soil Samples**	
	Disturbed	**Undisturbed**	**Disturbed**	**Undisturbed**
Goboro 1	1	0	1	0
Goboro 2	1	0	1	0

2.6.6.2 Excavations, Logging and Dynamic Cone Penetration Tests.

The test pits were excavated to a maximum depth of 1.0m (reservoir) and 0.5m(borehole). Based on visual inspection, the soil profile was established from the test pits and sketched. Penetration tests were conducted in the test pit using a standard set of DCP test equipment. The test equipment comprised an 8kg weight dropping through a height of 575mm to drive a 60 cone of diameter 20mm into the ground. The number of blows against penetration was then tabulated and analyzed using the UK DCP V3.1 program (a computer program for the analysis of data).

The photo plates attached below show excavation, logging and in-situ tests carried out.

Plate 2-2: Field Activities for Geo-technical Site Investigations (Kaaga and Partners 2023)

2.6.7 Social economic Surveys

Social baseline conditions are important in understanding the potential socio-economic impacts of the project components such as its effect on existing social services, availability of local labour and induced changes in population dynamics (in-migration, effects on domestic violence, family breakups, child labour, school dropout rate, early marriages and HIV/AIDS among others). Factors such as literacy levels in the local community influence how objectively a project is perceived and appreciated.

The objective of the socioeconomic baseline study was:

a) To assess the existing situation of the proposed project area.
b) To analyse the socioeconomic impact of the proposed project on the local community.
c) To collect the community's expectations and fears about the proposed project.
d) To build a prior trust between stakeholders of the project and the local community

2.6.7.1 Sampling procedure for Quantitative data collection

The study population was randomly selected from households within the project area. Household heads were selected as the major respondents in this survey since they have sufficient and required information. A total of 101 households were administered a structured questionnaire in the villages of Bulibuli, Busia, Gaga, Lobanga, Malanga, Maru, Maru West, Monigochi and Wadri.

Table 2-3: Sample Size

Category	Number reached
Bulibuli	12
Busia	10
Gaga	8

Lobanga	9
Malanga	11
Maru	14
Maru West	14
Monigochi	13
Wadri	10
Total Households	**101**
Key Informants	5
FGDS	2

2.6.7.2 Methods of data collection

a.) Key Informant Interviews

Key informant interviews were conducted to gather information from leaders at District, sub-county levels and community. The sample at the district level is included. Chief Administrative Officer, LCV Chairperson, District Natural Resources Officers, District Environment Officers, District Community Development Officers, Engineers, District Physical Planners and District Water Officers, District Education officers, and District gender and probation officers; details of these engagements are in Appendix E

b.) Focus Group Discussion

This technique involves a small group of respondents (usually 6-10 respondents) who were interviewed together in a common location. The interviewer leads the discussion and ensures that every person has an opportunity to respond. Focus groups allow a deeper examination of complex issues than other forms of survey methods. Two focus group discussions were held with the women groups, traders and sub-county leaders

c.) Structured interviews

Primary data was collected by interviewing sampled members of the study population. The structured interview method was used to collect household data with the aid of a structured questionnaire.

The table below summarises the data collection methods, study participants and sampling method used.

Table 2-4: Summary of study participants and sampling method used

Data Collection Method	Participant category	No of Participants		Sampling Method
		Male	Female	
Structured Questionnaire	Local Residents	60	41	Probability sampling (Random)

Key Informant Interviews	Sub-County Officials	8	5	Purposive
Focus Group Discussion	Women groups& Traders	4	18	Purposive

2.6.7.3 Data analysis

a) Quantitative data

Data was regularly cleaned before entry. Quantitative data from the questionnaires was entered and analyzed using the Statistical Package for Social Scientists (SPSS). Frequency and percentage tables as well as bar charts were generated and used to present the quantitative results.

b) Qualitative data

Qualitative data was transcribed and arranged according to existing and emerging themes through content analysis methods. The qualitative analysis largely followed the questions and themes of the study within the interviews and FGD guide.

2.7 Impact Assessment Methodology

This ESIA adopted a systematic procedure in identifying, describing and assessing the potential impacts of the proposed construction and operation of the Goboro RGC Water Supply and Sanitation project.

The methodology for impact evaluation was as follows:

a.) Impact description

Describing a potential impact involves an appraisal of the proposed road rehabilitation components together with the attributes of the receiving environment. Relevant impact characteristics may include whether the impact is:

- **direct (or primary)** – impacts that result from a direct interaction between a planned project activity and the receiving environment (e.g., between occupation of the facilities and pre-existing habitats)
- **indirect (or secondary)** – impacts that follow on from the primary interactions between the project and its environment because of subsequent interactions in the environment (e.g., loss of part of a habitat affects the viability of a species population over a wider area)
- **induced** – impacts that result from other activities that are encouraged to happen as a consequence of the project (e.g., new business set up to cater for increased traffic on roads)
- **cumulative** – those that result from the incremental impact, on areas or resources used or directly affected by the project, from other existing, planned or reasonably defined developments when the risks and impacts identification process is conducted (IFC PS1)

Each of these characteristics was addressed for each impact. Consideration of the above gave a sense of the relative **intensity** of the impact. The **sensitivity** of the receiving environment was determined by specialists based on the baseline data collected and literature data during the study

b.) Impact Evaluation for Significance

The significance of impacts on VECs was determined based on scoring VEC sensitivity and the impact:

- Magnitude
- Duration
- Extent.

The scale of significance was defined from impact characterization based on ecological-toxicological, physical-chemical and social studies and expert judgment. Also, significance was determined for impacts before the proposed mitigation was applied and determined again on the residual impact after the proposed mitigation

Extent: within a limited area (<500m from site), local (up to 10 km) or wide (regional or global)

Duration: Temporary (1 year), short-term (1-5 years), Medium term (5 -10 years), Long-term (> 10 years – 50yrs) or Permanent;

Magnitude of impact: Low, Medium or High/Very high

Very High (VH) and High (H): These denote that the impact is unacceptable and further mitigation measures must be implemented to reduce the significance.

Medium (M): Impacts in this region are considered tolerable but efforts must be made to reduce the impact to levels that are as low as reasonably practical.

Low (L): Impacts in this region are considered acceptable.

Probability of occurrence: Highly unlikely, Unlikely, Possible, Likely or Almost certain as presented in.

Table 2-5: Likelihood of occurrence classification

Probability of occurrence		
Level	**Probability**	
5	Almost certain	Very likely to occur (91 - 100%) Could occur either immediately or within a short period (likely to occur most weeks or months)
4	Likely	This impact will probably occur in most circumstances if controls are not applied (several times a year) (61 - 90%)
3	Possible	This impact could occur at some time if controls are not applied May happen every 1 to 15 years). It is expected that the impact will occur; Chance of occurrence (41 - 60%)

2	Unlikely	This impact is not likely to occur. Chance of Occurrence 11 – 39%.
1	Highly unlikely	Very unlikely to occur (0 - 10%)

Overall assessment of impact: Negligible, Low (4-6 rating), Medium (7-8 rating), High (9-and above rating) as presented in Table 2.7 and Table 2.8 below and summarised in table 8.1.

Table 2-6: Criteria for rating overall impact severity (environment parameters)

Impact rating	**Description of impact**
High	• Highly noticeable effects on the environment, difficult to reverse. • Widespread degradation of resources restricts the potential for further usage. • A significant contribution to a known global environmental problem when compared with the industry worldwide. • Sub-lethal effects upon a globally or regionally endangered species compromising reproductive fitness and/or resulting in long-term disruption/disturbance to normal behaviour. • Air quality/noise approaching occupational exposure limits. Water quality parameters approaching maximum stipulated values. • Periodic widespread nuisance both on and off-site.
Medium	• Noticeable effects on the environment, reversible over the long term. • Localized degradation of resources restricts the potential for further usage. • Sub-lethal effects upon a globally or regionally endangered species with no effect on reproductive fitness and/or resulting in disruption/disturbance to normal behaviour returning to normal in the medium term. • Elevated contribution to global air pollution problem partly due to preventable releases. • Frequent breaches of water/air quality and noise guidelines. • Causing localized nuisance both on and off-site.
Minor	• Noticeable effects on the environment, but returning naturally to the original state in the medium term. • Slight local degradation of resources but not jeopardizing further usage. • Disruption/disturbance to the normal behaviour of a globally or regionally endangered species returning to normal in the short term. • A small contribution to the global air problem is through unavoidable releases. • Elevation in ambient water/air pollutant levels greater than 50% of guidelines. • Infrequent localized nuisance.

Impact rating	Description of impact
Negligible	• No noticeable or limited local effect upon the environment, rapidly returning to its original state by natural action. • Unlikely to affect resources to a noticeable degree. • No noticeable effects on globally or regionally endangered species. • No significant contribution to the global air pollution problem. • Minor elevation in ambient water/air pollutant levels well below guidelines. • No reported nuisance effects.

Table 2-7: Criteria for rating overall impact severity (Social and economic parameters)

Criteria	Significance Definition	
Harm to People	Potential; to cause fatalities, mutilations or serious chronic health problems to a person	High
	Potential to cause Lost Time Incidents	Medium
	Not likely to result in Lost Time Incidents	Minor-Negligible
Assets	Major damage to on-site infrastructure, halting operations and incurring substantial delay in supplying replacement equipment	High
	Minor damage to individual items of equipment for which a spare part or replacement can be quickly mobilized to the development	Medium
	Damage resolved by on-site reserves, maintenance equipment and on-site personnel	Minor-Negligible
Reputation	Incidents attracting critical reporting requiring the company to take measures to maintain its reputation, or for which the company could be prosecuted and receive a token fine or be required to pay compensation to third parties	High
	Incidents attracting local news coverage and complaints, which involve expense in engaging local communities to apologize, clarify issues and make amends	Medium

Criteria	Significance Definition	
	An incident that does not provoke complaints	Minor-Negligible

2.8 Cumulative Impact Methodology

Cumulative environmental effects can be defined as effects on the environment which are caused by the combined results of past, current and future activities. The combined, incremental effects of human activity, referred to as cumulative impacts, pose a serious threat to the environment. While they may be insignificant by themselves, cumulative impacts accumulate over time, from one or more sources, and can result in the degradation of important resources. The following methodology was adopted:

Step 1: Scoping Phase I –

VECs, Spatial and Temporal Boundaries: This involved the identification and establishment of VECs, spatial and temporal boundaries of assessment. It further involved identification and agreement on VECs in consultation with stakeholders, determining the time frame and establishing the geographic scope. This guided on knowing whose involvement is key; and which VEC resources, ecosystems, or human values that were affected by the development. The known or anticipated cumulative impact issues within the area; concerns for cumulative impacts were identified in consultation with stakeholders, including potentially affected communities in addition to other regional assessments prepared for other projects within the area or region.

The temporal scope for the Cumulative Impact Assessment (CIA) was defined in relation to the lifespan of the Goborowater and Sanitation Project (as described in Chapter 4: Project Description) and the duration of the Project's impacts. In summary, Site Preparation and Enabling Works are scheduled to commence in 2024. The operation of the Project is scheduled to last 20 years after which decommissioning will take place. In total, the Project duration through all phases will be approximately 21 years although the Project's impacts may last beyond this date.

Step 2: Scoping Phase I –

Other Activities and Environmental Drivers: This involved the identification of other past, existing, or planned activities within the analytical boundaries. Assessment of their potential presence of natural and social external influences and stressors. This guided in knowing if there were any other existing or planned activities affecting the same VEC and if there are any natural forces and/or phenomena affecting the same VEC. Though not documented, it was reported that there are plans in the future to extend the electricity grid to the area. The development of such infrastructure in the area will further increase infrastructural developments in the form of transformers and distribution lines in the project area and neighbouring areas.

The construction works of Koboko-Yumbe-Moyo Road funded by the World Bank are likely to increase the cumulative impacts in some parts of the project areas. The road is a major road in Uganda that connects the districts of Yumbe and Moyo through Kochi Sub-county. It is an important transportation route in the region, facilitating the movement of people and goods between the two districts.

All these infrastructural development projects have similar socio-economic and biophysical impacts and all the major cumulative impacts of these projects have been highlighted in Chapter 8.

Step 3: Establish Information on the Baseline Status of VECs

This involved understanding the VEC's potential reaction to stress, its resilience, and its recovery time through the assessment of trends. This is because determination of the trend of change in the baseline condition of a given VEC over time may indicate the level of concern for cumulative impacts. Therefore, it was helpful; to know the existing condition of the VEC; establish the indicators to be used to assess such conditions; identify any other additional data needed and know those who may already have this information required. Data was limited and targeted to indicators that would allow the determination of any changes in VEC conditions as it provides a baseline condition that integrates the collective effects of all existing developments and exogenous pressures. Other developments within, or likely to overlap with, the Project AoI were noted based on the stakeholder consultations since no feasibility and surveys have been done.

Step 4: Assess Cumulative Impacts on VECs

This involved estimating the future state of the VECs that may result from the impacts they experience from various past, present, and predictable future developments through identification of potential environmental and social impacts and risks; assessment of expected impacts as the potential change in the condition of the VEC (i.e., viability, sustainability) and identification of any potential additive, countervailing, masking, and/or synergistic effects.

This guided in answering the questions on key potential impacts and risks that could affect the long-term sustainability and/or viability of the VEC; the known or predictable cause-effect relationships and the interaction of these impacts and risks to each other. Given the scale of the Project Area of Influence (AoI), particularly in relation to the project's indirect impacts, the anticipated developments considered have been prioritised based on the following criteria:

- The development's impacts are likely to overlap with the Project AoI;
- The development is of a type and scale that means it is likely to result in significant environmental and social impacts;
- The development is likely to have impacts on the VECs that fall within the scope of the CIA;
- The development is reasonably defined at the time the CIA was conducted; and

- The development is likely to proceed based on its known status.

While the CIA is not solely focused on the electricity distribution and road project works that were noted during consultations, it recognizes that electricity distribution and road project developments are the primary sources of cumulative impacts in the area that was assumed and that these developments are interrelated to a certain extent.

Step 5: Assess Significance of Predicted Cumulative Impacts

The significance was evaluated not in terms of the amount of change, but in terms of the potential resulting impact on vulnerability and/or risk to the sustainability of the VECs assessed implying evaluation of CIs in the context of ecological thresholds.

The impact assessment methods for the CIA are aligned with the methods used for the ESIA (based on the magnitude of the impact against the receptor's sensitivity). The significance of a cumulative impact is evaluated in terms of the impact on the sustainability of the VEC i.e. the risk that the threshold will be exceeded.

VEC sensitivity considers how a particular VEC may be susceptible to a given potential impact. More sensitive VECs may experience a greater degree of change, or have less ability to deal with the change, compared with less sensitive receptors that may be more resilient or adaptable. VEC sensitivity is based on multiple characteristics, namely:

- Vulnerability: the degree to which a VEC is vulnerable to change (i.e. higher sensitivity) or resilient to change (i.e. lower sensitivity). A VEC that is declining towards an unsustainable state and/or critical threshold would be of high sensitivity; and
- Value: the degree to which a VEC is valued by stakeholders or protected, with higher value receptors (based on ecological, cultural, social, economic, or other grounds) having a higher sensitivity.

The sensitivity of a receptor may be rated as high, moderate, low, or negligible based on the criteria set out in Table 2-9 below.

Table 2-8: Sensitivity Criteria

Sensitivity	Description
High	The VEC has little or no capacity to absorb change without fundamentally altering its present character, is of very high environmental value, or is of international or national importance.
Medium	The VEC has a low to moderate capacity to absorb change without fundamentally altering its present character, is of some environmental value, or of regional importance
Low	The VEC is tolerant of change without detriment to its character, is low environmental value, or local importance.

Negligible	The VEC is resistant to change and is of little environmental value.

Impact magnitude

The magnitude of a given impact is the degree of change from the baseline conditions within the Study Area, and is determined through the consideration of the following factors:

- Extent: the spatial extent e.g. the area impacted, population affected;
- Duration: how long the impact will last i.e. temporary (e.g. during construction) or long-term or permanent; and
- Frequency: how often the impact will occur (e.g. a one-off event, periodic, or continuous); and
- Reversibility: the length of time for baseline conditions to return (e.g. reversible in the short-term or long-term, or irreversible).

The magnitude of an impact can be rated as high, moderate, low or negligible based on the criteria set out in Table 2-10 below.

Table 2-9: Impact Magnitude Criteria

Magnitude	**Description**
High	Major long-term or permanent alteration to key elements/features of the baseline conditions such that the character/composition of baseline condition will be fundamentally changed.
Moderate	Permanent loss or alteration to key elements/features of the baseline conditions such that the character/composition of the baseline condition will be materially changed.
Low	Changes arising from the alteration will be detectable but the underlying character/composition of the baseline condition will be similar to the pre-development situation
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a “no change” situation.

Impact Significance

Once the VEC sensitivity and impact magnitude have been rated, the overall significance of the impact is predicted based on the risk to the sustainability of the VEC. The resulting significance level was also interpreted based on professional judgment and expertise.

2.9 Report writing

Findings of the study, discussion and recommendations were compiled and presented in this report.

2.10 Structure of the ESIA Report

The table below provides an overview of the structure and content of this ESIA Report

Table 2-10: ESIA Report Structure

Chapter
Chapter 1: Introduction
This chapter also details the purpose, need for the study, study objectives, and scope of the ESIA Report It describes the project location and infrastructure, current water supply and sanitation in the district
Chapter 2: Study Approach and Methodology
This describes the approach and methodology used during the study • A description of the ESIA process; and • A general description of the impact assessment methodology and the adopted impact significance criteria.
Chapter 3: Project Description
This section highlights details of the design overview of the proposed Goboro RGC piped water supply and sanitation system, water abstraction system, central water storage reservoir, distribution pipe network, water treatment units, proposed sanitation facilities and construction methods
Chapter 4: Policy, Legal & Institutional Framework
It provides an analysis of the policy, legal and institutional framework within which the proposed Goboro Rural Growth Piped Water Supply and Sanitation project is expected to operate. This Chapter covers relevant Ugandan and Development Partner policies, legislations and guidelines. Key Ugandan legislation governing the conduct of Environmental Impact Assessment (EIA) is the National Environmental Act No.5 of 2019 and the Environmental Impact Assessment Regulations (2020). The National Environmental Act established the National Environment Management Authority (NEMA) and entrusts it with the responsibility to ensure compliance with the EIA process in the planning and execution of development projects.
Chapter 5: Environmental & Social Economic Baseline

This section describes the major elements of the project area's environment, encompassing the physical, biological and social environment as well as the condition of the proposed project site. The information presented in this section is based on observation of the project area by the consultants as well as information from secondary literature.
Chapter 6: Consultations & Public Participation
This chapter describes the process of the public consultation conducted to identify the key issues and impacts of the proposed project. Emphasis has been placed on a fully inclusive, open and transparent public participation process and the transfer of information regarding the proposed project
Chapter 7: Project Alternatives
This section examines alternatives to the proposed development in terms of alternative water sources, alternative pipeline material, alternative project routes and sanitation options. With this information, reviewers have a basis for decision-making.
Chapter 8: Potential Environment and Social Impacts & Mitigation Measures
This section provides an evaluation of the environmental and social impacts and the corresponding mitigation strategies of the project. Prediction and analysis of possible positive and negative impacts of construction, operation and decommissioning of the proposed Goboro RGC piped water supply and sanitation system.
Chapter 9: Environmental and Social Management Plan (ESMP)
This chapter describes how the Project proposes to manage the environmental and social impacts and risks that will arise during the construction operation and decommissioning phases of the proposed Goboro RGC piped water supply and sanitation system. It presents institutional arrangements and responsibilities, Detailed ESMP, grievance Redress Mechanisms, monitoring and reporting and Management Plans.
Chapter 10: Conclusion and Recommendations

3 PROJECT DESCRIPTION, DESIGN AND IMPLEMENTATION

3.1 Nature of the project Piped Water System.

The proposed project has two components namely; the water supply component and the sanitation component. The water component will include solar-powered piped water systems with two boreholes at Maru and Malanga Village, as the water source. Each borehole will be equipped with a submersible vertical pump of capacity suitable to abstract water equivalent to the safe yield. The pumping mains from the individual borehole will deliver water to a central water storage tank in the transmission line to an elevated storage reservoir and distribution network to different areas within the project area

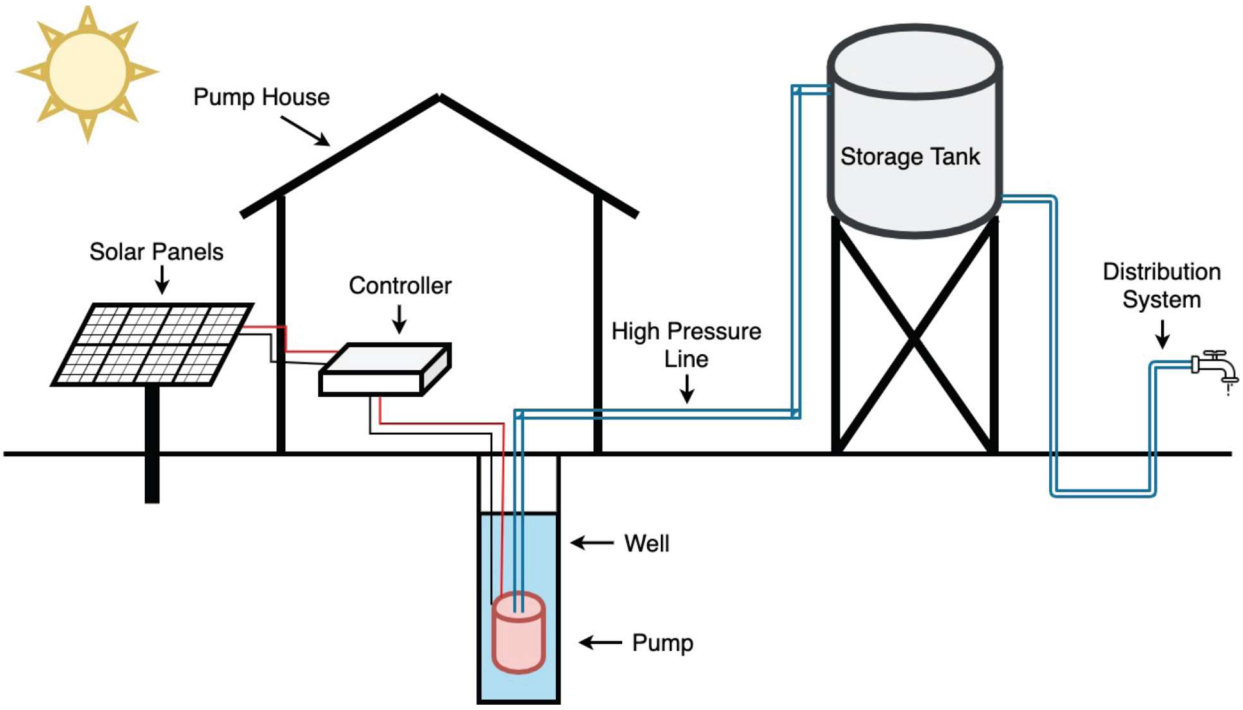

Figure: 3-1: Overview of Solar Powered Water System.

With regard to sanitation facilities, the general scope of works will involve the construction of a VIP toilet at Goboro Trading Centre.

Figure: 3-2: Goboro RGC Water Supply System Schematic Diagram

The following components of the water supply system have been designed according to the design criteria to meet the projected demand.

The designing involved hydraulic designs and sizing of the system components with due consideration of best practices.

3.2 Design Overview

According to the feasibility study report, the following components of the water supply system have been designed according to the design criteria to meet the system output capacity of 512m3/day. The designing involved hydraulic designs and sizing of the system components with due consideration of best practices.

The design has taken into consideration social, financial and environmental aspects.

3.2.1 Water abstraction system

The water development strategy is to abstract the current and projected water demand for Goboro RGC from 2 boreholes as detailed in the table below;

The water development strategy is to abstract the current and projected water demand for Goboro

RGC from 2 boreholes as follows:

• Malanga Borehole- Output	17 m^3/hr
• Maru Borehole -Output	13 m^3/hr

Total capacity: Output 30 m^3/hr = (300 m^3/day for 10 hours operation a day)

Each of the boreholes will be equipped with a submersible vertical pump of capacity suitable to abstract water equivalent to the safe yield. The pumping mains from the boreholes join at a Y-Junction to deliver water to a central water storage tank.

The borehole pump station comprises the wellhead in the middle of a 2x2m concrete platform and a 45 m^2 blockwork structure housing the pipework fittings and electrical controls. The pump station is situated on a 10,000 m^2 site that is enclosed with a 2.1m high concrete post and chain link fence. Access will be by a 3m wide gravel access road.

The submersible pump will be installed with an HDPE riser pipe, an air release valve (ARV) /vacuum breaker valve at the top of the riser, a swing check non-return valve, scour/blow-off valve and surge protection in the form of a pressure relief valve.

A helix-type bulk flow meter will be installed on the pumping main for flow measurement records.

Pumping of water is envisaged for 8 hours a day into a ground-reinforced concrete reservoir at the borehole site. From this RC reservoir, a surface pump will pump water to the main storage tank elevated at 12 m from the ground.

The pumping mains from the individual boreholes are listed in Table 3-1 below.

Table 3-1: Pumping Mains Details

Source	Pipe Material	OD (mm)	Length (m)
Malanga Borehole	HDPE PN 20	140	1,342
Maru Borehole	HDPE PN 20	110	2,160
Combination (after the junction)	HDPE PN 20	140	1,035

The quality of the water in the test pumped well displayed satisfactory results passing all the national standards for portable water requirements for water consumption.

3.2.2 Central Water Storage Reservoir

A 120 m^3 cold-pressed steel section panel water storage reservoir based on 30% of the maximum day demand of the 20th year, following Section 9.2 (ii) of the Water Supply Design Manual (January 2013-Second Edition of the Ministry of Water and Environment). The tank will be installed on raised ground to feed the distribution network. Storage capacity of 10 hours of maximum day demand to be provided.

3.2.3 Distribution pipe network

A hydraulic analysis model of the distribution pipe network layout has been analyzed with the following parameters:

- 15m elevated storage tank;
- Elevation of the nodes taken from the topographical survey;
- Pipe diameters, lengths and pipe material;

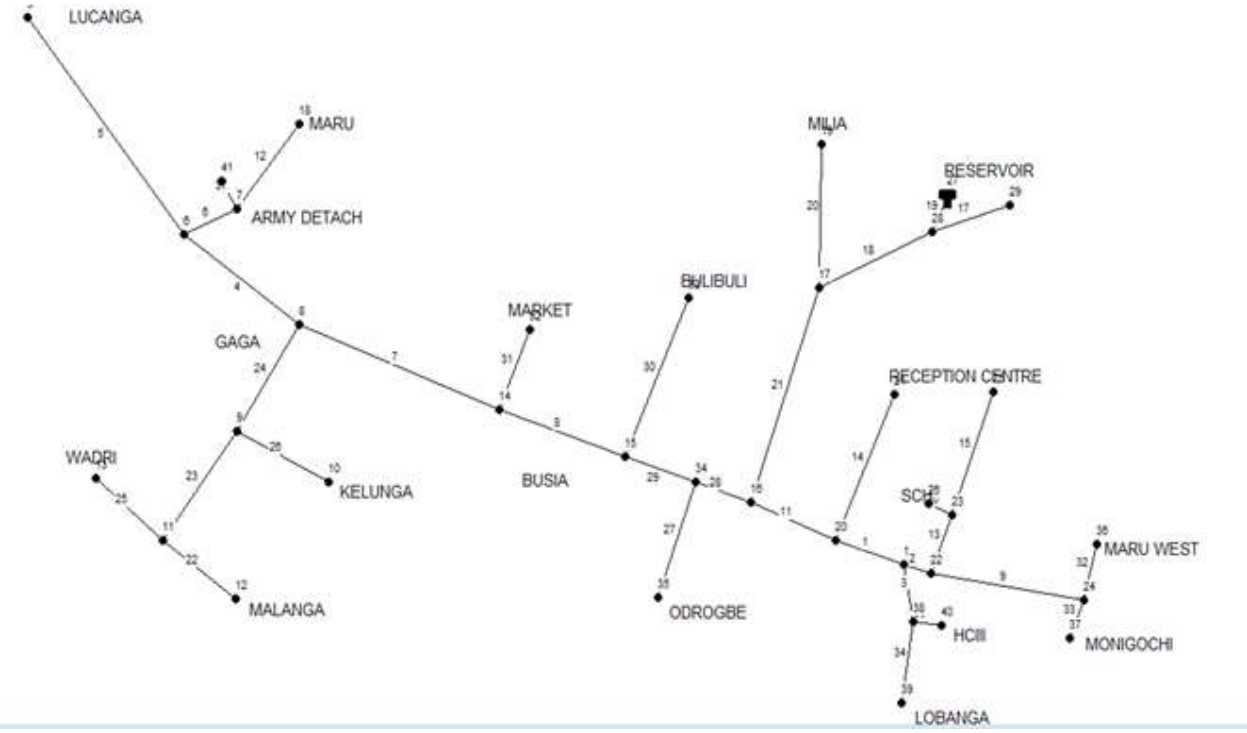

Figure: 3-3: EPANET hydraulic model (Proposed distribution pipe network)

The summary of the distribution pipe sizes and respective lengths is in the table below. The entire distribution pipe network is of a total length of 6,655 m.

Table 3-2: Summary of distribution pipe

OD	DN	Material	Length (m)
20	15	HDPE PN 10	360
25	20	HDPE PN 10	2385
40	30	HDPE PN 10	705
50	40	HDPE PN 10	735
63	50	HDPE PN 10	630
75	60	HDPE PN 10	725
90	75	HDPE PN 10	260
110	90	HDPE PN 10	250
125	100	HDPE PN 10	575
180	150	HDPE PN 10	30

Total	6,655

The area will be served with 3 PSPs, each with 2 taps. These will be located in strategic locations of the project area taking into consideration a maximum walking distance of 1.5 km, following Section 7.3.1 of the Water Supply Design Manual (January 2013-Second Edition of the Ministry of Water and Environment). However, due to the management problems associated with PSPs, more emphasis will be put on yard taps and private connections. Those who are willing to pay for yard taps and/or private connections will be connected to the system.

Where possible, distribution lines have been designed to serve communities surrounding the borehole sources. Otherwise, those communities will be catered for using water points installed outside the borehole compound.

From the above assessment that ground water is sufficient to meet the demand of Goboro RGC and the development approach will thus consist of the;

a.) Construction of 2No new borehole pumping house
b.) Supply and Installation of 2No. submersible pump
c.) Supply and laying of transmission mains from the borehole to the raw water sump
d.) Construction of a raw water sump
e.) Supply and lay clear water pumping mains from the sump to the new Storage Reservoir
f.) Construction of a new storage reservoir.
g.) Construction of a distribution network for the project area.
h.) Making new Consumer Connections.

3.2.4 Water Treatment Units

Based on the test results of the borehole water sources that are within the national drinking water standards, the water from the project boreholes may not require treatment. However, it is recommended as a minimum requirement, for precaution, to provide for filtration and disinfection because of the plausible abrupt change in suspended solids and microbiological qualities that could be harmful to human health.

Filtration to inline micro-filter to manufacturer's specification based on the pumping flow rate.

The dosing of calcium hypochlorite for disinfection will follow the design criteria below:

a) Chlorine solution strength 10%
b) Effective chlorine content 65%
c) The specific gravity of hypochlorite solution

The chemical storage, mixing and dosing will be performed at the borehole source site in a separate room at the top of the sump. A set of two DOSATRON inline proportional chemical dozers to dose chlorine solution from the mixing tanks directly into the pumping mains and in response to a pressure differential, a device shall be installed in the pumping main. The pressure differential device shall be an orifice plate or a venturi meter.

3.2.5 Land Take and Acquisition

The project will acquire land for all project-related components. The ESIA assessed the conditions of the sites. The risks and challenges related to land acquisition were assessed in relation

(relocation, loss of residential land, or loss of shelter), economic displacement (loss of land, assets, or access to assets leading to loss of income sources or other means of livelihood); alternative sites and possibility of land conflicts.

3.2.5.1 Total Land requirements

The project will require land to host project infrastructure. According to the design consultant, pipelines are to be laid along roads and within road reserves. A working corridor of 3 m along the pipelines is anticipated. Working corridors will be restored after completion of work, and repossessed by the respective owners. Although MWE and the design consultant do not anticipate land take for pipelines, it's better to assume that land take will be mandatory for the entire water transmission/distribution pipeline. Total land requirements for the Goboro WSS have been estimated at **14.50 acres.** However, the project case scenario is that the treated water transmission main and primary distribution network will follow the road reserve hence actual land required for the project is **8.30 acres.** This excludes land requirements for access road construction which will be determined by the contractor and based on his approach to the assignment. Details of various land takes are presented in the table below.

Table 3-3: Land requirements for the proposed project

Scheme	Component	Dimensions (m)		AREA		
		Length	**Width**	**m^2**	**Acres**	**Hectares**
Goboro	Borehole (Maru)	100	100	10,000	2.47	1.00
	Borehole (Malanga)	100	100	10,000	2.47	1.00
	Reservoir	70	60	4,200	1.04	0.42
	Office	30	30	900	0.22	0.09
	Total	270	260	**24,200**	**5.98**	**2.42**
Land requirements for the raw water mains, transmission and primary distribution assuming a width of 3 meters						
Scheme	**Component**	**Details**			**Length (km)**	**Land need (acres)**
Goboro	Transmission Pipe 1 from Borehole 1 to the Proposed Reservoir	A 3-meter width easement corridor			4,537	3.36
	Distribution Pipe	A 3-meter width easement corridor			6,655	4.93
	Total				**9,032**	**8.30**
Total land requirements for all infrastructure (acres)						**14.50**

Note Primary distribution mains to follow road reserve hence no need for land acquisition since it is public land. Therefore, the actual land to be acquired is approximately ***8.30 acres***

The project will also require land for the establishment of auxiliary sites such as the Contractors' camp. This ESIA did not assess the land requirements for such sites hence in the event that land is required during the construction phase, the Contractor should engage and agree with the landlords on how to access land needed for the auxiliary sites. Hence memorandum of Understanding (MoUs) may be signed between the Contractor and the Land Lord.

3.3 Proposed Sanitation Systems

3.3.1 Waste water disposal

Wastewater will be produced due to the increased consumption of water after the installation of the piped water supply system. However, a centralized conventional water-borne sewerage system is not practical in the project area due to the low levels of water consumption rate, the semi-permanent type of housing structures and affordability by the majority of the residents.

Soak-away pits are recommended for wastewater disposal for households, institutions and public places that cannot afford a water-borne system such as septic tanks.

3.4 Faecal waste management facilities

3.4.1 Households and institutions

Households and institutions without plumbing fixtures will continue using pit latrines for human/faecal waste disposal.

Households and institutions with water-borne sanitation facilities and private water service connections are expected to have septic tanks for faecal waste treatment. These facilities should be private installations.

Households and institutions should be encouraged to construct lined pits that can be emptied when filled. Line pit latrines save on cost and space in constructing new latrines when the old ones are full. The pit lining also minimizes ground water pollution in the area.

3.4.2 Public places

Public places such as taxi/bus parks, market places and stadia need to be provided with public waterborne sanitation facilities. The maintenance of public sanitation facilities should be the responsibility of the authorities of the respective public places. The sanitation facility will be constructed at the Goboro Trading Centre

The feasibility study proposed the construction of one (1 No.) waterborne toilet type and Hand Washing facility at Goboro Trading Centre at a location to be agreed upon with the sub-county administration. This is because there is virtually no public toilet in Goboro Trading Centre to serve the market area and the centre.

The designs for toilets for institutions and public places should be designed with separate facilities for males and females with consideration for persons with disabilities.

The components of the facilities are listed below;

Table 3-4: Components of the Sanitation Facilities

	Male side	**Female side**
Number of toilet stances	3	4
Number of shower stances	3	3
Number of toilet stances for PWDs	1	1
Number of shower stances for PWDs	1	1
Urinal	1	
2000 litre overhead tank	1	1
Biodigester Septic tank with associated soak pit		
Handwash facilities		
3000 litre Rainwater harvesting tank		

3.4.3 Faecal sludge management

A central faecal sludge management facility is under construction in Yumbe town council for further treatment for the safe disposal of sludge from the septic tanks.

Sensitisation campaigns should be carried out in the project area for the above-proposed interventions.

3.5 Ancillary Buildings

Buildings will be required to be constructed for the operation of the water supply system including the following;

Table 3-5: Ancillary Buildings

• Pump houses	45 m^2 pump house at each borehole station
• Chemical dosing house	3.0 x 6.0m building at the water reservoir site to house the chlorine dosing equipment and chemical storage
• Office and laboratory building	110 m^2 office building, laboratory and tools store
• Staff house (optional)	96 m^2 residential building to house two staff

3.6 Energy Provision

A solar system has been designed to supply each borehole station. The required solar power system is to comprise the following components.

Table 3-6: Borehole solar power system specifications

Location	Specifications
• Malanga BH DWD 69426	Flow rate (q) = 17m^3/h Workload = 200 m Daily Power Demand for 8 hours = 105.89 KWhr • PV Power rating = 300Wp • No. of Solar Panels = 100 Panels • PV panels per array = 10 Panels • Inverter rating = 22KW, 3phase • Total No of 30KW inverters required = 7
• Maru BH DWD 69426	Flow rate (q) = 13m^3/h Workload = 200 m Daily Power Demand for 8 hours = 80.97 KWhr • PV Power rating = 300Wp • No. of Solar Panels = 80 Panels • PV panels per array = 10 Panels • Inverter rating = 22KW, 3phase • Total No of inverters required = 6

Location	Specifications
• Goboro Reservoir site	Flow rate (q) = 30m³/h Workload = 20 m Daily Power Demand for 8 hours = 10.59 KWhr • PV Power rating = 300Wp • No. of Solar Panels = 20 Panels • PV panels per array = 10 Panels • Inverter rating = 22KW, 3phase • Total No of inverters required = 2

The specifications for electrical wiring, installations and fittings shall be of approved international standards.

In conclusion, except for the high initial costs and the large space for land take, the solar system offers more cost-effective operation and maintenance costs over the design horizon and would therefore be the preferred option.

3.7 Construction Activities

3.7.1 Project Phases

a.) ***Mobilization Phase*** - This phase will involve the the mobilization of the construction human resources, equipment, construction materials, erection of a temporary worker's camp and storage yard. The location of the project temporary camp will be agreed upon with the local leadership, landowners and contractor.

b.) ***Construction Phase*** **-** All project activities under this phase are supposed to be carried along the tracks, routes and access paths within the boundaries of the identified project sites without disturbing or obstructing the neighbours and businesses. To ensure this, the contractors will seal off the site perimeter with corrugated iron sheets or other suitable material during project implementation. In the case of trenches, proper barricades shall be applied to warn and protect the people from the impending dangers of falling into open pits and trenches. Upon completion of preliminary activities and on-site investigations, actual construction of the project components and facilities will start which will involve:

- **Earthworks:** The earthworks shall include; site clearance, general filling, excavation and trenching can be carried out either by manual labour or mechanical equipment depending on the size of quantities and complexity.
- **Concrete works;** Concrete production is expected to be by the use of concrete mixers. Manual production for small works and where the use of a mixer may be impractical will be employed.
- **Structural Steel:** The lifting of heavy structural steel sections will be done by cranes. The steel sections will be joined by either bolts or welding.
- **Reinforcement Steel fixing;** Various sizes of reinforcement steel bars will be cut to required lengths and bent to design shape either manually or by machines and will be placed and fixed for the works by manual labour.
- **Masonry:** All masonry work is to be done by manual labour using the necessary hand tools.

- **Pipe laying:** Pipe laying is expected to be carried out by manual labour using the necessary hand tools and pipe lifting equipment for the heavy pipes.
- **Electro-Mechanical Installations:** All electro-mechanical installations are to be carried out by manual labour using the necessary hand tools and mechanical lifting equipment by qualified personnel

3.8 Project Management

During the construction phase, the project shall have a supervising consultant who shall oversee the implementation of the project on behalf of the developer. The supervising consultant will have in place an environmental and social safeguards team comprising a Health & Safety officer, an environmental safeguards officer, social safeguards officer, among others.

The operation and management option is to hand over the water supply system and public sanitation facilities to the Northern Umbrella of Water and Sanitation (NUWS). Within the decentralization framework, the experience and capacity of the Umbrella organization, applied directly to the management of the newly constructed facilities will increase the likelihood of sustainable commercial operations and management of the systems in the next 5-10 years. The Umbrella organisation is under the Urban Water Department of the Ministry of Water and Environment and can effectively plan and manage budgets agreed upon within a contract framework.

3.8.1 Labor Force

Approximately 150 workers will be required for the contractor, along with 10 for the supervising consultant, 10 for the stakeholder engagement consultant, and 5 for the Ministry of Water and Environment (MWE), during the construction phase of the proposed Goboro RGC solar motorized piped water supply and sanitation project. There will be about 175 personnel at the project site, split up into categories including key staff, skilled, semi-skilled, and unskilled labourers. Seventy percent of these workers are expected to be locals, and their management will follow World Bank safeguard policies, environmental, health, and safety norms, as well as Ugandan labour laws.

3.8.2 Equipment

The equipment that will be used during the construction of the Goboro RGC water supply and sanitation project includes:

Excavators: Used for digging trenches and excavating earth for the installation of pipelines and other structures.

Excavator Compactors: These are excavators equipped with compaction attachments, such as vibrating plates or drum compactors, that can be used to compact soil or other materials after excavation.

Bulldozers: Used for clearing and levelling the ground.

Dump trucks: Used for transporting materials such as gravel, sand, and earth.

Wheel loaders: Used for loading and transporting materials on-site.

Backhoes: Used for digging trenches and other excavation work.

Compactors: Used for compacting soil and other materials to create a stable base for construction.

Concrete mixers: Used for mixing and pouring concrete for structures such as foundations and water tanks.

Pipe laying equipment: Used for laying and connecting pipes for the water supply system.

Cranes: Used for lifting heavy materials and equipment.

Welding equipment: Used for welding pipes and other metal structures.

Pumps: Used for pumping water during construction and for testing the water supply system.

Generators: Used for providing power to equipment and tools on-site.

3.9 Demobilization Phase

The demobilization phase will involve clearing the project site of all construction and unwanted material. The disposal of any unwanted material will be done by the contractor. The waste materials may include packaging, wood, steel crates, cardboard, wrapping materials, construction debris, boxes, sacks, drums, cans, chemical containers etc. Damaged areas will need to be restored before commissioning the project. Upon completion of the contractor's obligations, the contractor will hand over the project to MWE, the client.

3.10 Operation Phase –

This will involve the employment of operators both skilled and unskilled, operation of the water supply and sanitation system, maintenance of the facilities put in place, etc.

4 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

This section presents a summary of key policies, laws, regulations and guidelines relevant to the environmental and social management of the project. It also identifies agencies, departments and institutions responsible for the monitoring and enforcement of legal requirements specified therein.

Key Ugandan legislation governing the conduct of Environmental Impact Assessment (EIA) is the National Environmental Act No.5 of 2019 and the Environmental Impact Assessment Regulations (2020). The National Environmental Act established the National Environment Management Authority (NEMA) and entrusts it with the responsibility to ensure compliance with the EIA process in the planning and execution of development projects.

4.2 National Policies Framework

Table 4-1: National Policy Framework

Legislation	Key provisions/requirements	Application to the proposed project
Policies and Strategies		
The National Environmental Management Policy, 1994	The overall goal of the policy is the promotion of sustainable economic and social development that enhances environmental quality without compromising the ability of future generations to meet their needs. The policy states that an Environmental Impact Assessment should be conducted for a policy or project that is likely to have impacts on the environment. The developer has prepared an ESIA to address environmental and social issues.	With reference to this project, the preparation of this ESIA is consistent with the provisions of the policy. In addition, the provisions in this policy are consistent with the World Bank safeguards policies that require the preparation of environmental and social assessments for development projects before their implementation.
The National Land Use Policy 2006	The overall goal for the national land use policy is "To achieve sustainable and equitable socio-economic development through optimal land management and utilization in Uganda".	Policies, programs and projects can be used to effectively implement land use plans. The locations for the facilities shall be in line with the land policies
National Policy for the Conservation and Management of Wetland Resources 1995	The policy aims at curtailing the rampant loss of wetland resources and ensuring that benefits from wetlands are sustainable and equitably distributed to all people of Uganda. The policy calls for the application of environmental impact assessment procedures on all activities to be carried out in a wetland to ensure that wetland development is well-planned and managed.	Application of environmental impact assessment procedures on all activities to be carried out in a wetland to ensure that wetland development is well-planned and managed
Buy Uganda Build Uganda (BUBU) policy, 2014	BUBU is relevant to the project because it encourages the production, purchase, supply, and consumption of local goods and services. BUBU also provides capacity-building programs to local suppliers of goods and services.	Such Projects are one of the places where BUBU can be promoted by ensuring locally produced goods are accessed.
The Uganda National Land Policy, 2013	In support of the national objectives on poverty eradication and economic growth, while at the same time ensuring sustainable utilization of	This is expected to improve the prosperity of the communities.

	natural resources including land and water, the National Land Policy's main goal is 'to ensure an efficient, equitable and optimal utilization and management of Uganda's land resources for poverty reduction, wealth creation and overall socio-economic development'.	
The Uganda Forestry Policy, 2001	This policy aims at sustainable management of the forest resources in protected areas, public and private land. It also aims to promote increased forest production by the private sector and communities. This policy was drafted on the understanding that Uganda is endowed with a rich diversity of forestry resources, but that these resources are highly threatened by over-exploitation	The construction will lead to the loss of some planted trees. However, the contractor will plant some trees at the end of project works on available spaces on the site
The National AIDS Policy and National HIV/AIDS Strategic Plan 2015/16- 2019/20	This Policy underlines the link between GBV and HIV along with recognizing gender-based HIV vulnerability and all aspects of cultural attitudes and practices regarding sex and sexuality that put women at risk. The policy emphasizes integrating sexual and gender-based violence (GBV) prevention and human rights into HIV prevention programming. The policy among others encourages scaling up of comprehensive sexual and reproductive health (SRH)/HIV programmes targeting vulnerable populations such as adolescents (both inside and outside schools) and young people, women, girls and people with disabilities.	The provision of HIV/AIDS services by the contractor such as voluntary counselling and testing as well as free condom distribution can reduce risk.
National Gender Policy (NGP), 2007 and National Action Plan on Women (2007)	This Policy focuses on promoting gender equality and empowerment of women and provides a strategic framework that guides the implementation of gender-focused interventions to combat gender-based violence. The priority area on gender and rights commits the Government and other actors (including CSOs, and UN agencies) to develop and implement interventions to combat gender-based violence in all its forms and at all levels.	Key in the project is, that the policy outlines the legitimacy of gender equality as a fundamental value that should be reflected in Uganda's development choices, poverty reduction strategies and institutional practices which no doubt is consistent with the Banks safeguards policy on gender.
The National Water Policy, 1999	The objective of the policy is to guide the development and management of the water resources of Uganda in an integrated and sustainable manner, to secure and provide water of adequate quantity and quality for all social and economic needs, with full participation of all stakeholders and mindful of the needs of future generations.	Construction will require water which poses a risk of conflict in case the contractors use domestic water sources such as the community stand taps. The contractor will secure the required water abstraction permits from the Directorate of Water Resources Management (DWRM).
National Policy on Elimination of Gender-Based Violence, 2016	The policy emphasizes early intervention to prevent re-victimization of and long-term effects for girls, including interpersonal violence, sexual coercion, alcohol and drug abuse and mental health problems, Reporting cases of violence against children immediately.	There is an acknowledged existence of Sexual and gender-based violence (SGBV) in the community. The common forms of SGBV include sexual advances, assault, rape, fraud and verbal abuse. The Contractor should have a sexual harassment policy that is communicated to all workers as well as continuous sensitization on GBV, risk and prevention mechanisms. During operation, the water user management committees will require

		training and capacity building in gender and child protection issues.
National Policy on HIV/AIDS and the World of Work, 2007	The policy obliges developing entities to mainstream HIV/AIDS interventions alongside the planned developments. defines the roles of key stakeholders namely government, employers, workers and the private sector including the informal sector, people living with HIV/AIDS, civil society organizations and development partners. Amongst the roles of employers is the formulation of a sound HIV/AIDS policy, around the principle of non-discrimination, equality, confidentiality, care and support and incorporation of HIV/AIDS training into new worker inductions.	HIV/AIDS mainstreaming is a contractual obligation that will involve collaboration with nominated service providers for HIV/AIDS. The contractors may also sign MoUs with health centres. It is strongly recommended that the services be extended beyond the construction workers to include the immediate surrounding communities.
Laws		
The Constitution of the Republic of Uganda, 1995	The Constitution is the supreme law of Uganda and it provides for the protection of the environment while it's Article 39 guarantees the right of every Ugandan to a clean and healthy environment. The constitution, therefore, requires that the project be implemented without endangering human health and the environment.	Civil works must be undertaken within the observance of the constitutional rights and responsibilities of the public and state.
The National Environment Act 2019	The new National Environment Act was passed to repeal, replace and reform the law relating to environmental management in Uganda. Every developer must undertake an environmental assessment for projects listed in Schedule 5 of the Act and a Project Brief for projects listed in Schedule 4. 28. Functions of district environment and natural resource committees. (1) The functions of the district environment and natural resources committee are— (f) to monitor all activities within its local jurisdiction to ensure that such activities do not have any significant impact on the environment. (2) The district environment and natural resources committee shall receive funding from among the sources of funds available to the urban or district council for performing its functions under this Act.	For all new materials sites to be established for the project, NEMA approval must be secured while all existing sites should undertake/provide proof of compliance such as having undertaken corrective actions emanating from their environmental compliance audits. The Contractor should work closely with the District Environment Officer to identify sites where construction waste can be reused or disposed of. Yumbe district environment and natural resource committees will be involved in periodic monitoring of the project both during the construction and operational phases. The Yumbe District Environment Officers will participate in the review of environmental and social impact assessment reports, environmental audit reports and other reports to be submitted to NEMA regularly.
The Physical Planning Act 2010	The Act is to provide for the establishment of a National Physical Planning Board; to provide for the composition, functions and procedure of the Board; to establish district and urban physical planning committees; to provide for the making and approval of physical development plans and the applications for development permission; and for related matters.	"Local physical development plan" means a plan for an area or part of an area of a city, municipal, town or urban council and includes a plan with reference to any trading centre, marketing centre or rural area. The project is expected to be in line with the approved physical development plans of the area

The Land Acquisition Act, 1965	This Act provides for the acquisition of land after its valuation and along approved procedures which ensure adequate, fair and timely compensation to the landowners.	Land acquisition is envisaged for some project components that will be constructed on private land
The Historical Monuments Act, 1968	The Act provides for the preservation and protection of historical monuments and objects of archaeological, paleontological, ethnographical and traditional interest and other matters connected therewith. Section 2 provides for the declaration of preserved objects and sub-section (1) mandates preservation of an object of archaeological, paleontological, ethnographical, traditional or historical interest.	Some cultural sites or objects of significance to indigenous communities might be unearthed/encountered during construction. Necessary consultations should be undertaken, and a process followed in line with the requirements of this Act.
The Local Governments Act, Cap 243 as amended	The Local Governments Act (LGA) operationalizes the principle of decentralization enshrined in the Constitution. The Act accordingly establishes local governments and administrative units in Uganda and empowers them to manage the development of their respective areas of jurisdiction. In managing development, the law mandates local governments and administrative units to provide certain services.	The proposed project is within the jurisdiction of Yumbe Local Governments headed by a Local Council V (LC V) Chairman and Chief Administration Officer (CAO) who are the political head and technical head respectively. Various district offices whose functions would be relevant to the project include offices of Natural Resources/Environment, District Health Inspector, District Planner, Community Development Officer, District Director of Health Services, District Water Officer, Town Council and District Engineer. Equally important is village-level local council administration (LC I and LC III). Leaders at these levels of local administration are closer to residents and therefore important in effective community mobilization, sensitization and dispute resolution. Local government structures are important for mobilizing support for the project as well as monitoring its social-environmental impacts both during the construction and operation phases.
Public Health Act, Cap 281	Section 105 of the Public Health Act imposes a duty on the local authority to take measures to prevent any pollution dangerous to the health of any water supply that the public has a right to use for drinking or domestic purposes.	The developer and the contractor will take all lawful, necessary and reasonable measures to ensure the general public safety in relation to any likely negative impacts/cause nuisance or contravening this Act as a result of the project.
The Water Act Cap, 152 1997	The Act provides for the use, protection and management of water resources and supply in Uganda. The Water Resources Regulations of 1998 established under this Act stipulates a requirement to apply for a permit to construct, own, occupy or control any works on or adjacent to the land as per Regulation 10.	Any disposal of waste shall need to be in line with the waste discharge regulations; proper management of fuel/oil spills is essential for minimizing the chances of water contamination. The effluent discharged must meet the standards.
Traffic and Road Safety Act, Cap.361	Section 119 of the Traffic and Road Safety Act stipulates that every person who uses, parks or stands a motor vehicle, trailer or engineering plant on any road carelessly or without reasonable consideration for other persons using the road commits an offence.	The contractor is to ensure the worthiness of vehicles, manage the speed of the vehicles as well and establish a considerate parking site during construction to avoid inconveniences to other road users.
The Occupational	Safety and Health Act, 2006	The Occupational Safety and Health Act of 2006 makes provisions for the health, safety, welfare and appropriate training of persons employed in

		workplaces. It makes it mandatory for employers to have more than 20 workers in place implement a Health and Safety policy and provide adequate safety gear to workers.
The Land Act, Cap 227, of 1998	The Land Act, Cap 227 of 1998 provides for the tenure, ownership and management of land. Under Section 44 the Government or the local government shall hold land in trust for the people and protect natural lakes, ground water, natural streams, wetlands and any other land reserved for ecological purposes for the common good of Ugandans.	The Land Act vests land in Uganda to the people in relation to the four land tenure systems.
The Employment Act, 2006	The Employment Act 2006 is the governing legal statutory instrument for the recruitment, contracting, deployment, remuneration, management and compensation of workers. The Act Mandates Labour officers to regularly inspect the working conditions of workers to ascertain that the rights of workers and basic provisions are provided, and workers' welfare is attended to.	Persons employed by the project need to be issued with contracts and their welfare taken care of by the employer.
The Workers' Compensation Act, Cap. 225	The Worker's Compensation Act outlines responsibilities and obligations for both parties (employer and employee) in guaranteeing the safety and health of the workers. The Act outlines matters of compensation for injuries and accidents as well as the responsibility of employees to take care of their health and safety while on the project.	Employers/contractors must have in place a workers' compensation insurance policy.
The Road Act, Cap 358	The Road Act (Cap 358 of the Laws of Uganda) provides for the need to maintain basic control over developments along roads to ensure maintenance of clear visibility along sections of the road in line with safety needs.	The contractors of the project in different sites are obliged to ensure safety along the access roads by use of safety signage, speed limits, traffic controllers and humps.
The National Forestry and Tree Planting Act, 2003	Section 38 of this Act requires that a person intending to undertake a project or activity, that may impact a forest, should undertake environmental and social impact assessment studies to evaluate the magnitude and extent of forest destruction and the mitigation measures for salvaging the forest.	Some project sites have some trees that are likely to be cut down during project implementation, hence, the need for a detailed assessment of impacts across such sites.
Labour Disputes (Arbitration and Settlement) Act, 2006	The Act amongst others, makes provision for referring disputes to the industrial court subject to the discretion of the labour officer and circumstances of the agreement or disagreement.	The Act is applicable concerning the protection of the project workers, during both construction and operation phases, against any disputes between the workers and the labour officer
Children Act Cap 59	The act defines a child as a person below the age of 18. It lists the right for children to be with their parents, circumstances under which they should not, foster care and adoption procedures as well as mandates of local authorities and roles of community.	There is a marked presence of children around the project area. Some children may seek contract employment and think that they do not need school to make it in life since they already have ideas and knowledge on how to make money. Secondly, when school starts, some children might drop out of

		school to continue with work. Child labour is prohibited during project implementation.
Regulations		
The Environmental Impact Assessment Regulations, 2020	This is a frame guide on how ESIA for development projects is to be conducted and what fees are to be paid for approval purposes of the project.	The developer has prepared this ESIA with a particular focus on the content specified within the First Schedule of these Regulations.
The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, No. 3/2000	The objective of these regulations is to; provide for the conservation and wise use of wetlands and their resources in Uganda, give effect to clause 2 of article 237 of the constitution of Uganda, ensure water catchment conservation and flood control, ensure the sustainable use of wetlands for ecological and tourist purposes for the common good of all citizens, ensure that wetlands are protected as habitats for species of Fauna and Flora, provide for the regulated public use and enjoyment of wetlands, enhance research and its related activities, minimise and control pollution.	However, for cases where the Contractor identifies a good source of materials (sand), then a sand mining permit must be secured from NEMA.
The Water Resources Regulations, 1998	These regulations are meant to ensure that the abstraction of water and discharge of wastewater is carried out sustainably and that water resources are protected from over-exploitation and pollution	Construction will require water that will be abstracted from nearby rivers to avoid conflicts with communities over water sources.
National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999	These regulations provide standards for effluent discharge. Section 6 (2) details the maximum permissible limits for 54 regulated contaminants, which must not be exceeded before the effluent is discharged into water or on land.	Construction activities will generate effluent waste. The contractor should employ appropriate measures to manage effluent waste generated by project activities. Regarding wastewater and human waste, the design has provided for 1 toilet both with separate stances for men, women and PWDs.
The National Environment (Noise Standards and Control) Regulations, 2003	Part III Sec. (1) requires machinery operators to use the best practicable means to ensure that the emission of noise does not exceed the permissible levels.	Noise will be one of the undesirable consequences of the construction phase arising from construction equipment and haulage fleet, works and workers. Noise generation is inevitable during construction activities, these standards shall apply.
The Waste Management Regulations of 2020	The Regulations require waste disposal in a way that would not contaminate water, soil, and air or impact public health. Regulations require a person who owns or controls a facility or premises, which generates waste to minimize the waste generated by adopting cleaner production methods.	These provisions apply to the proposed Goboro RGC Water Supply and Sanitation Project with respect to the construction process, domestic waste and construction waste. The contractor and other institutions responsible for the generation of this waste shall comply with the provisions of this regulatory standard

4.3 Key international environmental and social laws

4.3.1 International Protocols and Conventions

Table 4-2:International Protocols and Conventions

International Protocols and Conventions	Key Provisions and Relevancy
African Convention on the Conservation of Nature, 1968	Encourages individual and joint action for the conservation, utilisation and development of soil, water, flora and fauna for the present and future welfare of mankind, from an economic, nutritional, scientific, educational, cultural and aesthetic point of view.
United Nations Framework Convention on Climate Change (UNFCCC), 1992	The Convention requires parties to avoid adverse effects on the environment and adopt measures and policies to control carbon dioxide emissions in technologies, considering their common, yet differentiated responsibilities, as well as their specific national and regional development priorities, objectives and circumstances. They are required to take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example, impact assessments, formulated and determined nationally, with a view to minimising adverse effects on the economy, on public health and on the quality of the environment of projects or measures undertaken by them to mitigate or adapt to climate change.
United Nations Convention to Combat Desertification (UNCCD), 1994	Binding international agreement linking environment and development to sustainable land management. The Convention addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and peoples can be found. The 10-Year Strategy of the UNCCD (2008-2018) was adopted in 2007 *to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability.*
Montreal Protocol for the Protection of the Ozone Layer, 1987	The protocol was designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. All of the ozone-depleting substances controlled by the Montreal Protocol contain either chlorine or bromine (substances containing only fluorine do not harm the ozone layer). The provisions of the Protocol include the requirement that the Parties to the Protocol base their future decisions on the current scientific, environmental, technical, and economic information that is assessed through panels drawn from the worldwide expert communities.
Stockholm Convention on Persistent Organic Pollutants, 2001	Protects human health and the environment from Persistent Organic Pollutants that remain intact in the environment for long periods and can become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife, which can lead to serious health effects.
International Labour Organisation Convention, 1998	Sets out basic principles and labour rights at work, based on international best practices.

4.3.2 World Bank Operational Policies

The Operational Policies provide a basis on which the World Bank screens proposed projects to determine the appropriate extent and type of Environmental Assessment to be undertaken. The Bank classifies proposed projects as Class A, B, C or F1 depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts. The categorization of projects is based on an assessment of their likely environmental and social impacts. Below is a brief description of the different categories:

- **Category A Project:** which may have potentially significant adverse social or environmental impacts that are diverse, irreversible, or unprecedented;
- **Category B Project:** may have potentially limited adverse social or environmental impacts that are few, generally site-specific, largely reversible, and readily addressed through mitigation measures;
- **Category C Project:** likely to have minimal or no adverse social or environmental impacts, including certain financial intermediary projects with minimal or no adverse risks; and
- **Category FI Project**: Assigned to business activities undertaken by Financial Intermediaries or through delivery mechanisms involving financial intermediation.

The table below summarizes safeguards policies that were triggered by the project.

Table 4-3: World Bank Operational Policies

OP No.	World Bank Safeguards Operational Policies triggered by the project	Triggered/Not Triggered	Key Provisions and Relevance
OP 4.01	Environmental Assessment	Triggered	In general, the project falls under Category B of the World Bank´s classification of projects requiring an ESIA/ESMP given that its potentially adverse environmental and social impacts will be site-specific, few if any are irreversible, and in most cases, mitigation measures can be readily designed. Additionally, the World Bank Environment Health and Safety Guidelines (EHSGs), with specific reference to the EHSGs for water and sanitation projects, apply to the project.
OP 4.04	Natural Habitat	Triggered	The Bank supports the protection, maintenance, and rehabilitation of natural habitats and their functions. The conservation of natural habitats is essential for long-term sustainable development. The project will pass through some seasonal wetlands and bushes and therefore OP 4.04 is triggered due to the potential loss or degradation of natural habitats as a result of physical project activities
OP 4.12	Involuntary Resettlement	Triggered	This is the guiding policy when a project results in involuntary resettlement. OP 4.12 describes the detail and elements that a resettlement plan should include. These include objectives, potential impacts, socio-economic studies, legal and institutional framework, eligibility, valuation and compensation of losses, resettlement measures, relocation planning, community

OP No.	World Bank Safeguards Operational Policies triggered by the project	Triggered/Not Triggered	Key Provisions and Relevance
			participation, grievance redress procedures, implementation schedule, costs and budgets, and monitoring and evaluation. This report conforms to the WB policy requirement on contents and structure. OP 4.12 is triggered due to land acquisition at the water intake, and water storage tanks.
OP 4.11	Physical Cultural Resources	Not Triggered	This policy gives guidelines for the preservation of cultural property and seeks to avoid their elimination, otherwise, mitigation activities be undertaken to limit the adverse impacts as far as possible. Whereas there are no serious cultural properties along the proposed water transmission and distribution corridors, chance finds could be encountered during construction especially while trenching channels for the water transmission pipes. Detailed in the ESMP are measures to mitigate impacts on cultural properties. PCRs identified within the project area include graves and places of worship. Excavations may encounter and find items of archaeological/paleontological value. Hence a chance finds procedure has been developed for this project.
	World Bank Policy on Access to Information (July 1, 2010)	Triggered	This policy is triggered since there is a need for disclosure of information to all the stakeholders. There is a need for disclosure of information to all the stakeholders. Compliance shall be ensured by disclosing the information to all the stakeholders such as district technocrats, sub-county leadership, Local council leaders, and communities among others during the consultation process and the information is accessible.
OP 4.36	Forests OP/BP 4.36	Not Triggered	The proposed site for project implementation and the immediate neighbourhood do not have any forest or land gazetted as a forest reserve
OP 4.09	Pest Management OP 4.09	Not Triggered	No application of pesticides is envisaged in the project

4.3.3 The World Bank Group Environmental, Health and Safety Guidelines for Water and Sanitation project

The EHS Guidelines for water and sanitation projects include information relevant to the operation and maintenance of (i) potable water treatment and distribution systems, and (ii) collection of sewage in centralized systems (such as piped sewer collection networks) or decentralized systems (such as septic tanks subsequently serviced by pump trucks) and treatment of collected sewage at centralized facilities. The document lists environmental issues, occupational health and safety concerns and community health and safety impacts that are associated with water and sanitation projects. All the issues presented in these guidelines were either taken care of at the design stage or are discussed and mitigated as part of this report.

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more guidelines are applied as required by their respective policies and standards. The industry sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which guides users on common EHS issues potentially applicable to all industry sectors.

The guidelines shall govern both workers' (occupational) safety and public safety. The applicability of the EHS Guidelines tailored to the hazards and risks established for each project based on the results of an environmental assessment in which site-specific factors are considered members of the World Bank Group are involved in a project, the EHS

The guidelines provide for effective management of environmental, health, and safety (EHS) issues entails the inclusion of EHS considerations in the project activities through:

a) Identifying project hazards and associated risks as early as possible;
b) Involving EHS professionals, who have the experience, competence, and training necessary to assess and manage EHS impacts and risks, and carry out specialized environmental management functions
c) Understanding the likelihood and magnitude of the risks
d) Prioritizing risk management strategies to achieve an overall reduction of risk to human health and the environment;
e) Favouring strategies that eliminate the cause of the hazard at its source;
f) Incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences;
g) Preparing workers and nearby communities to respond to accidents;
h) Improving EHS performance through a combination of ongoing monitoring of facility performance and effective accountability

The following has been considered when assessing the potential risks related to health and safety

a) Infrastructure and Equipment Safety
b) Hazardous Materials Safety
c) Environmental and Natural Resource Issues;
d) Community safety and exposure to project-related risks
e) Emergency Preparedness and Response.

4.4 Institutional framework

The Project will be implemented by the Ministry of Water and Environment (MWE) and the host District Local Governments of Yumbe.

Ministry of Water and Environment as the Developer is responsible for the management, coordination and supervision of project activities including the implementation of environmental and social safeguards requirements as detailed in the ESMP.

However, during construction, the Contractor will be responsible for the day-to-day implementation of the ESMP but under the direct supervision of the MWE. Legally, the host district local governments are responsible for day-to-day monitoring of the environmental and social aspects of the project while at the National level, the National Environment Management Authority (NEMA) and the Department of Occupational Safety and Health (DOSH) of the Ministry of Gender, Labour and Social Development are responsible for the monitoring of environmental, social and safety aspects of the project. This section mainly sets out the roles and responsibilities for the management of the project's safeguards aspects by different government institutions.

4.4.1 Ministry of Water and Environment

The Ministry of Water and Environment (MoWE) has the overall mission: to promote and ensure the rational and sustainable utilization, development and effective management of water and environment resources for the socio-economic development of the country. The ministry has three directorates: the Directorate of Water Resources Management (DWRM), the Directorate of Water Development (DWD) and the Directorate of Environmental Affairs (DEA). MWE regulates water resources utilization and wetlands management through DWRM and DEA respectively. In addition to regulatory functions, MWE shall take the lead on the implementation of the project and shall ensure all recommendations contained in the mitigation plan are implemented.

4.4.2 National Environment Management Authority

National Environment Management Authority (NEMA) was established under the National Environment Act No.5 of 2019 as the principal agency in Uganda charged with the responsibility of coordinating, monitoring, regulating and supervising environmental management in Uganda. In this context, NEMA will be responsible for reviewing and approval of this environmental impact assessment, ensuring proposed mitigation measures are implemented, monitoring compliance with approval conditions, and ensuring any other impacts that may arise are mitigated.

4.4.3 National Forestry Authority

The National Forestry Authority (NFA) is a government statutory entity responsible for the management of Central Forest Reserves (CFRs) on a sustainable basis, as well as, for supplying high-quality forestry-related products and services in Uganda. Although there was no natural forest within the project area, there were pockets of planted forests mainly comprising teak trees along the water transmission and distribution network, there were NFA will be interested in ensuring tree clearance of the plantation forests is minimized. Under catchment management, there is a component of tree planting and NFA would come in to provide training on the best practices for tree planting while also supplying high-quality seedlings.

4.4.4 Wetlands Management Department

Wetlands Management Department (WMD) is mandated to manage wetland resources and its goal is to sustain the biophysical and socio-economic values of the wetlands in Uganda for present and future generations. The Wetlands Management Department is a key stakeholder of the project because some key project components are located in wetlands. For example, both Maru and Malanga Bore sites are located in a wetland along Nyawara Stream.

4.4.5 Directorate of Water Resources Management

The Directorate of Water Resources Management (DWRM) is responsible for managing and developing the water resources of Uganda in an integrated and sustainable manner to provide water of adequate quantity and quality for all social and economic needs of the present and future generations. The Directorate comprises four departments namely Water Resources Monitoring and Assessment Department, Water Resources Planning and Regulation Department, Water Quality Management Department and the International Transboundary and Water Affairs Department.

4.4.6 Ministry of Lands, Housing and Urban Development

The Mandate is "To ensure a rational: sustainable and effective use and management of land and orderly development of urban and rural areas as well as safe, planned and adequate housing for socio-economic development". The MoLHUD, through the Office of the Chief Government Valuer, and the District Land Boards, will provide guidance on land acquisition and property valuation, where required.

4.4.7 Ministry of Local Government

The 1997 Local Government Act provides for the decentralization and devolution of government functions, powers and services from the central to Local Governments and sets up the political and administrative functions of local governments. The Local Governments are responsible for the protection of the environment in their respective areas of jurisdiction. Local Governments shall be consulted on projects to be located within their jurisdiction and on matters that affect their environment. At the District Level, the District Environmental Officers, District Engineer and Community Development Officers in the respective areas of project implementation will participate in monitoring the projects to ensure that mitigation measures are adequate and advise or point out additional compliance requirements following their inspections. The District Land Boards and Lands Officers will guide on issues of compensation or land acquisition.

4.4.8 Ministry of Gender, Labour and Social Development

The Ministry of Gender Labour and Social Development is a Government Ministry with a responsibility to empower communities in diverse areas. The Ministry came into being by a constitutional requirement of the 1995 Constitution, Chapters 4 and 16 which mandates the government to: "empower communities to harness their potential through skills development, labour productivity and cultural growth. The Ministry promotes cultural growth, skills development and labour productivity while promoting gender equality, labour administration, social protection and transformation of communities.

This Ministry has one of its major tasks to ensure that all Ugandans enjoy better standards of living, especially the disadvantaged and vulnerable groups." The Directorate of Labor, Employment and Occupational Safety and the Directorate of Gender and Community Development in the Ministry are responsible for the inspection of the workplace environment to safeguard occupational safety, the rights of workers and gender equity. Specifically, DOSH Activities in ensuring enforcement of OSH at workplaces carry out the following activities: i) Developing/reviewing occupational safety and health policy, laws, regulations, technical standards, strategy, guidelines, code of conduct and manuals. ii) Registering all workplaces in the country. This assessment recognises key gender health and safety and social issues, as emerging from stakeholder consultation and places emphasis on the management of such in the ESMP.

4.4.9 The Equal Opportunities Commission (EOC)

The Equal Opportunities Commission (EOC), was established by the Equal Opportunities Act 2007. The Commission is mandated to provide a framework for redressing imbalances, which exist among marginalized groups while promoting equality and fairness to all. The Commission was established according to Article 32 (3 – 4) of the Constitution and is a body corporate with perpetual succession and a common seal and may sue or be sued in its corporate name and, may do, enjoy or suffer anything that the body corporate lawfully do, enjoy or suffer. The Commission gives effect to the State's constitutional mandate to eliminate discrimination and inequalities against any individual or group of persons on the grounds of sex, age, race, colour, ethnic origin, tribe, birth, creed or religion, health status, social or economic standing, political opinion or disability, and take affirmative action in favour of groups marginalized based on gender, age, disability or any other reason created by history, tradition or custom for redressing imbalances which exist against them; and to provide for other related matters.

4.4.10 Yumbe District Local Government

Yumbe District local government is mandated under the Local Government Act and the National Environmental Act to ensure that all project activities are implemented following the national legal and policy framework. The district is responsible for major functions and services previously carried out by the central government i.e., land administration and surveying; the construction and maintenance of feeder roads, and; the provision and maintenance of water supplies. Therefore, these District Local Governments are key stakeholders in the project.

1.1 Permits and licenses required by project proponent

Table 4-4: Permits and Licenses

Regulations/ Standards/ Approvals	Description	Reference	Issuing Institution	Applicant
ESIA certificate	The certificate will be provided after approval of the ESIA report	National Environment Act, 2019	National Environment Management Authority (NEMA)	Developer
Workplace Registration Certificate	Every workplace is required to be registered and must commit to abide by all of the country's labour laws	Occupational Safety Health and Welfare Act (1997)	Ministry of Gender, Labour & Social Development	Construction contractor
License to handle and store hazardous waste	Every establishment producing hazardous waste in their production line/ processes needs to acquire a license for handling and storage of hazardous waste	National Environment Act, 2019	National Environment Management Authority (NEMA)	Construction contractor
Water Abstraction Rights	For water abstraction, it is a requirement for the project to obtain water abstraction rights	Water Resources Act	Directorate of Water Resources and Management (DWRM)	Developer
Road cutting permit, Permit for working in road reserves	The project plans to construct a water pipeline which will most likely need to cross roads or be laid in the road reserve boundary, this shall require a permit from the Roads Authority	Road Traffic Act (1998)	UNRA and Moyo District Local Government	Construction Contractor

Development Planning Permission	The project is within the jurisdiction of the Yumbe District Councils, which will require to approve the designs and the plans for the proposed water supply and Sanitation Infrastructure	Physical Planning Act 2010 as Amended 2020	Yumbe District/ Local Government	Developer

5 ENVIRONMENT AND SOCIO-ECONOMIC BASELINE

5.1 Introduction

This section describes the major elements of the project area's environment, encompassing the physical, biological and social environment as well as the condition of the proposed project site. The information presented in this section is based on observation of the project area by the consultants as well as information from secondary literature.

5.2 Physical Environment

5.2.1 Topography of the project area

The Project area is generally flat (plateau) with Hills at Anji in Katoro village Kochi Parish. The area drains in a westerly direction towards the Nyawara Stream.

The topography of the project area is in such a way that the landscape gently slopes westwards enabling the gravity flow of water from the reservoir tank (raised section of area) to the lower areas of Bulibui, Busia, Lobanga, Malanga, Maru West, Maru. Figure 5-1 below presents a map showing the topography of the project area.

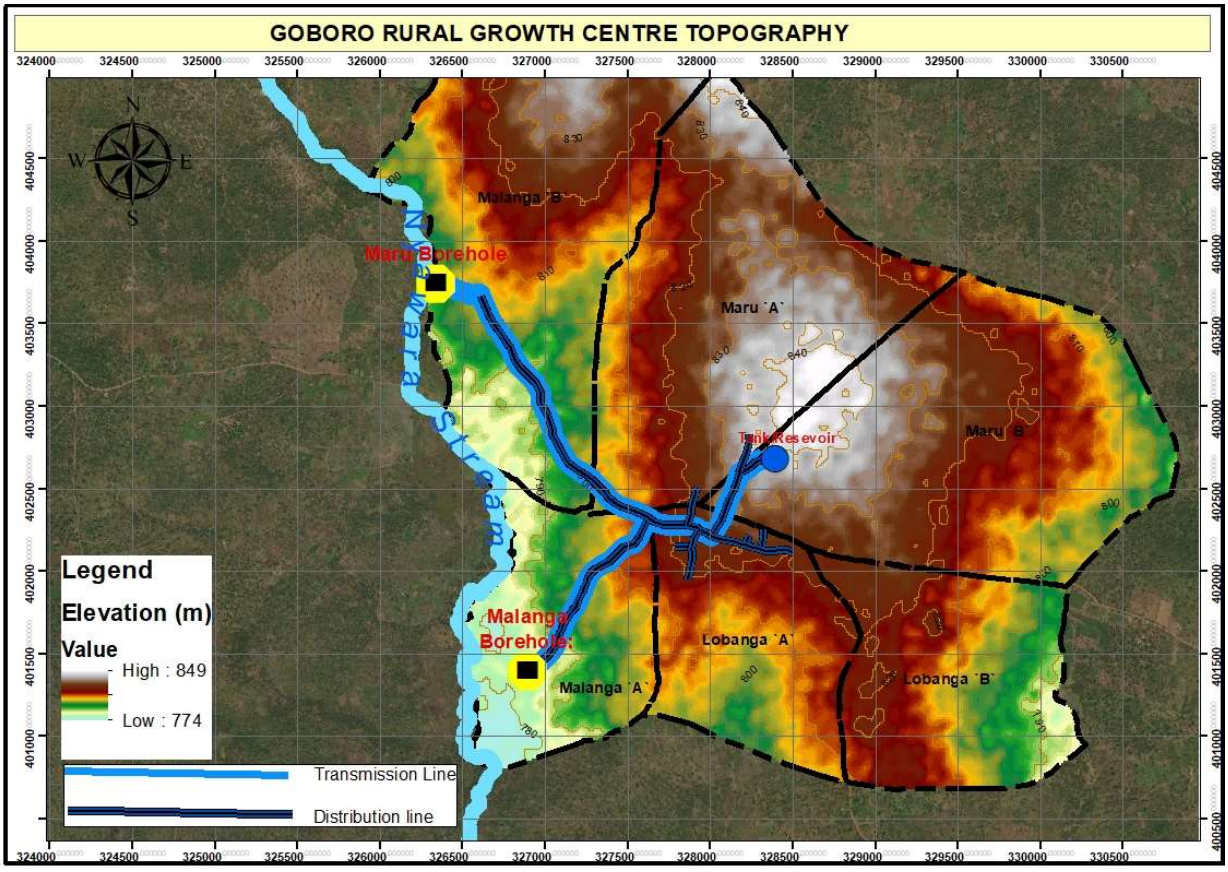

Figure: 5-1: Topography of the project area

5.2.2 Hydrology

Apart from subterranean hydrology, there is no major surface water body in the Sub-County except parallel patterned tributaries that originate from the Inland River Kochi, Nyewa and Kena.

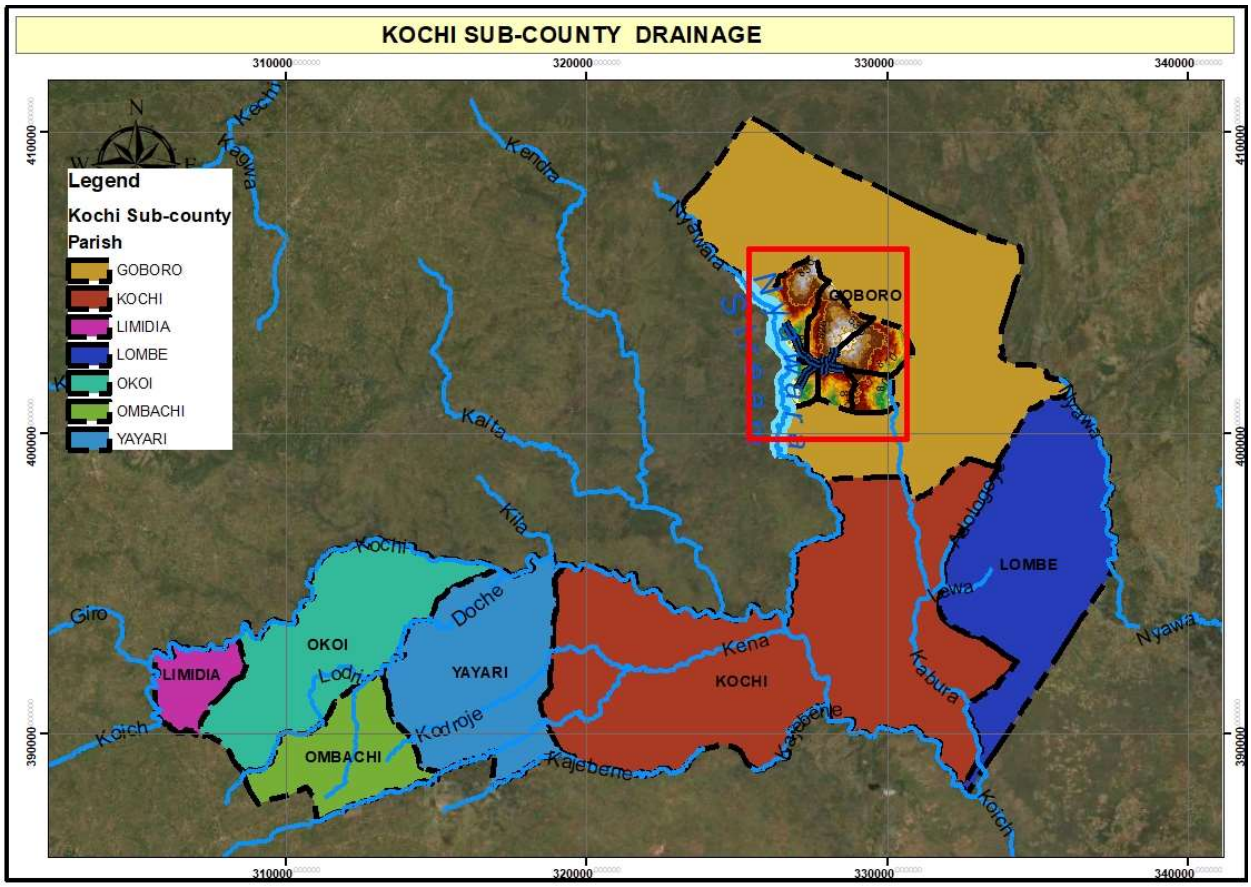

Figure: 5-2: Hydrology of the project area

5.2.3 Geology and soils

The Precambrian rocks of the basement complex underlie Kochi Sub County. The rocks are composed largely of granite fascia-grade rocks, which generally form enclaves in the gneiss complex. On hilltops, grey granite and gneiss are left exposed in many places. These granites and gneiss are intensively metamorphosed and deformed.

The soils are generally considered moderately fertile with shallow soil depths of 30cm and easily nutrient-weathered and leached. It generally has loamy soils which are fairly fertile, especially along valleys. Some alluvial deposits found on the lower portions of the slopes are relatively more fertile. Predominant soils are ferralitic and sand bags are the soil type most widely spread covering large.

5.2.4 Climate

The climate of Yumbe district is tropical with moderate rainfall and temperature. The district experiences extreme seasonal variation in monthly rainfall. The district receives an average total rainfall of 1250mm. The area experiences two seasonal rainfall, light rains between April and October. The wettest months are usually July to November with over 120mm/month. The period December-February is a long dry with less than 60mm/month. The rains are associated with the northerly and southerly movements of the inter-tropical front. Mean monthly evaporation ranges from 130 mm to 180 mm.

Temperatures are generally low during the nights of dry seasons (Dec-March) and high during day hours whereas during wet seasons, temperatures remain high (28-29^{o}C) throughout. The area has a humidity of over 80% in most months which reduces to below 50% during dry seasons especially in December to March.

5.2.5 Wind speed and wind direction

The prevailing winds in Yumbe District are mainly from the east to the west direction with frequent windstorms during the dry season. The winds in Yumbe district flow at an average speed range between 3.2 – 5.6 miles per hour which is potentially enough for wind energy production. Strong winds are experienced at the onset and offset of rains and during dry seasons/spells. Winds in the district are generally dry with very low humidity.

5.2.6 Noise

Unregulated or controlled noise often interrupts performance or communication thus predisposing a person to a risk of accidents, injuries, dangerous occurrences, stress, anxiety, illnesses such as noise-induced hearing loss (which could be permanent or temporary loss), tinnitus and physical damage among others. The onset of outcomes due to exposure (effects) are dependent on the threshold, time of exposure to the noise, and biological, physical and emotional factors surrounding the person at risk.

From the baseline noise measurements, a total of eleven (11) points were sampled along the transmission line, the proposed intake points and reservoir tanks.

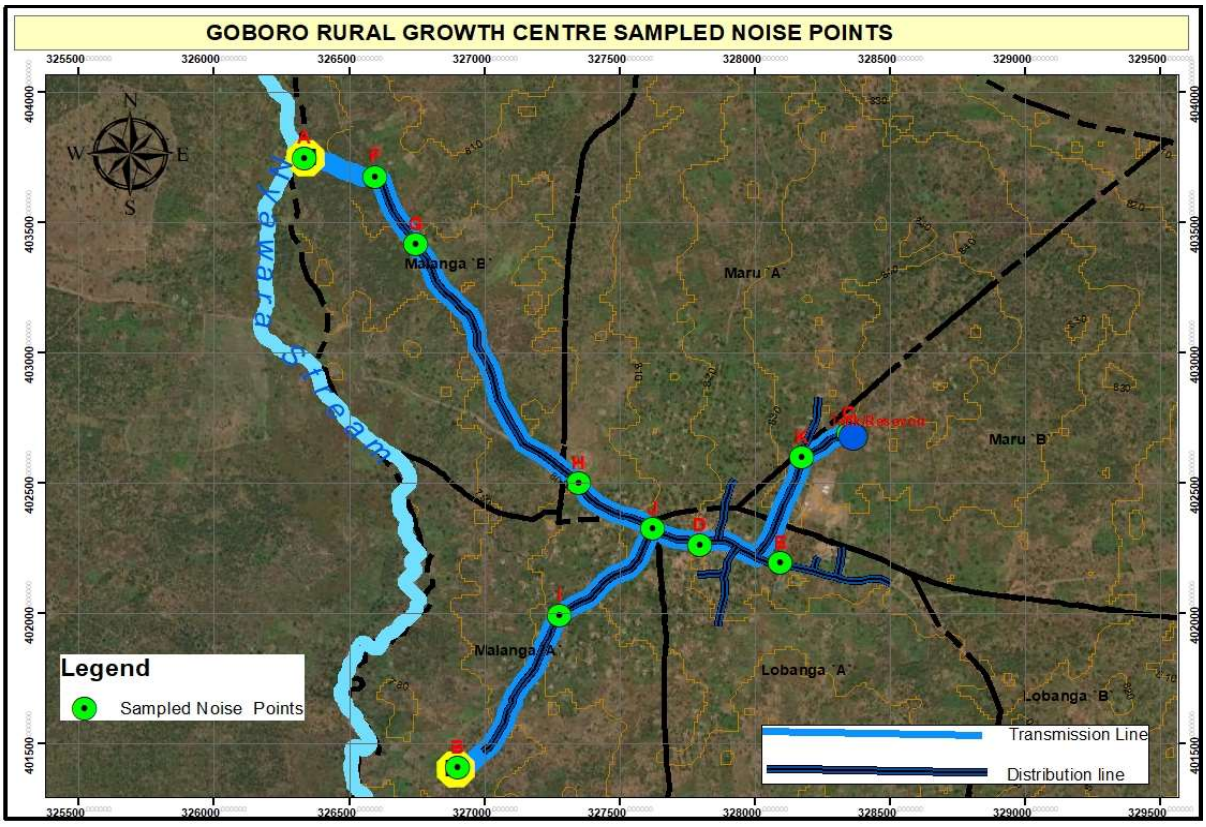

Figure: 5-3: Sampled Points for Noise Measurement

Table 5-1: Measurements of Noise level, dB (A) at the intake, along the project route and reservoir tank

GPS NO	Name of site	Coordinates	NOISE dB(A)		Attributing factors
			Min	Max	
A	Maru Borehole	326334.23 m E, 403744.96 m N	39.5	44.7	Remote village
B	Malanga Borehole	326902.15 m E, 401406.92 m N	42.1	48.5	Community members fetching water at the borehole
C	Proposed Reservoir Tank	328351.09 m E, 402688.45 m N	36	45	Quiet site/ no settlements
D	Goboro Trading Centre (next to the market	327800.56 m E, 402260.62 m N	46 .4	53.2	Noise from traders and music at the trading centres
E	UNHCR Refugees Transit /Reception Centre	328096.63 m E, 402191.30 m N	39.5	48.3	Light motorcycle traffic
F	Transmission line (Malanga B Village)	326596.17 m E, 403673.52 m N	36	46.9	Remote homestead. No traffic
G	Transmission line (Malanga B Village next to homestead)	326748.31 m E, 403412.75 m N	38.2	42.5	Children playing in the vicinity
H	Access road to Army Barracks	327348.65 m E, 402498.35 m N	36	42.8	Light traffic from the nearby road
I	Transmission line (Malanga A Village)	327277.94 m E, 401990.04 m N	37.6	44.8	light foot traffic
J	Transmission line (Maru A Village)	327624.85 m E, 402322.07 m N	38.7	49.2	Light motorcycle traffic from the road
K	Transmission Line next to Goboro COU	328176.23 m E, 402597.87 m N	36.5	43.5	Quiet church compound.
	National Noise Standards: *(1.) National standards (Maximum permissible levels for the general environment) for mixed residential areas are 55 dBA and 45 dBA for day and night time limits respectively.* *(2.) Maximum permissible noise levels, Leq (continuous or intermittent) for construction sites shall not exceed:* ➢ *Residential: 60dBA* ➢ *Commercial: 75dBA* ➢ *Industrial: 85 dBA*				

The average dB(A)noise level assessment at all the sampled areas ranged from (36-53.2) dB(A). With all areas having a minimum Noise level within the permissible levels. However, these are likely to change during the construction phase and operational phase of the project due to the increased activities at this site especially at the intake where the pump house will be constructed.

During project implementation, the contractor shall aim at reducing the work site noise output by;

- Choosing low-noise machinery
- Maintaining and lubricating equipment and machinery

5.2.7 Ambient Air Quality

The results from the measurement of air quality parameters measured in the atmosphere in and around the project area are presented in Table 5-2 below. These measured levels were compared with the Draft National Air Quality standards as shown in Appendix C Measurements are highlighted in the table below:

Table 5-2: Ambient Air Results

GPS NO	Name of site	Coordinates	Particulates (µg/m3)		Attributing factors
			Min	Max	
A	Maru Borehole	326334.23 m E, 403744.96 m N	232	34	Remote village
B	Malanga Borehole	326902.15 m E, 401406.92 m N	230	45	Community members fetching water at the borehole
C	Proposed Reservoir Tank	328351.09 m E, 402688.45 m N	282	49	Quiet site/ no settlements
D	Goboro Trading Centre (next to the market	327800.56 m E, 402260.62 m N	432	80	Noise from traders and music at the trading centres
E	UNHCR Refugees Transit /Reception Centre	328096.63 m E, 402191.30 m N	298	121	Light motorcycle traffic
F	Transmission line (Malanga B Village)	326596.17 m E, 403673.52 m N	205	90	Remote homestead. No traffic
G	Transmission line (Malanga B Village next to homestead)	326748.31 m E, 403412.75 m N	222	142	Children playing in the vicinity
H	Access road to Army Barracks	327348.65 m E, 402498.35 m N	342	163	Light traffic from the nearby road
I	Transmission line	327277.94 m E,	223	120	light foot traffic

	(Malanga A Village)	401990.04 m N			
J	Transmission line (Maru A Village)	327624.85 m E, 402322.07 m N	308	98	Light motorcycle traffic from the road
K	Transmission Line next to Goboro COU	328176.23 m E, 402597.87 m N	204	93	Quiet church compound.

At all locations in the Goboro RGC project Area where measurements were made, gas monitoring equipment did not detect CO, H2, NO2, Cl2, ClO2, H2S, NH3 and Methane.

Therefore;

- The contractor should ensure that the workers are adequately protected from exposure to excessive dust through the provision of appropriate gear including masks.
- The site should be adequately boarded off during construction to reduce exposure of neighbours to dust
- Where needed, dust suppression should be done with a water bowser.
- Project vehicles should have a restricted speed limit of 40 km/h through settlements and trading centres to minimize dust.

5.2.8 Geotechnical Soil Findings and Interpretations

5.2.8.1 Seismic Site Characterisation

The map shows contours (Zones 1, 2, 3) of peak ground acceleration (PGA) corresponding to an average return period of 475 years with the following values of PGA:

PGA = 1.0 m/sec^2 for zone 1

PGA = 0.8 m/sec^2 for zone 2

PGA = 0.7 m/sec^2 for zone 3.

The site lies within zone 1 of the seismic zoning of Uganda, implying that there is a high risk of earthquake occurrence and thus the design has considered this in line with the Seismic Code of Practice for Structural Designs; Uganda National Bureau of Standards, First Edition: June 2003 and earthquake resistant design according to 1997 UBC (Universal Building Code). The seismic zone factors are shown in the table below.

Table 5-3: Seismic Zone Factor, Z

Zone	**1**	**2A**	**2B**	**3**	**4**
Zone Factor, Z	0.075	0.15	0.20	0.30	0.40
Soil Profile Type	SD	-	-	-	-
Seismic Coefficient, Ca	0.12	-	-	-	0.44 Na
Seismic Coefficient, Cv	0.18	-	-	-	0.64 Nv

Note: The zone shall be determined from the seismic zone map shown in Figure 1 shown above.

C_a = acceleration-dependent seismic coefficient

C_v = velocity-dependent seismic coefficient

S_D = Stiff soil profile with SPT-N values between (15-50) and shear wave velocity between (180-360) m/s

Na = Near-Source Factor (acceleration-dependent)

Nv = Near-Source Factor (velocity-dependent)

5.2.8.2 Water Table

At the depth of 0.5 m and 1.0m, the borehole and reservoir water table was not encountered. Therefore, the water will not affect the bearing capacity of the soil at the mentioned borehole locations.

Dynamic Cone Penetration (DCP) test was conducted at the existing ground level and depth of 1.0m(reservoir) and 0.5m(borehole). This test was conducted to evaluate the consistency of the underlying soils. Test results are summarized in the table below.

Table 5-4: Summary of DCP Test Results and Consistency

RGC	Test Pit Location	Depth (m)	Layer		Thickness (mm)	Penetration rate (mm/blow)	Layer
Goboro	Borehole 1	0.00	I	0.000-0.210	210	21.00	Medium Dense
			II	0.210-0.780	570	35.63	Loose
		0.50	I	0.500-0.650	150	50.00	Loose
			II	0.650-1.240	590	16.86	Medium Dense
	Borehole 2	0.00	I	0.000-0.640	640	23.70	Stiff
			II	0.640-0.800	160	13.33	Very Stiff
		0.50	I	0.500-0.670	170	56.67	Soft
			II	0.670-1.290	620	15.50	Stiff
	Reservoir	0.00	I	0.000-0.370	370	21.76	Medium Dense
			II	0.370-0.570	200	5.00	Dense
		1.00	I	1.000-1.040	40	1.33	Very Dense

Based on the DCP test results, the consistencies are as indicated below;

- The soils at the borehole 1 site exhibited Loose - Medium dense consistency while at the borehole 2, the soils exhibited soft - very stiff consistency. At the reservoir, the soils exhibited medium dense - very dense consistency.

Soil strata of very loose and very soft consistencies are not suitable for foundation purposes as they have low bearing strengths. They can only be used after improvement by densification and compaction.

5.2.8.3 Laboratory Findings

Classification and Identification of Soils

Laboratory classification tests were carried out on the Disturbed soil samples recovered from the test pits at the RGCs. Soil classification was carried out using the Unified Soil Classification System as seen in the table below.

Table 5-5: Index Properties and USCS Classification for Retrieved Soil Sample

RGC	SAMPLE LABEL	Depth (m)	Percentage soil grain size			Atterberg limits			Ic	NMC (%)	USCS
			>5mm	5 - 0.075 mm	<0.075 mm	LL %	PL %	PI %			
Nyori	Borehole 1	0.5	0	55	45	30	15	15	0.9	17	Clayey Sand
	Borehole 2	0.5	0	40	60	53	21	32	0.8	27	Fat Clay
	Reservoir	1.0	31	49	20	46	21	25	1.4	11	Clayey Sand with gravel

At the investigated RGC sites, the soil strata are as indicated below;

- Goboro; Borehole 1 site test pit is composed of Clayey Sand (SC) soils with medium plasticity of 15%, having natural moisture content generally higher than the plastic limits of soil, with a consistency index of 0.9.

At the borehole 2 site, the test pit is composed of Fat Clay (SH) soils with a high plasticity of 32% and a consistency index of 0.8. The test pit at the reservoir is composed of Clayey Sand with Gravel (SC) soils, having a natural moisture content lower than the plastic limits of the soil with a consistency index of 1.4.

5.2.8.4 Shear Strength Test Results

Goboro reservoir soils were non-cohesive and therefore there were no undisturbed soil sample-bearing capacities based on the shear strength parameters performed.

5.2.8.5 Bearing Capacity Evaluation

Bearing capacity values were determined using SPT-N values derived from Dynamic Cone Penetrometer test results carried out at existing ground and 1.0m (reservoir) and 0.5m (borehole) depth and Shear strength analysis which was conducted on undisturbed soil samples obtained from all test pits at 1.0m depth.

5.2.8.6 Evaluation of bearing capacities based on N-values.

Bearing capacity values were determined using SPT N - values derived from Dynamic Cone Penetrometer test results carried out at existing ground and 1.0m (reservoir) and 0.5m (borehole) depth in the test pit to obtain the penetration rate measured in mm/blow and thereafter converting into blows per 100mm in accordance with the method developed by (Ampadu, Ayeh, & Boadu, 2018) as follows:

- For coarse-grained soils above the groundwater table, the correlation is a non-linear equation represented by N_{SPT} = 1.78 (N_{DCP})0.77;
- For fine-grained soils above groundwater level, the correlation equation is $NSPT$ =0.216N_{DCP} + 7.6; and
- For both fine-grained and coarse-grained soils below the groundwater level, the correlation equation is given by N_{SPT} = 0.216N_{DCP} + 0.4.

Where:

N_{DCP} = blows per 100mm (the number of blows required to drive the DCP cone 100mm into the ground); and

N_{SPT} = blows per 300mm (the number of blows required to drive the split spoon sampler 300mm into the ground) using a hammer of 10kg and 63.5kg for DCP and SPT equipment respectively.

Evaluation of bearing capacities based on N-values

The maximum pressures the soils are capable of resisting were estimated from the field Nvalues based on empirical relations and the following assumptions:

i. The Peck et al (1967) relationship between N-values and unconfined compressive strength is valid for cohesive soils;

ii. Footing width 1.0m and

iii. The maximum allowable settlement in non-cohesive soils is 25mm

The corresponding bearing capacity values are summarized in the table below.

Table 5-6: Evaluated Bearing Capacities of Sub Soils Based on N- Values

LOCATIONS	Depth (m)	Layer	Depth-Range (M)	Soil Type	Penetration Rate	Ndcp	Nspt	Unconfined Compressive Strength	Undrained Cohesion	Ultimate Bearing Capacity	Allowable Bearing Capacity
					mm/blow	blow/100m	blow/300mm	q_u	c_u	q_{ult}	q_{all}
								(kPa)	(kPa)	(kPa)	(kPa)
BOREHOLE 1	0.00	I	0.000-0.210	Sand	21.00	5	6	78	39	199	66
		II	0.210-0.780		35.63	3	4	52	26	133	44
	0.50	I	0.500-0.650		50.00	2	3	40	20	102	34
		II	0.650-1.240		16.86	6	7	92	46	236	79
GOBORO BOREHOLE 2		I	0.000-0.640	Clay	23.70	4	9	111	56	287	96
		II	0.640-0.800		13.33	8	9	121	60	310	103
	0.50	I	0.500-0.670		56.67	2	8	105	52	269	90
		II	0.670-1.290		15.50	6	9	118	59	303	101
RESEVOIR	0.00	I	0.000-0.370	Sand	21.76	5	6	75	38	194	65
		II	0.370-0.570		5.00	20	18	234	117	602	201
		I	1.000-1.040		1.33	75	50	649	325	1668	556

For cohesive soils, the relationship qu = 13.1 x Design N-value is used for evaluation of the Unconfined Compressive Strength qu, the cohesion Cu = qu/2 and qult = 5.14 x Cu. qall is evaluated usinga factor of safety of 3 Allowable Bearing capacity with settlement limited to approximately 25mm for cohesionless soils read off directly from the Chart (Published by Terzaghi and Peck 1967).

Note:

DCP test results above are given based on the layer strengths of test observations taken at given depths based on the bearing capacities evaluated using SPT-N values;

- Goboro RGC; The bearing capacity reflected at 1.0m depth at the reservoir site is 556kPa, and 79kPa and 101kPa at 0.5m depth at the borehole sites 1 and 2 respectively.

Evaluation of bearing capacities based on the Shear Strength Parameter

The maximum pressures the soils are capable of resisting have been estimated from the shear strength parameters obtained from the laboratory tests.

The following assumptions were made;

a) A 1.0m square footing was assumed along with the following considerations;

b) Terzaghi's bearing capacity equations are valid for laboratory test results,

c) The failure mechanism is by both general shear and local shear; and

d) The factor of safety against shear failure is 3.0.

For the borehole site, the most critical unit is the backwash tank with area and pressure. During construction when soil is opened up, further analysis of the foundation soil will be carried out for the confirmation of the bearing capacity. Should the general foundation soils be of a lower bearing capacity than that of the trial pit foundation, treatment will be necessary and will involve a fill of compacted hardcore of a layer not less than 500mm thickness beneath the formation level of the respective structures.

5.2.8.7 Structural Designs

The structural designs are based on accumulated experience in optimising the fundamental requirements and at the same time minimising costs.

5.2.8.8 Design loads

The following loads have been considered in the detailed design of the structures:

- Dead loads
- Live loads
- Wind loads
- Seismic/Earthquake loads
- Hydrostatic pressure and dynamic thrust
- Uplift and buoyancy
- Earth pressure
- Erection loads

5.2.9 Water quality

Detailed water quality tests were carried out to establish the quality of the groundwater and the most suitable water treatment options required to ensure a safe water supply to Goboro RGC consumers against the lowest costs.

Tests were carried out on water samples in NWSC Central Laboratory Bugolobi in September 2018 as shown in Table 5-7 below.

The samples tested showed satisfactory physio-chemical and microbiology characteristics of the source which were commensurate with the National Standards for natural potable water. The ground water is suitable for domestic water supply.

Table 5-7: Water Quality Data for the Boreholes

Parameters	Units	National Standards for Natural Potable	Malanga DWD 89640	Maru BH DWD 69427
PH		5.5-9.5	6.86	6.69
Conductivity	Us/cm	2500	342	192
Turbidity	Ntu	25	2.41	5.0
Total	Mg/l	1500		137
Akalinity	Mg/l	500	68.0	74
Magnesium	Mg/l	100	4.80	4.6
Calcium	Mg/l	150	12.20	9.8
Hardness	Mg/l	600	54.0	44
Iron	Mg/l	0.3	0.18	0.039
Suspended solids	Mg/l	0.0	0	0
Chlorides	Mg/l	250	8.0	20
Nitrates	Mg/l	45	3.0	0
Bicarbonate	Mg/l	500	0	74
Colour	Ptco	50	21.0	24
Sulphates	Mg/l	400	1.0	08
Fluorides	Mg/l	1.5	0	0.03
Coliforms	CFU/100ml	10	0	0
E-Coli	CFU/100ml	0	0	0
Phosphorus		5	0.22	

Source: Feasibility Report

5.3 Biological environment

5.3.1 Vegetation of the project area

The landscape setting for Goboro RGC is defined by a modified landscape with extensive subsistence croplands, bushland/grassland, shrubs and plantation agriculture. In general, most of the natural vegetation cover within the project corridor had been reduced by human presence leaving small patches of natural transitional vegetation amidst vast degraded habitats.

The project area is endowed with considerable vegetation cover that can be broadly categorised as wooded grassland. Different plant species were recorded in the entire project area. Figure 5.4 shows the relative frequency of the different life forms by the number of species. The most common life form was trees followed by shrubs (Figure 5-4).

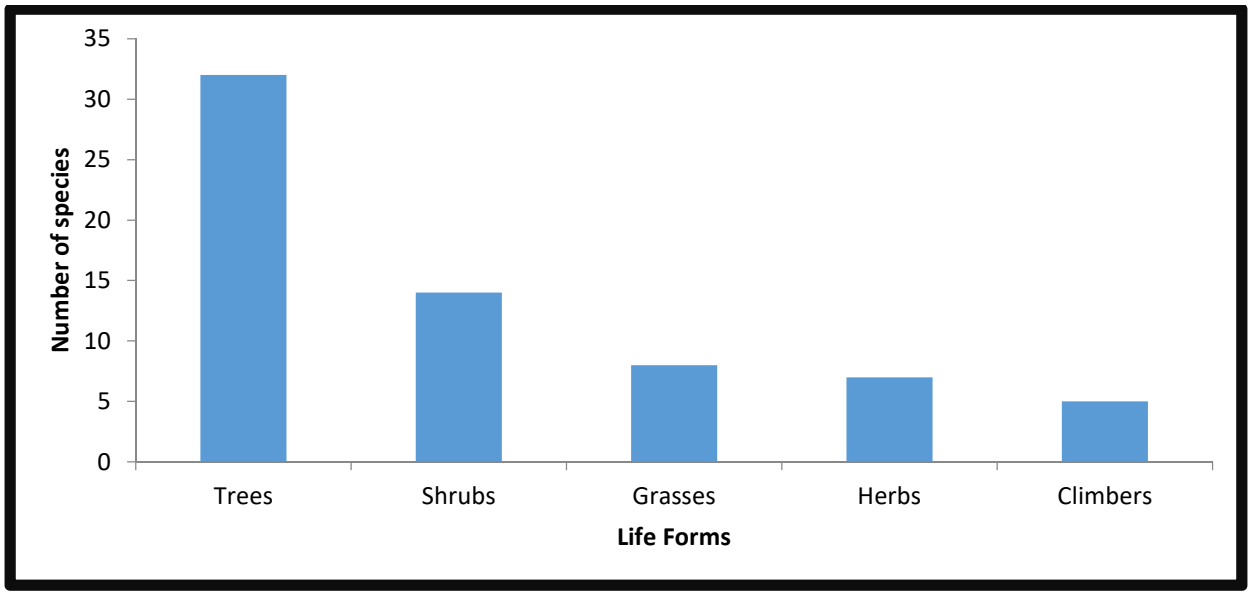

Figure: 5-4: Distribution of plant species by life forms along Goboro RGC Piped water supply

Wooden Savanah

Grassland Savannah

Bushlands and thicket	Tobacco Plantation
 Subsistence agriculture (Maize gardens)	 Flooded Shrubland-
 Mango trees in Lobanga village	 Vegetation cover and wetland in Buli Buli Village

Plate 5-1: Vegetation units along the Goboro RGC water supply area

5.3.1.1 Vegetation Units at the Maru and Malanga Borehole Site

The most dominant tree species were *Combretum adenogonium, Maytenus senegalensis* few scattered *Piliostigma thorningii*. *Isoberlinia doka, Daniehcliveri and Afzelia Africana*. Among the herbs, *Asparagus africana* was common. *Panicum deustum and Hyperrhenia ruffa* were the most common grass species. The life form around this area can be found in Figure 5-5 with trees being the most common life form.

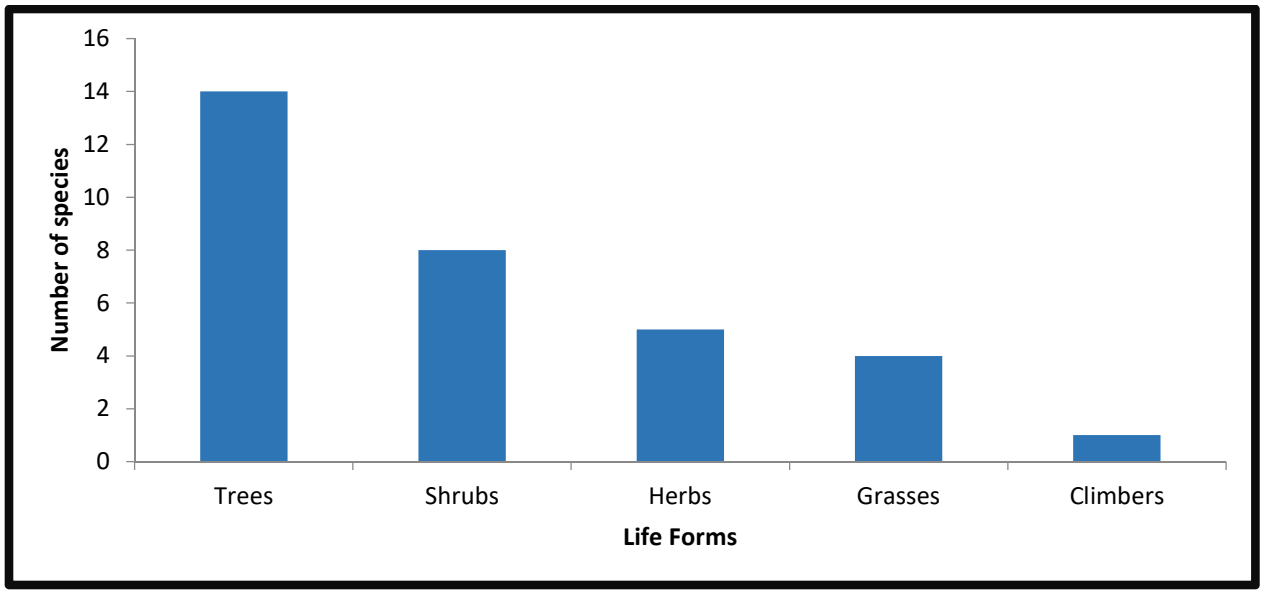

Figure: 5-5: Distribution of plant species by life forms at the borehole's sites

Panicum Deustum at Malanga Borehole site

Hyperrhenia ruffa at Maru Borehole site

Afzelia Africana seed pod

Afzelia Africana mature tree

Plate 5-2: Vegetation units at Maru and Malanga Borehole Sites

5.3.1.2 Vegetation Units along the water supply transmission Route

The most dominant tree species were *Combretum adenogonium, Vitellaria paradoxa Acacia hockii,* and a few scattered *Piliostigma thorningii*. Among the herbs, *Asparagus africana* was common. *Panicum deustum* and *Hyperrhenia ruffa* were the most common grass species. The life form around this area can be found in Figure 5-6 with trees being the most common life form.

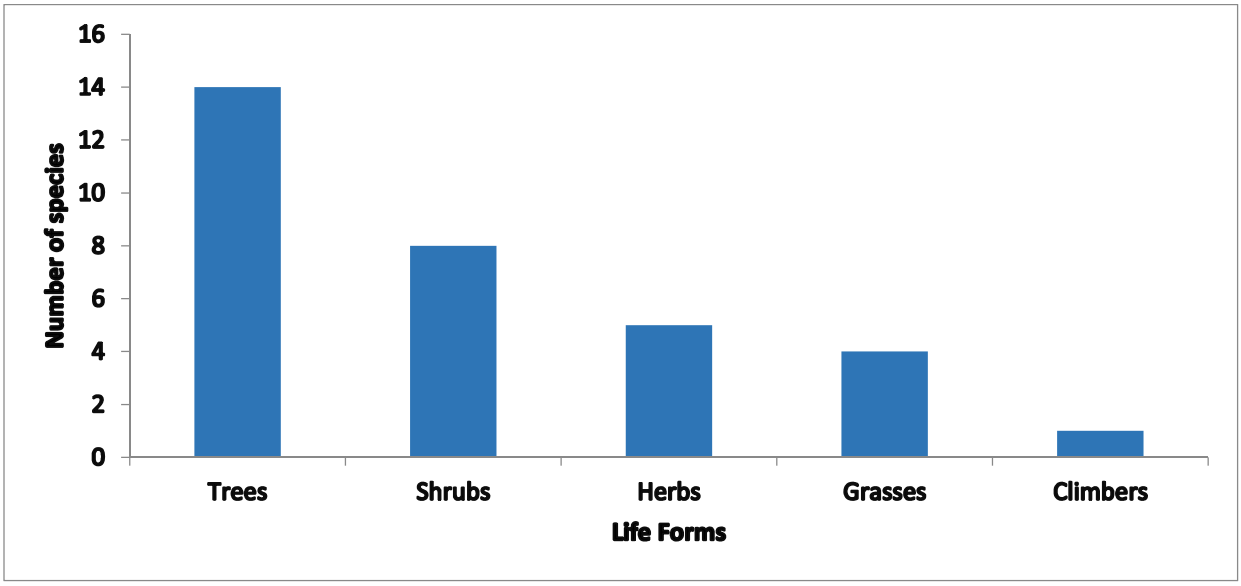

Figure: 5-6: Distribution of plant species by life forms along water supply transmission Route

	
Vitellaria paradoxa next to the transmission line at Maru Village	*Acacia hockii* along transmission line Malanga Village
	
Piliostigma thonningii in Wadri Village	*Vitellaria paradoxa* within the project area

5.3.1.3 Vegetation Units at the reservoir tank site Maru Village

The most common tree species around the reservoir site included *Vitellaria paradoxa*, *Acacia gerrardii, Combretum adenogonium, C. Collinum.* The most frequent grasses were of *Hyparrhenia rufa species and Butyrospermum-Hyparrhenia*

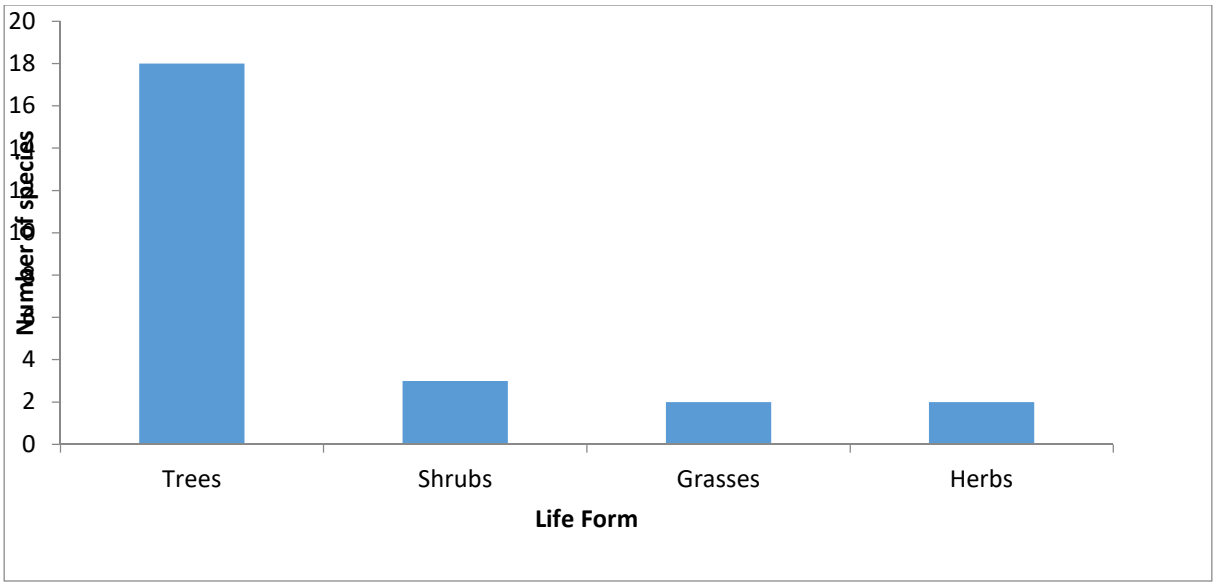

Figure: 5-7: Distribution of plant species by life forms at the proposed Reservoir tank site

5.3.2 Species of Conservation Importance at Goboro RGC Project area

Two species of conservation significance were recorded within the Goboro RGC project area (IUCN, 2018).

5.3.2.1 Afzelia africana

This species has been assessed as Vulnerable A1d by IUCN 2019 ver 2.3. In Uganda, the species has its main distribution range in West Nile, Acholi, Bunyoro, and Madi. In Africa, it's widespread and can be found in countries such as Cameroon, Central African Republic, Nigeria, Senegal etc. The main threats included habitat quality reduction and exploitation of the species for its high-quality timber both domestically and on international markets. A total of five mature individuals were recorded at Goboro RGC Project Surroundings.

Nationally, *Afzelia Africana* has been assessed as Endangered A2acd. Therefore, the species needs protection whenever it is found. In West Nile, culture seems to play a critical role in its conservation. For instance, there are tales from the elders in the area to the effect that the tree cannot be cut without strict customary norms being followed or else the person will meet death.

5.3.2.2 Vitellaria paradoxa

Vitellaria paradoxa, commonly known as shea tree, shi tree, or vitellaria, is a tree of the family Sapotaceae. It is the only species in the genus V*itellaria*, and is indigenous to Africa. *Vitellaria paradoxa,* the Shea butter tree, grows across a wide swath of Africa, from Senegal, Sudan, and Uganda to Ethiopia. It is one of the most important indigenous trees growing in sub-Saharan Africa. Throughout the "Shea belt" the trees are highly valued by the local communities, not only for the economic and dietary value of the cooking oil but also for other products. The fruit pulp, bark, roots, and leaves are used in traditional medicines and the wood and charcoal are used for building and cooking.

In 2006, the Ugandan government declared that the shea tree was endangered, and in 2018, it banned the cutting and transportation of the trees altogether.

Plate 5-3: Conservation of Shea Nut Tree in Goboro Parish

5.3.3 Mammals

The project area is generally a modified environment. The sites sampled were near settlements, woodlots/tree plantations, riverine areas, grasslands, and cultivated areas. Rodent, shrew species, Bats and mongoose are the wild mammals identified in the area. Domesticated animals including cattle, goats and sheep also found in the project are were the only mammals observed during the survey

Plate 5-4: Cattle grazing next to Maru Borehole Site

5.3.4 Birds

Bird species representing fifty (50) genera exist in the project area. The most represented genera are *Streptopelia* with four species and genus Euplectes with three species.

The most common species occurring in the project area include the African Palm Swift, Northern Red Bishop, Black-Headed Weaver, Common Bulbul, Piapiac, African Mourning Dove, Red-eyed Dove, Laughing Dove and Vinaceous Dove. The area supports a high proportion of species associated with open habitats and grassland.

5.4 Social Economic Environment

The baseline survey examined the socio-economic profiles of the target beneficiary communities in Goboro Rural Growth Centres in Kochi sub-county. Specifically, it examined demographic characteristics, housing typology, income sources, crop and livestock production, income streams and expenditure patterns, access to water, sanitation and hygiene, waste disposal, health service delivery, education service delivery, gender and gender-based violence and HIV/AIDS.

5.4.1 Demographic Composition

The demographic information looked at various variables including respondents' gender, relationship to household, age, marital status, religious affiliation, ethnicity and education attainment among others.

5.4.1.1 Population

According to the 2014 National Housing and Population Census results (2014), the proposed project area of Goboro RGC had a population of 2,128 with the females being more than the males. The rural growth centre has a total of 1,066 households and these are considered the primary beneficiaries of the water supply system. Beneficiary households should be targeted and mobilized to participate in all project activities.

With a district population growth rate of 5.5% the project area is estimated to have a population of 5,235 by 2023.

Table 5-8:Goboro RGC Projected Population (2023)

District	Sub County	RGC	Location Coordinates	Villages	Projected Population 2023	Number of Households
Yumbe	Kochi	Goboro	Zone: 36N 327809.00 m E 402266.00 m N	Bulibui	350	75
				Busia	510	60
				Gaga	448	210
				Kelunya	236	64
				Lobanga	527	53
				Malanga	721	65
				Maru	1475	95
				Maru West	242	52
				Monigochi	301	38
				Wadri	418	76
				Total population	5235	

Source: Feasibility Report

5.4.1.2 Average Household size

The project area has an average household size of 7.6 persons. The baseline examined the sex of the respondents. Findings suggest that a bigger proportion of the respondents were female (64%) compared to more than a third of the males (36%).

Table 5-9:Percentage of respondents by sex

Sex	Frequency	Percent
Male	36	36%
Female	65	64%
Total	**101**	**100%**

This is attributed to the fact that during household-level interviews, most of the male household heads were engaging in income-generating activities. This implies a relatively large household size in the project area, which is associated with less wealth and high poverty levels.

5.4.1.3 Age structure

The 2014 Census report revealed that the district had a young population. More than half of the district's population are children 62%. The district's largest population percentage is represented by 64.8% for age 0-17 years of whom 56.5% are children aged 0-14 years, followed by 18.0% for 18-30 years, 14% for 31-59 years collectively accounting for the productive age group of 45.5% while 45.2 % accounts for the reproductive female group and 2.2% for 65 and more years account for the elderly in the district.

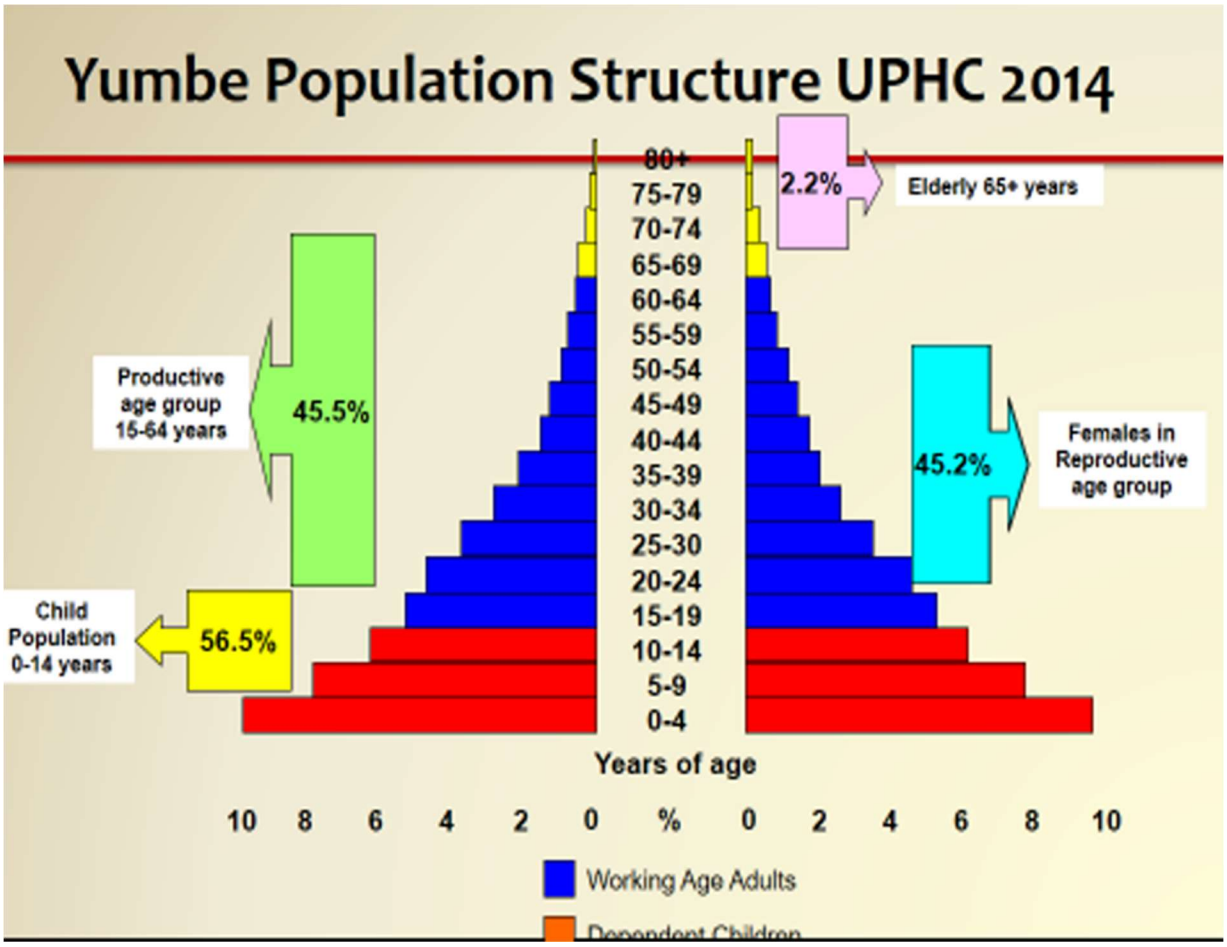

Figure: 5-8: Yumbe District Population Structure Source: UBOS – Uganda Population and Housing Census, 2014.

The findings concur with the baseline study which indicates that a big proportion of the respondents were aged between 19 to 50 years. Table 5-10 below shows that (37%) of the respondents were aged between 31 to 50 years while (32%) were aged between 19 and 30 years. This is an indication of a youthful population that is likely to benefit from employment opportunities especially casual jobs during the construction phase. Findings also suggest that (9%) of the respondents were aged above 61 years. This is considered an elderly age group and vulnerable.

Table 5-10: Percentage of respondents' Age category

Age category	Frequency	Percent
< = 18yrs	5	5%
19 to 30yrs	32	32%
31 to 50yrs	38	37%

51 to 60yrs	17	17%
61yrs >	9	9%
Total	**101**	**100%**

5.4.2 Marital Status of the Respondents

Table 5-11 below indicates that more than half (52%) of the respondents were in polygamous marriages, (18%) were widowed, (13%) were divorced while (11%) were in monogamous marriages and (6%) had never been married. Given that most of the respondents were in polygamous marriages is a true reflection of a Muslim community. The majority of the respondents being in some form of marriage is domestic violence.

Table 5-11: Marital status of the respondent

Marital status	Frequency	Percent
Married Polygamous	53	52%
Widowed / Spinster	18	18%
Divorced	13	13%
Married Monogamous	11	11%
Never married	6	6%
Total	**101**	**100%**

Source: Baseline survey, 2023

5.4.3 Religion of Respondent

The majority of the beneficiary communities subscribe to the Muslim faith. Findings in Table 5-12 below reveal that (61%) of the respondents were Moslems, (34%) were Catholics, (4%) were Anglican and 1%. The project should be cautious of organizing activities on religious days especially Fridays when the Muslim community has prayers.

Table 5-12: Religion of respondent

Religion	Frequency	Percent
Muslim	62	61%
Catholic	43	34%
Anglican	4	4%

Others	1	1%
Total	**101**	**100%**

Source: Baseline survey, 2023

Plate 5-5: Religious Facilities within the project area

	
Goboro Mosque	Goboro Catholic Church

5.4.4 Ethnicity

According to Yumbe District Development Plan, Kochi sub-county is largely inhabited by the Aringa ethnic group constituting (93%). However, there are other tribes including Lugbara, Kuku, Kakwa and Madi and also some refugees of Sudanic origin.

5.4.5 Level of Education

According to the baseline survey, more than half (51%) of the respondents had attended primary level but not sat PLE while (23%) had never had any form of formal education. Only (18%) had ever gone past the primary level. Given the semi-literate nature of the beneficiary population, project messages and IEC materials should be translated into locally used languages.

Table 5-13: Education level of respondent

Education level	Frequency	Percent
None	23	23%
Primary/not completed	51	51%
Completed Primary	9	9%
O-level/incomplete	6	6%
O-level complete	8	8%

A-level	2	2%
Post-secondary	1	1%
Junior	1	1%
Total	**101**	**100%**
Literacy level	**Frequency**	**Percent**
Cannot read and write	61	82%
Can read and write	13	18%
Total	**74**	**100%**

Source: Baseline survey, 2023

The baseline survey also examined the literacy levels of the respondents. Findings in Table 5-13 above show that most (82%) of the respondents could not read and write while less than an insignificant proportion (18%) could read and write in any language. The literacy level is consistent with the respondents' educational attainment.

5.4.6 Settlement Patterns & Housing3

5.4.6.1 Settlement patterns

The settlement patterns in Gorobo RGC were observed to be mostly linear, nucleated and scattered patterns of settlement. According to the sub-county development plan, this has been influenced by several factors including; linear settlement patterns along the main roads that are networking the RGC with the rest of the district.

Nucleated settlement patterns have also been influenced by productive resources such as areas with fertile soils, settlements near safe water sources for both domestic consumption and production, settlements near service centres such as market schools, health centres, refugee reception centres and UPDF detaches among others. Within the outskirts of the trading centre, settlement in the project area was observed to be very sparse with mild concentration around trading centres such as Goboro, Wadri and Lobanga.

Plate 5-6: Settlement pattern in Goboro Trading Centre

Plate 5-7: Clustered settlement in Lobanga Village

5.4.6.2 Housing

Based on the household survey conducted, 82.18% of the respondents lived in temporary houses (mud floors, mud and wattle walls, grass thatched), 10.89% lived in semi-permanent houses (unburnt bricks, mud floors, iron sheet roof) and only 6.93% lived in permanent structures (cemented floor, burnt brick, iron sheet roof).

Table 5-14: Type of Housing

Type of Housing	Freq	Percentage (%)
Permanent	7	6.93
Semi-Permanent	11	10.89

Temporary	83	82.18

Source: Socio-Economic Survey,2023

Semi-permanent and Temporary houses, Busia Village

Permanent houses in Goboro Centre

Plate 5-8: Housing type within the project site

5.4.7 Land tenure system

Yumbe just like any other district in West Nile, the land is mainly communally owned and governed by the customary system of land tenure. Under this tenure arrangement, land ownership is vested in the lineage and is allocated by a father to his sons, who in turn, assign it to their wives and children for cultivation. Women, therefore, tend to be excluded from owning land, although they are allowed the right to use it. While in theory, it sounds as if no single individual or household owns the land under such a tenure ship arrangement, in practice; the ownership is vested in the users.

In every community, it is clear which portion of land belongs to which household, and usually the head of the household is recognized as the owner. It is also the head of the household (land owner) who has the responsibility to rent or sell out potion of such land in case of need; though this is usually done after consultation with and the consent of the larger members of the lineage is obtained.

However, it was noted that the customary land tenure system hinders the commercialization of agriculture which has lowered agricultural production and productivity customary land tenure. According to the current Kochi sub-county development plan, the customary land tenure system is also associated with land conflicts which in the long run negatively impact developments on the land including agriculture production.

5.4.8 Economic Activities

Economic status was examined in terms of the major sources of household income, household monthly income and expenditure patterns.

5.4.8.1 Household's Main Source of Income

Baseline survey results in Table 5-15 indicate that the majority (79%) of the households in Goboro RGC are involved in crop farming, followed by those engaged in casual labour (8%), salaried

employment (4%) and trading in produce (4%). Households involved in crop farming and trading are likely to benefit from the project during the construction phase by selling their agricultural produce and trade items.

Table 5-15: Main source of income for the household head

Income source	Frequency	Percent
Crop farming	80	79%
Casual labour	8	8%
Monthly salary	4	4%
Produce trade	4	4%
Retail trade	1	1%
Other	4	4%
Total	**101**	**100%**

Source: Baseline survey, 2023

5.4.8.2 Household monthly income

Table 5-16 below shows the range of household incomes per month. (49%) of households, heads earned a maximum of Shs 50,000, (31%) earned between Shs 50,001 to 100,000 and only (7%) above Ushs 200,000. This is a very low-income project area as most households' earnings are much below at least $1 a day, a sign of abject poverty.

Table 5-16: Household monthly income

Income range	Frequency	Percent
<50,000	49	49%
50,001 to 100,000	31	31%
100,000 to 150,000	9	9%
150,001 to 200,000	5	5%
200,001	7	7%
Total	**101**	**100%**

Source: Baseline survey, 2023

5.4.8.3 Household Expenditure Patterns

Figure 5-9 below shows the percentage of households' expenditure spent on various items. Findings suggest that most of the households (89%) spend on school fees, followed by expenditure

on food (78%), medication (77%), airtime (72%) and transport (47%). By creating local employment opportunities, especially during the construction phase, the project is likely to boost household income and expenditure streams.

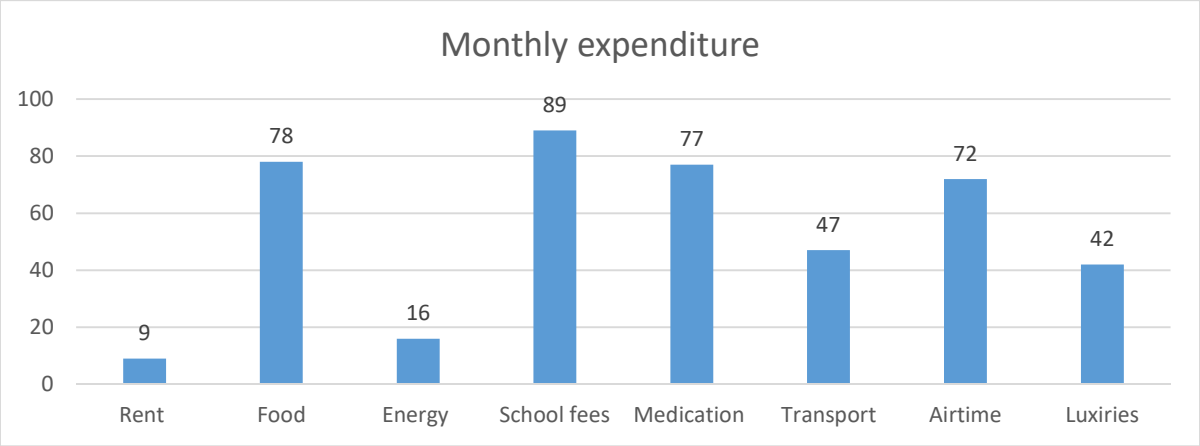

Figure: 5-9: Household average monthly expenditure. *Source: Baseline survey, 2023*

5.5 Household production systems

The baseline survey examined household production in terms of both crop farming and livestock production.

5.5.1 Crop farming

Baseline survey findings indicate that there are about six crops grown in the project area. However, findings in Table 5-17 suggest that the four (4) main crops grown include beans (32%), cassava (32%), peas (10%) and greens/vegetables (9%). Any livelihood restoration programme should focus on improving farming methods for crops already grown by the beneficiary households. Focus group discussion with women groups in Goboro market noted that crop farming is faced with various challenges including extended drought i.e.March–May, experiencing too much rain between July to August that destroys crops. Crop farming in Goboro is rainfed without any form of micro irrigation.

Table 5-17: Crops grown by households

Crops grown	Frequency	Percent
Beans	90	32%
Cassava	90	32%
Peas	28	10%
Greens	24	9%

Onion	11	4%
Coffee	3	1%
Others	35	12%
Total	**282**	**100%**

Source: Household survey 2023

5.7.2 Domestic Animals Kept by Households

Households in the project area rear domestic animals, the majority (71%) of the households said that they keep domestic animals/birds while more than a quarter (29%) do not keep any livestock. Findings further indicate that more than half (52%) of the households keep goats, followed by those that keep chicken (41%), cows (12%) and sheep (9%). Focus group discussion with women groups in Goboro market and field observation noted that ducks are also reared by some households within the rural growth centre.

Commercial Centres Market in the background at Goboro Trading Centre

Maize and Cassava Milling at Goboro Trading Centre

Tobacco Farming in Maru Village

Cattle rearing in Maru Village

Charcoal Selling in Monigochi Village

Farming in Wadri Village

Plate 5-9: Economic activities in the project area

Other economic activities such as brick making, charcoal burning, business, animal rearing and casual work also contributed significantly towards the income of some households although their contribution is generally lower than that from crop farming. The survey ascertained that production is undertaken on a subsistence scale using rudimentary tools.

5.5.2 Water Sources

The source of water is an important determinant of the health status of household members. Safe and clean water is a prerequisite for reducing many common killer diseases of both adults and children such as diarrhoea dysentery and cholera. In African households that collect water outside their residence, the burden is reflected in the division of labour along gender lines within the households. In line with socially constructed gender roles, the burden of water collection and storage usually falls on the women and girls of a given household (UNDP 2006).

Findings of the socioeconomic household survey indicated that the majority of the households in the project area get their water from the public boreholes (89.11%) and swamps (4.95%). These two sources are used alternatively depending on the seasons.

Table 5-18: Household's Main Water Sources

Water sources	**Main source**	**water**	**Alternative source**	**water**
	Freq	**%**	**Freq**	**%**
House Connection	0	0.00	3	2.97
Public stand post	1	0.99	0	0.00
Public borehole	90	89.11	14	13.86
Hand-dug well	1	0.99	3	2.97
Rainwater harvesting	0	0.00	12	11.88
Protected Spring	0	0.00	3	2.97
Unprotected well	4	3.96	11	10.89
Streams	0	0.00	2	1.98
Swamp	5	4.95	53	52.48

Total	101	100	101	100

Source: Household survey 2023

Children queuing for water in Wadri Village

Women and children queuing for water at Goboro Mosque Borehole

Plate 5-10: Some of the Project Area Water Sources, means of water collection and challenges in Goboro

Table 5-19 below shows that more than half (56%) of households move an average of 0.5km to the main water source, followed by a third (31%) that move between 0.51 to 1km and (13%) that move between 1.01 to 2km. The average distance to the main water source was 0.81km.

Table 5-19: Average distance to the main water source and time taken to collect water

Average distance	**Frequency**	**Percent**
0 – 0.5km	56	56%

0.5 – 1km	31	31%
1.1.– 2km	13	13%
2.1 – 5km	0	0%
5.1km>	1	1%
Total	**101**	**100%**
Hours spent on water collection		
<1 hrs	8	8%
1 – 2 hrs	25	25%
2 – 3 hrs	27	26%
3> hrs	41	41%
Total	**101**	**100%**

Source: Baseline survey, 2023

Regarding the average time spent on water collection, table 5-19 above further shows that more than a third (41%) of households spend more than 3.01hrs on water collection, followed by (26%) that spend between 2.01 to 3hrs while a quarter (25%) spend between 1.01 to 2hrs. A small proportion spends (8%) less than 1 hr per day.

From the above analysis, the water supply system design should aim at reducing the walking distance and the time taken to collect water for the household. This way households will have ample time to devote to economic activities for adults and to education for the school-going children.

5.5.3 Responsibility for water collection

According to Table 5-20, the majority of the households had the burden of fetching water mainly on the women (43%) and the girls (32%) respectively. A small proportion said that water collection at the household level is the responsibility of all household members. According to focus group discussions (FGD), the main means of fetching water was by head/back. FGD findings also revealed that water is mainly fetched very early in the morning before the children go to school or late in the evenings when they return from school. Early morning water collection greatly disrupts daily school attendance.

Table 5-20: Responsibility of fetching water at the household level

Who fetches water	Frequency	Percent
Women & girls	43	43%
Women	33	32%

All household members	12	12%
Girls	4	4%
Women & boys	4	4%
Boys & girls	3	3%
Boys	2	2%
Total	**101**	**100%**

Source: Baseline survey, 2023

FGD with women groups for Goboro market indicate that water collection during the dark hours i.e. early morning and late in the night subject women and girls to safety and security risks including rape and defilement of school girls. Discussions with women revealed that they anticipated that the proposed water supply project to avert these security risks by availing water throughout the day and reducing the danger of fetching water during insecure hours.

5.5.4 Challenges associated with water Collection

The baseline survey inquired about the water collection challenges during wet and dry seasons. Findings in Table 5-21 indicate that during the wet and dry seasons, Goboro faces several water collection challenges. However, the most predominant challenges experienced during the wet season include poor quality water (25%) and difficult terrain (22%) while during the dry season, the major challenges associated with water collection are over-crowding (37%), inadequate water (29%) and long waiting time (24%).

Table 5-21: Challenges with water collection

Water collection challenges	**Wet season**	**Dry season**
Poor quality water	25%	1%
Difficult terrain	22%	4%
Inadequate water	13%	29%
Over crowding	12%	37%
Children playing at the source	11%	0%
Long waiting time	6%	24%
Conflicts	2%	3%
None	10%	0%
Total	**101**	**100%**

Source: Baseline survey, 2023

The proposed project should aim at addressing and solving the above challenges by designing a sustainable and reliable water supply system.

5.5.5 Amount of Water Used by Households

On average half (50%) of the households use between 5 to 10 jerrycans of water per day, followed by those (18%) that use between 10 to 15 jerrycans while a small proportion (15%) use a maximum of 5 jerrycans a day. See Table 5-22 for details. Given the limited water sources in Goboro RGC, the high water demand is straining the existing water sources and resulting in over-crowding at the water sources.

Table 5-22: Amount of water used at the household level

Challenges	Frequency	Percent
< 5	15	15%
5.1 to 10	51	50%
10.1 to 15	18	18%
15.1 to 20	6	6%
20 <	11	11%
Total	**101**	**100%**

Source: Baseline survey, 2023

Focus group discussions with the community indicated that the main use of water in Goboro RGC include domestic use, brick making, utilized by public institutions such as markets, school, health centres, refugee reception centre and boda-boda and car wash.

5.5.6 Households Payment towards maintenance

Table 5-23 below shows that the majority (65%) of households pay for domestic water while almost all (99%) pay for the maintenance of the existing water sources. This is a positive indicator of the willingness of the beneficiary households to contribute user fees for the sustainable operation and maintenance of the proposed water supply system.

Table 5-23: Payment for use of water

Pays for water	Payment for domestic	Payment for maintenance of water
Yes	65%	99%
No	35%	1%
Total	**100%**	**100%**

Source: Baseline survey, 2023

5.5.7 Management of water sources

The baseline survey included questions on women's involvement in the management of water sources. Findings suggest that over (99%) of the women are involved in the management of Goboro water sources and they are part of the water user committees. Table 5-24 further explores the roles women play on user committees. Findings indicate that more than half (54%) of women are treasurers on the user committees, a quarter (25%) serve in the capacity of chairpersons and less than a quarter (17%) are secretaries. The project under the stakeholder engagement component should empower and build the capacity of women to take on a more active role in the sustainable management of the proposed water supply project since women are the main users of water at the community and household levels.

Table 5-24: Women's involvement in water management

Women involved	**Frequency**	**Percent**
Yes	99	99%
No	2	1%
Total	**101**	**100%**
Women roles	**Frequency**	**Percent**
Treasurer	69	54%
Chairperson	32	25%
Secretary	21	17%
Other	5	4%
Total	**127**	**100**

Source: Baseline survey, 2023

5.6 Sanitation and Hygiene

Under sanitation and hygiene, the baseline survey examined the following key variables. Availability of toilet facilities, challenges with toilet facilities, existence of public toilets, waste disposal and prevalence of waterborne diseases.

5.6.1 Availability of toilet facilities

Baseline survey findings indicate that almost all (91%) of the households had a toilet facility while a significant proportion (9%) had no toilet facility but used a communal toilet facility or shared a facility with neighbours. Homes without toilet facilities are prone to health-related hazards. The survey further asked about the type of toilet facility possessed by households. Findings suggest that almost all (90%) of the households had traditional pit latrines while a few reported VIP latrines (6%) and water-borne toilets (4%) as indicated in Table 5-25 below. Observations in Goboro RGC suggest that VIP toilets and water-borne toilets are mostly found in institutions such as Goboro P/S, Refugee Reception Centre, and Goboro HClI.

Table 5-25: Availability and type of toilet facility

Availability of facility	**Frequency**	**Percent**
Yes	92	91%
No	9	9%
Total	**101**	**100%**
Type of toilet facility	**Frequency**	**Percent**
Traditional pit latrine	83	90%
VIP latrine	5	6%
Waterborne	4	4%
Total	**92**	**100**

Source: Baseline survey, 2023

Public toilet at Goboro Market

Dilapidated latrine at the Goboro Market

VIP toilet at UNHCR Refugees Reception Centre

A VIP Toilet facility at Goboro P/S in Maru West Village

A Traditional Toilet Facility in Buli Buli Village

A Traditional Toilet with a lack of safety requirements like a door, roof, or HWF, in Wadri Village

Plate 5-11: Types of toilet facilities in Goboro RGC According to Kochi Sub-County Development Plan

The following are the areas in dire need of attention in terms of sanitation improvement

- Trading Centres – Goboro, kochi, Aliodranusi and murere
- Some Churches and Mosques
- Shelters for entertainment like video halls, disco halls, etc.
- Primary Schools – Kochi bridge, Goboro, Akande, Kendra, Kelurunga, Ombechi, fitinambaya, feyo, and Alema Primary School.

5.6.2 Challenges with toilet facilities

Several challenges are faced with the toilet facilities within Goboro RGC. However, according to Table 5-26. The 3 common ones included the area being swampy (67%), rocky grounds (15%) and collapsing soils (12%) which render the construction of toilet facilities in the RGC a challenge. For instance, focus group discussions noted that latrine construction in swampy and rocky areas increases the cost of construction and emptying the toilet facilities. The participants in women's FGDs also noted that pit latrines constructed in swampy areas often collapse before their lifespan.

Table 5-26: Latrine construction challenges

Challenges	Frequency	Percent
Swampy area	78	67%
Rocky grounds	18	16%
Collapsing soils	14	12%
Other	6	5%
Total	**116**	**100%**

Source: Baseline survey, 2023

5.6.3 Public toilets

The survey included a question about the presence of public toilets in Goboro rural growth centres. Most (82%) of respondents confessed that there were no public toilets in the centre. This is clearly expressed by the high need for public toilets in the rural growth centre. For instance, Table 5-27 denotes that almost all (96%) said there was a need for public toilets. This need will be addressed under the sanitation component of the project.

Table 5-27: Presence and need for public toilets

Presence of public toilets	**Frequency**	**Percent**
Yes	18	18%
No	83	82%
Total	**101**	**100%**
Need for public toilets	**Frequency**	**Percent**
Yes	97	96%
No	4	4%
Total	**101**	**100**

Source: Baseline survey, 2023

The location of toilet facilities should be partly informed by the input of the beneficiary communities including the village water and health committee and the respective LC chairpersons of the different villages where the facilities will be proposed.

5.6.4 Waste Disposal

The baseline survey inquired about the disposal of wastewater and solid waste. Wastewater is managed in different ways, however, according to Table 5-28, the 3 common ways of disposing of wastewater include dumping into a compound (38%), draining wastewater in soak-away pits (35%) and dumping in gardens (24%). Regarding disposal of solid waste, more than half (53%) of the respondents said that they dump solid waste in rubbish pits, more than a third (34%) collect and burn while (8%) scatter solid waste in the gardens. This finding points to the notion that there is no streamlined collection and management of solid waste in Goboro RGC by the Kochi sub-county.

Table 5-28: Water and solid waste management

Disposal of wastewater	**Frequency**	**Percent**
Dumping into compound	39	38%

Drained in soak-away pit	36	35%
Dump in garden	24	24%
Dumping in the road	2	2%
Others	1	1%
Total	**101**	**100%**
Disposal of solid waste	**Frequency**	**Percent**
Dump in rubbish pit	61	53%
Collect and burn	39	34%
Scatter in garden	9	8%
Dump in the open collection area	6	5%
Total	**115**	**100**

Source: Baseline survey, 2023

5.6.5 Waterborne diseases

Findings suggest that the most common waterborne diseases in Goboro RGC are malaria (62%), typhoid (25%), Diarrhea (11%) and bilharzia (2%). According to engagements with the community elders, the construction of reliable sources of clean and safe water and the construction of toilet facilities within Goboro RGC, will significantly reduce the prevalence rate of waterborne diseases.

Table 5-29: Common waterborne diseases

Diseases	**Frequency**	**Percent**
Malaria	94	62%
Typhoid	38	25%
Diarrhoea	17	11%
Bilharzia	3	2%
Total	**152**	**100%**

Source: Household survey 2023

5.6.6 Energy sources for lighting and cooking

The survey inquired about major sources of energy for lighting and cooking. Findings in Table 5-30 below show that there are 2 major sources of energy for lighting including torches accounting for (45%) and solar (42%). Concerning energy sources for cooking, most (89%) of the interviewed households use firewood with an insignificant proportion using charcoal (3%). Overreliance on biomass energy for cooking within the project area threatens the degradation of the environment.

Table 5-30: Source of energy for lighting and cooking

Energy source for lighting	**Frequency**	**Percent**
Torches	45	45%
Solar	42	42%
Firewood	11	11%
Electricity	2	2%
Others	1	1%
Total	**101**	**100%**
Energy source for cooking	**Frequency**	**Percent**
Firewood	90	89%
Charcoal	3	3%
Others	8	8%
Total	**101**	**100**

Source: Household survey 2023

The lack of supply of electricity to most urban and rural growth centres hinders economic and social transformation in the district. The absence limits industrialisation as well as value addition. The above situation tends to increase the cost of doing business in the District. Hence, most private business operators tend to over-depend on biomass energy source and their generators to operate their business.

Plate 5-12: Energy sources for lighting in Goboro Trading Centre

5.6.6.1 Energy for Cooking

Over 95% of the households, institutions and industrial energy demand and consumption in the district is from biomass mainly in the form of firewood and charcoal yet it is used inefficiently. Over 96% of the rural population utilises firewood while 70% of the urban population uses charcoal as their main source of energy for cooking. The use of other improved sources of energy such as gas, bio-gas and briquettes are insignificant.

5.7 Transport and road network

Kochi sub-county has two major types of roads i.e. feeder roads and community access roads. The feeder roads in the Kochi sub-county link up the entire sub-county and Goboro RGC and enable the population to easily access administrative and other services. They enable easy access to health facilities, educational institutions, markets, recreational centres, police posts, UPDF detaches, churches, mosques and the refugee reception centre. Specifically, Goboro RGC has one major feeder road i.e. Kochi – Goboro which links to the other feeder roads in the sub-county including Aliodranusi – Kerwa, Aliodranusi – Kali and Kochi bridge – Didibidi. The feeder roads are maintained by the district under the Road Fund.

5.8 Health service delivery

The whole population of Goboro RGC is served by only one Health Centre II i.e. Goboro HCII. According to the Government standards, each parish and sub-county is supposed to have a health Centre Grade II and III respectively. The health centre population ratio is about 1:2128 persons per clinical officer. This is attributed to the fact that Goboro Health Centre II regularly receives patients from South Sudan. Given the above circumstances, there is a need for the Kochi sub-county sub-county to prioritize the construction of more health units for the sub-county to meet the increasing demand for health services within and outside the sub-county.

5.8.1 Other Community Level Health Structures

Within Goboro II, there exists the Village Health Team (VHT) which consists of volunteers selected by the community to assist in health-related issues. This is the Health Centre Grade I and is found at least 2 in every village. We also have the Community Medicine Distributors (CMDs).

These are members of the VHT but are specially chosen to help with giving out specific drugs at the Community level.

5.8.2 Private Health Services

According to Kochi sub-county development plan, there are 12 drug shops which are mainly managed by unqualified personnel. This poses a health risk to the population especially if the drugs are not handled by qualified health professionals. Focus group discussions noted that it is a common practice for ordinary people to go for prescriptions in the drug shops without a prior diagnosis from a qualified health practitioner hence exposing themselves to health hazards.

5.8.3 Referral Pathway

According to Kochi sub-county development plan, the prevailing referral pathway in Goboro RGC starts with the Village Health team and comes directly to Goboro HCII and then to Kochi HC III. However, there are other more serious cases that Goboro HCII and Kochi Health Centre III refer to Yumbe Hospital.

The most common referral cases include:

- Complicated malarial cases in children under 5s, pregnant mothers and adults
- Scissorian mothers who need expert attention in the higher health Units
- Malnourished children.

Most of the diseases and conditions treated in Goboro HCII are due to poor water and sanitation conditions. These diseases include; malaria, diarrhoea, skin diseases, eye and ear infections, respiratory tract infections (RTI), warm infections and infestations with the commonest ones being hookworms, bilharzia, *askaris*, and *stronglodiasis*.

5.9 Educational Institutions

5.9.1 Primary schools

Kochi sub-county has 4 nursery schools, 5 government-aided primary schools, and 4 community-owned primary schools. There is no secondary school in the sub-county. Specifically, Goboro RGC has 2 pre-primary schools, and 1 primary school i.e. Government aided. Goboro primary school has a total enrolment of 1431 pupils with 732 girls and 699 boys. The Goboro primary school has no water source.

Plate 5-13: Goboro Primary School

5.9.2 Educational service delivery indicators

The primary school falls below the national average educational indicators with a 143:1 classroom-pupil ratio, 130:1 pupil-teacher ratio, 23:1 desk-pupil ratio and 95:1 toilet stance pupil ratio. At the sub-county level, the population projections indicate that the children within the primary school age in Kochi sub-county are 4889. The current enrolment thus represents only (55%) of children who should be in primary school. The above statistical projections for the Kochi sub-county suggest that 4,164 children are at home yet they are supposed to be in school. The Goboro RGC has no single secondary school.

5.9.3 School Drop-out rate

There is a high dropout rate in Kochi Sub County. The below table shows that of the 1,235 pupils enrolled in P.1, only 13.8% are likely to reach P.7. Most of the pupils drop out between primary 4 and primary 7. The records in the schools show that the lower primary sections have a high number of pupils but it keeps dropping as they advance to upper primary. In P.1 – P.4, the enrolment totals to 3,298 which is 81.5% of the total number of pupils. Yet in P.5 – P.7, there are only 914 pupils representing 18.5% of total enrolment. No School in Kochi has at least a 50% retention rate. The dropout rate is more on the girls' side. In Goboro primary school, the situation is not any better with only 9.1% likely to reach and complete P7.

Table 5-31: Number of primary pupils enrolled in the schools by class;

S/N0	Schools	P.1	P.2	P.3	P.4	P.5	P.6	P.7	Total
➢	AMAGURU PRIMARY SCHOOL	203	127	78	74	66	38	18	604
➢	KOCHI BRIDGE PRIMARY SCHOOL	371	288	205	113	75	63	39	1164
➢	AKANDE PRIMARY SCHOOL	190	184	158	119	87	24	12	774
➢	GOBORO PRIMARY SCHOOL	426	307	223	189	155	95	36	1431

➢	LOMBE PRIMARY SCHOOL	260	186	171	141	77	46	35	916
Total		1450	1092	835	636	460	266	140	4879

Source: Kochi sub-county Education Office

According to Kochi sub-county development plan, the common reasons for the high dropout rates include; -

- Lack of interest in learning
- Early marriages by both sexes
- No career guidance by the parents
- Pupils are used for labour in their homes and stopped from going to School
- Group influence by the community since most people have not studied
- Social factors such as nightclubs and video shows.
- Poverty and thus inability to pay School fees and procure the needs of the Pupils e.g. uniforms, food, books, pens, etc.
- Peer influence and bad behaviours learnt from the media most especially Video shows and night dances
- Many pupils also drop out because the language of communication is not friendly

The project should design a message that empowers the parents to play their roles and to take it as their responsibility to ensure that their children enrol and attend school regularly.

5.10 Physical Cultural Resources (PCR)

Worship centres, graves and burial grounds were the PCR recorded in the project area. The study found that there was no physical cultural resource directly affected by the proposed Goboro Piped water supply. There were no reported cultural resources reported in Goboro Rural Growth Centre

5.11 HIV/ AIDS Situation

Baseline survey findings suggest that almost all (97%) of respondents were aware of HIV/ AIDS. The risky groups include teenage girls (37%), teenage boys (33%), adult men (15%) and adult women (15%).

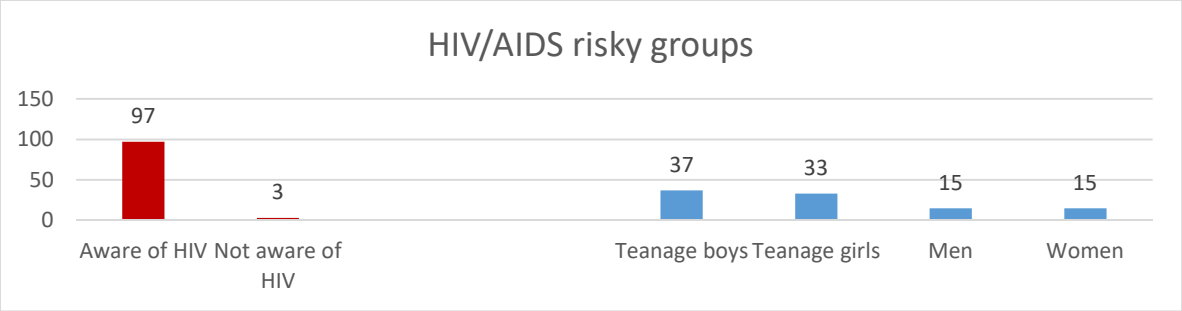

Figure: 5-10: Awareness of HIV/AIDS and Risk Groups. *Source: Baseline survey, 2023*

According to the current Kochi 3-year development plan, there is no comprehensive analysis of the HIV/AIDS situation in Kochi Sub County and Goboro Rural Growth Centre in particular. This is due to the lack of reliable data. However, the following factors were noted as facilitating the spread of HIV/AIDS;

- In Goboro RGC, the population is predominantly a Muslim community and the majority of them are polygamists
- Secondly, the Muslim and Catholic communities do not encourage condom use in the prevention of HIV/AIDS
- Failure of positive clients to follow instructions including feeding the babies with artificial feeds after birth hence increasing infections
- Failure of clients to turn up for reviews at a given period
- Night dances, video shows and major market days expose the youth to unprotected sex
- Lack of sex and HIV/AIDS education by the parents and community leaders attributed to strong religious beliefs that are against the practice.

The proposed solution to the HIV/AIDS problem by the Sub-County includes;

- The sub-county should be supported to undertake monthly HCT Programmes in the Goboro RGC
- Promotion and provision of condoms to prevent STI/HIV/AIDS and other sexually transmitted diseases.
- Promotion of adolescent-friendly reproductive health care services including family planning, STI, and HIV/AIDS, counselling, treatment and ANC
- The sub-county should be supported to develop health education on STI/HIV/AIDS.
- In addition, the proposed project should develop appropriate messages to neutralize the factors responsible for the spread of HIV/AIDS.

5.12 Transport

According to Yumbe District Development Plan,2021/2025, The District had a total road length of 1,691Kms of which 322km (19%) are National roads managed under UNRA of which 93km (28.9%) are in good condition, 130km (40.4%) are in fair condition and 99km (30.7%) are in poor condition. 292 Km (17.3%) are feeder roads managed under the district, of which 68 km (23.3%) are in good condition, 135km (46.2) are in a fair state and 89km (30.5%) are in a poor state. Community Access Roads (CAR) account for 61.5% (1040.9km) of the total road lengths in the district managed at sub-county throughout the district, of this only 92.2kms (8.9%) are in good condition, 190.9kms (18.3%) are in a fair state while 757.8kms (72.8%) are at poor state.

The modes of transport in the project area consist of motor vehicles, and motorcycles for the motorized means while bicycles and pedestrians constitute the non-motorized means. All the roads in the project area are marram roads which become impassable during rainy seasons. Table 5-32 below presents a list of roads that will be traversed by the proposed Goboro RGC Transmission route water supply

Table 5-32: Roads to be traversed by transmission pipeline

Road Name	**Type of the Road**	**Surface of the Road**	**Condition of the road**
Goboro- Midigo Road	Feeder Road/District Roads	Marram	Fair
Malanga A Access Road	Community Access Road	Gravel surface	Poor
Lobanga A-Maru B Road	Community Access Road	Gravel surface	Fair
Malanga B Access Road to Maru Borehole	Community Access Road	Earth surface	Poor

Goboro- Midigo Road

Malanga B Access Road to Maru Borehole

Lobanga A-Maru B Road

Plate 5-14: Existing Roads within the project area

5.13 Health Facilities

Good health is central to having a productive workforce, and healthcare provision is vital to the welfare of the community. The Uganda Health Sector Development Plan (HSDP) 2015/16-2019/20 is the medium-term plan driving the agenda of a healthy life for all Ugandans alongside the National Development Plan III (NDP III) and the National Health Policy (NHP II) 2011–2020.

One of the fundamental goals of the HSDP is to contribute to the production of healthy human capital for wealth creation through the provision of equitable, safe and sustainable health services.

In addition, among the guiding principles for the implementation of the NHP II is; being 'evidence-based' and 'forward-looking'. The sector development plan is in line with the Sustainable Development Goal (SDG) target 3.8 which advocates for achieving universal health coverage including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all.

Kochi Subcounty with a population of over 29,818 people, has only one Health Centre III (Kochi Health Centre Grade III and two Health Centre II i.e., Goboro and Lokpe HCII. According to the Government standard, each Parish and Sub-County is supposed to have a health Centre Grade II and III respectively. However, Kochi has one Health Centre Grade III and two Health Centres IIs. The health centre population ratio is extremely high at 1:38,681 persons per clinical officer. This is attributed to the fact that Kochi Health Centre III, Goboro Health Centre II & Lokpe Health Centre II regularly receive patients from South Sudan.

Given the above circumstances, there is a need for the Sub-County Local Government to prioritize the construction of more health units for the Sub-County to meet the increasing demand for health services within and outside the Sub-County.

The Health Centre offers both outpatient and in-patient services. The outpatient services involve diagnosis and treatment of common diseases, monthly antenatal visits by pregnant mothers, routine Immunization and Health Education. Meanwhile, the inpatient services mostly include maternity, PMTCT and admission of other serious disease cases. Cases that are too serious to handle in the health centre are usually referred to Yumbe Referral Hospital. The Health Centre also offers outreach activities like Immunization, Health Education and HCT to Communities on different.

Plate 5-15: Goboro Health Centre II

5.14 Information Communication Technology

ICT is a fulcrum of development. It is an accelerator, amplifier, and augmenter of change. It has a huge potential to improve national productivity by making Government and business enterprises more efficient, effective and globally competitive. ICT greatly facilitates the achievement of Sustainable Development Goals (SDG) 9, SDG 11 and SDG 17 as well as Africa Agenda 2063 Aspiration 1, and Uganda Vision 2040.

ICT has the potential not only to revolutionize the way Government operates but also to enhance the relationship between Government and Citizens (G2C), Government and Business community (G2B) and within Government-to-Government Departments (G2G). It is therefore a crucial driver of social and economic development. ICT can serve a variety of different ends: better delivery of Government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient Government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and or cost reductions.

However, ICT coverage in Yumbe District is quite limited coupled with the remoteness of some parts of the district. The common networks available in the district include; MTN, Airtel, Africel etc. The network requires a lot of improvement for instance just in parts of Ariwa, kei, Midigo, Kerwa, Kochi, Drajini, and Romogi. In terms of uses, about 10% of the population have access to internet services while mobile phone users stand at about 40% of the adult population in coordinating their periodic businesses. However, most of these phones are used for voice calls.

5.15 Gender analysis

Gender analysis highlights the imbalances as regards advantages and disadvantages for women and men in society or in a specific area. It reveals the underlying causes of gender inequality. Promoting gender equality and women's economic empowerment is important in the development planning process as both are important in ensuring that women enjoy their human rights and can contribute to inclusive and sustainable development.

Gender inequalities limit the ability of women and girls to fully participate in, and benefit from development programmes in Uganda. Formal and informal institutions, such as patriarchy, religion, family, marriage as well as social and cultural practices play a major role in perpetuating gender inequalities in Uganda.

Prominent in perpetuating these inequalities are the glaring differences in asset ownership and employment opportunities for women and men, and the ingrained Gender-Based Violence (GBV) – higher among women. Discrimination against women and girls continues to constrain them from equally participating in, contributing to, and benefiting from sustainable natural resource management, as well as sustainable development.

Women continue to face constraints related to access to, control over and ownership of businesses and productive resources such as land and credit. Overall, there is limited employment of women and this constrains further women‘s income potential. Women are also marginalized in skills development, access to financial resources, employment and inheritance rights.

Goboro piped water supply and sanitation project need to put this at the centre of their implementing strategy to ensure that women can be assisted to overcome the hurdles rural women face in the world of work.

5.15.1 Power and Decision-Making

According to the study findings, men are considered leaders and have the privilege to make decisions over their wives, sisters, daughters and mothers on most aspects including ownership of land and other productive resources as well as decisions that impact the socioeconomic life and health of women.

The community is run by clan lords predominantly male and cultural norms stipulate that a wife should be subordinate to her husband and therefore has no right to question him since he is the head of the household. Like women, girls are excluded from decision-making, however, the boys (males) are usually part of decision-making, they attend public consultations and clan meetings where decisions on major productive resources and other important issues are made. The lack of social and economic value for women and women's work and accepted gender roles perpetuates and reinforces the assumption that men have decision-making power and control over women including what they produce. This creates unequal power relations in the home between men and women, boys and girls which further contribute to increased vulnerability of women and girls to GBV and poverty.

The study findings also indicate that relationships between spouses, children and their parents are marked by different levels of authority and power that maintain privileges and subordination among the different sexes and members of society.

In all the groups consulted, relations between men and women, in particular, were characterized by high levels of inequality. Traditionally, men are seen as decision-makers, household heads and breadwinners among others, they, therefore, hold sole authority over the women (wives, daughters, sisters, mothers), a situation worsened by the tradition of paying bride price where the women(wives) are perceived and viewed more as servants and secondary citizens than spouses. Important to note therefore is the fact that despite men assuming and taking on the lead role as HH heads, it is only in theory, that women are the providers of family basic needs.

5.15.2 Access to land and other assets

According to the World Bank Environmental and Social Framework, 2016, ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. More so, these impacts may fall disproportionally on vulnerable PAP households. Where the environmental and social assessment of the project identifies specific individuals or groups as disadvantaged or vulnerable, the borrower will identify such groups; and propose and implement differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and that they are not disadvantaged in the sharing of any development benefits and opportunities resulting from the project.

Land is a vital resource and livelihood asset for all women and men because, in Uganda, most people depend on agriculture to earn a living. However, because the land is communally owned, predominantly males oversee and hold in trust the land on behalf of the whole community and make decisions on it. Women are just given land user rights whereby, husbands allocate land to

each wife for family production, the women therefore till the land with their children to produce food for their family's consumption. Men, therefore, have decision-making power while women are given user rights as qualified by the statement below from one of the FGDs

"*I have two wives and when it comes to cultivation, I allocate every woman their piece of land to cultivate and I also reserve for myself some gardens, every woman takes care of her children "(FGD male respondent Goboro Trading Centre).*

The men on the other hand retain some gardens for themselves and whatever they grow, is mainly meant to be for sale to earn them (men) some income. This money is not shared at the family level but it is meant to facilitate the men's leisure time like drinking alcohol, and soda for Christian men and Muslims respectively, marrying other wives and giving them a good start in the family as they transition to the normal daily hard conditions prevailing in the homestead for those who are still taking on other wives.

Most of the productive assets are owned and controlled by men including; land, animals (cows, goats, sheep etc.) are the property of men and in case the women own animals, they are required to produce ownership licenses to be able to sell them in the market thus, the men in most cases sell on behalf of women and give them the proceeds. These proceeds at times are not delivered in full amounts and because the men are the HH heads, they are not to be questioned consequently disadvantaging the women.

5.15.3 Roles of boys and Girls in the community

The project area is Muslim dominated area and because their religion allows for polygamy, most men produce several children for whom they cannot cater leaving this docket for the women thus, girl child education is not a priority and therefore FGDs with women in the project area indicated that, as soon as a girl gets her first menstrual periods, she is viewed to be ready for marriage. Similarly, these girls are kept away in the homestead doing housework while the boys (youth) are always at the trading centres.

It is important to note that, FGDs reported that, boys have developed a culture of laziness whereby they only wake up and go to hang out with peers in trading centres gambling and involve themselves in substance abuse, this was confirmed using participant observation.

On the other hand, girls are relegated to the homestead and prevented from accessing the public thus, most girls have dropped out of school and are providing labour at home (cooking, fetching water, taking care of their siblings, washing etc.) Muslim women are controlled and restricted and relegated to the homestead and the only time they get to socialize is when they go to the market to fetch water and chat with their friends.

5.15.4 Gender-Based violence

Gender-based violence (GBV) in all its manifestations (physical, sexual, Female Genital Mutilation (FGM), emotional and psychological) remains critical in human rights, public health and economic development (MGLSD, 2016). GBV is perpetrated against men, women, boys and girls, however, the vast majority of cases reported involve women and girls. The existence of GBV violates one's rights and slows down progress in achieving sustainable inclusive human development. Furthermore, in Uganda, social beliefs, systems, perceptions, and attitudes about women and men, boys and girls and their roles in society exacerbate the already fragile categories (DFID, 2016). Domestic violence is widespread in Uganda. Nearly 60% of women between the ages of 15 and 49 have experienced physical and/or sexual intimate partner violence, and 46% of women have experienced marital rape.

According to the Yumbe District Development Plan 2021-2025, Cases of gender-based violence including defilement, rape and child neglect are still common in the district. Although 70% of women have experienced gender-based violence in some form, access to prevention and response services is limited. Factors contributing to gender-based violence include traditional cultural practices like payment of bride prizes, poverty, insecurity, alcohol and drug abuse, and lack of information and rights awareness. Gender-based domestic violence remains a serious violation of rights in Yumbe district. Children are affected more by the consequences of this domestic violence.

During the assessment majority of the female respondents reported having experienced gender-based violence in different settings throughout their lifetime. The most common forms of lifetime violence reported were sexual violence, physical violence, Emotional and psychological violence, Harmful traditional practices, and socio-economic violence.

Sexual violence included rape and marital rape, child sexual abuse, defilement, incest, sexual exploitation and sexual harassment, Emotional and psychological violence included verbal abuse that is insulting, degrading or demeaning, confinement and isolation and the denial of basic resources for family survival, Harmful traditional practices include; early and forced marriage, honour killings and maimings, infanticide or infant neglect and denial of education for girls or women

Socio-economic violence includes discrimination and denial of opportunities and services to women and girls, social exclusion and obstructive legislative practice.

Below are some of the statements made by respondents during the FGD interview;

"A man may come back home late sometimes smelling alcohol and drunk and the wife refuses to have sex with him, and this makes their wives angry, and they get aggressive or get other lovers hence sparking off fights in the families" female respondent, Goboro Trading Centre (2023)

"Women who cook and vend food as business might not be allowed to bring their food to the premises because the contractors might fear bringing gender-based violence in their homes most especially when they are not sensitized". Female respondent (2023).

"Sexual exploitation because some women will be asked for relationships, especially in the search for employment opportunities". Female respondent (2023).

"Women with children might not be allowed to work because the contractors fear falling in danger of paying compensation money and being taken to the police for recklessness". Female respondent (2023).

"Labour exploitation for women who might be engaged but earning little income".

"Unwanted pregnancy due to the in migrants who are coming in the community in search of jobs and ending up having sex with women". Female respondents (2023)

In conclusion, the effects of gender-based violence were said to be devastating and long-lasting, to a man or woman, who lives in an abusive environment. It was said to lead to disillusionment and self-destruction. Therefore, policymakers and civil society groups are required to join hands in mobilising against this. Although the government has domesticated several human rights commitments and fights against this by setting up legal instruments and institutions, there are still major gaps in such areas as educating citizens, including children, about their rights, securing access to justice and services, holding duty-bearers accountable, improving access to legal recourse and justice. It is pertinent to interrogate gender-based violence-related issues and devise possible measures to mitigate them before, during and after the implementation of the water supply project.

5.15.5 Poverty

The need for social protection is motivated by two factors: poverty and vulnerability. Poverty describes a low level of income or consumption, while vulnerability refers to the risk of falling into poverty.

According to the Yumbe District Development Plan 2021-2025, People of Yumbe District view poverty as a lack of means to satisfy basic material and social needs, as well as a feeling of powerlessness.

Women are concerned more with the lack of land, water, and family planning services resulting in large family sizes, lack of assistance, household food and poor welfare of children when they define poverty. Men relate poverty mostly to the inability to engage in meaningful employment and the lack of productive assets. To the youth, the degree and extent of social connectedness and family welfare indicate the level of poverty. These show that the challenge to address poverty requires multi-faceted approaches. Gender and location-specific material, income and social capital concerns must be addressed within the context of each community

Overall, the dimension of poverty in Yumbe is characterized by: - Households that have one meal per day; Households with houses built with mud and wattle and grass thatched roofs; and Household members without a radio, or bicycle.

Following the information gathered, below is the table explaining how the different categories are affected by poverty in the community around the project area.

Table 5-33 Categories of the Population Mostly Affected by Poverty in the Project Area

Category	**How they are Affected**
Youth (male and female)	- Drug abuse/opium smoking and chewing of "*mairungi"* - Unemployment - Engage in unprotected sex
Some people with disabilities	- Unemployed - Public neglect - Don't have skills - Vulnerable to diseases and abused sexually
PLWAIDS/HIV	- Have few productive assets and lack vocational skills - Do not have public protection and lack medicines dependents - No source if income
The Elderly	- Have few productive assets and lack vocational skills - Do not have public protection and lack medicines - Lack of dependents
Women	- Marginalized resources access control and ownership - Little influence at top decision-making organization - Engaged in non-productive activities sexually abused
Unemployed and or unemployment	- Have no influence and are abused - Exploited to get cheap labour - Lack of food
Some of the orphans	- Lack of food, shelter, clothing - Abused sexually - Over-exploitation

Category	How they are Affected
Boda-boda riders	- Exploited to get cheap labour - Low payment and high fuel prices

5.15.6 Vulnerable groups

The vulnerable groups (Women, the elderly, adolescents, youth, poor, children, persons living with HIV/AIDS, and persons with disabilities) were identified as some of the vulnerable groups in the project area.

Women: In Uganda, gender relations have favoured men in nearly all aspects including household decision-making, ownership of productive resources such as land, access to capital or financial services and sexual decisions (O'Neil & Domingo, 2015). Although women are at the forefront of economic activities and contribute enormously to the GDP of Uganda, they remain at the periphery of receiving the benefits of development. Women and girls in most societies tend to be poor because of asymmetries in intra-household power, resulting in unequal access to and control over productive assets (physical and financial capital). They have little influence over household income, lack education and skills, have low participation in decision-making processes, and are adversely affected by the patriarchal system of inheritance.

In the proposed project area, women were said to belong to the population group at greater risk of poverty and exclusion from the benefits of development. Women do not own nor control land but only have access. Women are poorer compared to their male counterparts because most of the women are not employed or in low-paying positions, (FYDP,2021)

According to FGD with the women's group held at Goboro Trading Centre,

- The project is likely to enhance crop production through the provision of water to support micro-irrigation during the dry season i.e., March & May, the project should support women by encouraging workers to buy their food crops
- The project should target vulnerable and marginalized groups by extending water supply lines and stand posts close to their homes.
- The female youth should be considered for causal labour as a measure to fight idleness which exposes them to early marriages and unwanted pregnancies.
- Local people should be empowered to use the small income gained from causal labour as start-up capital to diversify income sources.
- The project should install more water points across the Goboro community to strengthen the institution of marriage as women will have more time for their loved ones.

Plate 5-16: FDG with women Group at Goboro Trading Centre

Children: Children are the single largest group of Ugandans living in absolute poverty, constituting 59 percent of them being poor. Kochi Subcounty had a children population of 52% (23,795) of the population. Children are a vulnerable population group because of their inability to provide for themselves in all dimensions, but more importantly, because they cannot raise their concerns directly. Of all children, the most vulnerable are children living in child-headed households, children living with ageing caretakers, and orphaned children. Poor children are less likely to attend school and have little control over their situation and socio-economic environment.

According to the report by the Community Empowerment for Rural Development (CEFORD),2020, many children in the region are being engaged in farming activities, roadside businesses and caretaking by their parents thus depriving them of their rights.

The vulnerability of neglected children within the project area is associated with being part of large families; lacking basic needs; lacking social support and social protection; being physically disabled; living with HIV/AIDS; and limited access to health and education and suffering from child abuse. The child abuse cases were fueled by alcoholism, drug abuse and poor implementation of existing laws.

According to the issues raised during stakeholder engagement, the major causes of child rights violations included domestic violence, property wrangles, lack of enforcement of the laws, lack of awareness of people's rights, poverty, illiteracy, alcoholism, orphanhood, drug abuse and poor implementation of existing laws

Given their mandates regarding probation and Child welfare, the Community Development Officers (CDOs) can identify and follow up on child protection cases as key stakeholders in child and family care. The CDOs handle most of the cases and others are referred either to Family Children Court for further action or to police because of their criminal nature. A few are referred back to the Local council courts because of the procedures required by law. The local leaders expressed concern that these cases will increase during the construction phase with the presence of male migrant Labour who may fraternize with married women and children within the area.

It was noted that this impact is related to the effect of the project on most of the vulnerable groups (women, children, and persons with disabilities) thus strict measures should be taken to alleviate such acts while enhancement measures should be encouraged

The Elderly: According to the United Nations, the elderly are people aged 60 years or older. The estimated population of the elderly in Uganda at 3.6 percent (UBOS 2016). The elderly are vulnerable to being at risk of several challenges; poverty due to retirement from livelihood activities and lack of income, poor health due to the frequent occurrence of diseases that are associated with ageing, affluence, sedentary, increased risk of economic, physical, emotional and psychological abuse.

The assessment carried out a situation analysis of the elderly in the project area to understand the challenges they face or anticipate with the proposed project. The analysis revealed major issues prevalent among the elderly including inadequate health care; stigma and neglect perpetuated by community and relatives; idleness, poverty, exploitation especially those who had property, and loneliness as most have their children away from the town council.

Some said there is dependence on remittances from their children, relatives and at times neighbours.

	During community consultations, majorly, all elderly persons linked old age to poverty in the project area. Gathered information suggested that older people in the area fall steadily into poverty as old age sets in, with some having retired, or had no steady jobs during their youth times yet had families to take care of

The Youth Many youths, in the country who are classified as poor do not have access to productive assets (land and capital). Others lack vocational skills and have limited access to income, credit and income-generating activities.

During community consultations, youth mentioned that they face a major challenge in their access to employment due to their limited professional abilities and scarce job opportunities. Obstacles to creating their own business are numerous, such as the lack of capital and the lack of knowledge of enterprise management. The support from the district and government is very little and when available it does not reach the youth at the lowest level in the village but is rather shared among those in positions of influence.

Youths' expectations from the water supply and sanitation project are high; in terms of job opportunities, skills development and business opportunities among others. Employment of youth especially in casual work during project implementation will not only improve their livelihood but will also create a sense of ownership of the project in the community. This will in turn help control crime e.g., theft of construction material since they are already benefiting from the project.

6 STAKEHOLDER CONSULTATION AND DISCLOSURE

6.1 Introduction

The Stakeholder engagement and consultation process was undertaken as per the requirements of the National Environment (Environmental and Social Impact Assessment) Regulations 2020 and World Bank Safeguard Policies. Under sub-regulation (1) of the regulation (16) of the National Environmental and Social Impact Assessment regulations (2020), and best international practice, the project developer is required to undertake relevant stakeholder consultations during the ESIA process so that their views and fears are incorporated in planning as detailed below;

I) *The developer shall take all measures necessary to seek the views of the people in the communities that may be affected by the project during the process of conducting the study under these regulations*.

Therefore, during the ESIA process, consultations were conducted with relevant stakeholders, including potential beneficiaries, affected groups and local authorities about the project's environment and social aspects and their views considered. To meet this requirement, the EIA team held public consultations with all the villages affected by the proposed Goboro Rural Growth Centre water and sanitation project, National agencies and district local governments were also consulted.

This exercise aimed to disseminate information to interested and affected parties (stakeholders), solicit their views and consult on sensitive issues, to add value to the project design considerations. Public consultation has also been highly useful for gathering environmental and socio-economic data, understanding likely impacts, determining institutions and individual preferences, selecting project alternatives and designing viable and sustainable mitigation measures.

6.2 Public participation objectives

The main objective of the public consultation process was to involve all stakeholders and the community at the very early stages and provide ample opportunity to identify likely negative impacts, consult on sensitive issues and find ways to minimize the negative impacts and enhance the positive impacts of the project.

The specific objectives of the consultation process are to:

a) To provide clear, timely and accurate information about the proposed project to the communities- to ensure the community understands the proposed project and the anticipated impacts;
b) To obtain feedback (the main concerns and perceptions) of the population and their representatives regarding the proposed project- these included impacts, alternatives, and opportunities;
c) Ensure Compliance with both national regulations and international best practice
d) Improve project design and, thereby, minimize conflicts and delays in implementation and create a sense of self-ownership to the project by the community

e) To obtain opinions and suggestions directly from the affected communities and interested parties on their preferred mitigation measures- this included ensuring their concerns and priorities were understood and acting as input into the decision-making process and informing the solutions
f) Obtain the perceived potential negative environmental and social impacts so that they can be mitigated;
g) Obtain baseline environmental and social conditions in the proposed project area based on local knowledge
h) Manage expectations and concerns: by providing a mechanism for stakeholders to engage with the project about their concerns and expectations and provide a mechanism for receiving, documenting and addressing comments received
i) To enhance institutional co-ordination especially where different organizations and institutions are affected or of interest e.g., utility companies and social amenities
j) Provide equal opportunity to stakeholders to get involved in project planning;
k) Build trust with the stakeholders.

6.3 Stakeholder Engagement Plan

The Stakeholder Engagement Plan was implemented successfully, as indicated in the table below.

Table 6-1: Stakeholder Engagement Plan

Component	NO	Tasks	Status
Stakeholder identification	1	Desktop research, feasibility study, team expertise and discussions held during the Reconnaissance Field Visit provided adequate information to identify key stakeholders.	Completed
	2	A Stakeholder List was compiled and categorised the names, positions, organizations and contact details of all stakeholders.	Completed
	3	Further meetings were held with key stakeholders and through such, further assisted in identifying names, organizations and contact details for stakeholders.	Completed
Stakeholder consultations	4	Feasibility studies, preliminary designs and documentation were compiled and presented to facilitate consultative meetings with stakeholders.	Completed
	5	Stakeholder meetings were scheduled formally and included key informant interviews, meetings with key, and informal discussions. Letters of introduction from MoWE were presented to stakeholders.	Completed
	6	Consultations were also conducted at the local level including the local council leadership within which the project lies to be able to incorporate the views of the community concerning the establishment and construction of the Goboro water supply and sanitation project.	Completed

	7	All the views of all meetings and other stakeholder inputs were documented, as well as attendance registers kept of all stakeholders contributing to the assessment.	Completed
Socioeconomic Baseline study	8	National and District level socioeconomic data was sourced from available data sources	Completed
	9	Qualitative socio-economic data were collected at the proposed site within the Project area, to provide representative data for the assessment.	Completed
	10	Socio-economic data was analyzed and compiled, as presented in the ESIA report.	Completed
Summary of inputs	11	All inputs gathered from stakeholders were summarized, for input into project design and the management of both positive and negative impacts.	Completed

6.4 Stakeholder Identification

To develop an effective consultation programme it was necessary to determine exactly who the stakeholders were, based on the definition that a stakeholder is "any individual or group who is potentially affected by a project or can themselves affect a project".

This was based on some key questions below:

a) Who will the project benefit/ affect?
b) Who are the key players in the development and implementation of the project?
c) What key resources will be impacted?
d) Who is most dependent on resources likely to be affected?
e) Who possesses claims on resources to be affected – including legal jurisdiction and customary use?
f) Are several government sectors and ministry departments involved?
g) Which agencies license certain aspects or resources to be affected (forestry, wetlands, wildlife areas)?
h) Are there major events or trends currently affecting the stakeholders (e.g., development initiatives, migration, population growth)?

A database of all individuals, communities, interested parties, organizations, and institutions was generated (and continually updated), and the identification of the stakeholders was based on two different levels (local, and national).

Table 6-2: Stakeholder Categories

No	Stakeholder	Interest/ Mandate
1	MoWE	• They are the implementing agency that bears project conception knowledge and have to establish mechanisms for compliance with ESHS requirements.
2	Yumbe District Local Government & Kochi Sub County Councils and LC	• Approve and supervise the implementation of Local policies and government programs in their areas of jurisdiction • Mobilize the community Follow up on grievances Monitor Social and Environmental concerns related to the project Coordinate District level planning to ensure that project interventions are in line with the • District Development Plans Support the technical supervision of consultants e.g.; District Engineer • Mandated to oversee all construction activities, Environment, Social, Health and Safety in the District
3	Project Partners (Red Cross & UNHCR, OPM)	• Charged with overall coordination of project activities in the district • Monitor grievances redress mechanism within the district related to the project • Support the technical supervision of consultants e.g.; District Engineer
4	Health Workers	• Sensitize the community on HIV and AIDS
5	Community members	• Provide ownership of the project, report • safeguard issues, provide information for • grievances management • To solicit views, comments, and recommendations from the community

6.5 Methods of engagement

Stakeholder engagement during the ESIA study involved different methods. These included formal meetings, key informant interviews, focus group discussions and public meetings as illustrated in Table 6.3 below.

Table 6-3: Summary of stakeholders identified and consulted during the ESIA process

Activities	**Stakeholder**	**Purpose of Information sharing/ disclosure**
Awareness/sensitization meetings by the ESIA team	• PAPs, Landowners, beneficiaries and communities	• General overview of the project and implications
Focus groups	• Women • Youth • Elderly • Persons with disability • Area leaders • Other interest groups	• General overview of the project and implications • Disclosure of mitigation measures and grievance mechanism • Identification of views and expectations

Village meeting / public consultation	• All PAPs • Indirectly affected people • Beneficiaries • Communities	• General project overview • Identification of views and expectations • Disclosure of mitigation measures • Acquisition of information for input into ESIA
Formal meetings	• Government bodies • Local government	• Overview of project and implications • Disclosure of mitigation measures • Acquisition of information for input into ESIA
Key informant interviews	• Local government • Government officers • Local and political leaders • Cultural Leaders	• Overview of project and implications • Baseline data • Feedback on the project proposals

6.6 Stakeholder mobilization

Consultation of government agencies and district officials was done through formal meetings held with the respective agencies and district leadership. A letter of introduction for this purpose was issued by the Ministry of Water and Environment (the client)

At the District level, mobilization was through different structures as highlighted below. At the District, the CAO was notified about the intention of the ESIA team to conduct consultations with affected communities. A contact person from the water department was then allocated by the office of the CAO to guide the team and liaise with the leadership of the sub-county. At the Sub County, the leadership was notified about the project and their views sought.

At the village level, identified villages and their representatives were mobilized through L.C 1 leaders. Local leaders from the identified villages would then select a central meeting place where village members and their leaders convened. Meetings were held with local leaders, representatives of the youth, women, the old and disabled, potential water users, land owners and users among others.

Below is a pictorial view of some of the stakeholder meetings conducted during the ESIA study

6.7 Engagement schedules

Stakeholders were mobilized and engaged at their convenient time and venues as shown in table 6.4 below.

Table 6-4: Stakeholder engagement schedule

Stakeholder	Venue	Designation	Date
Yumbe District	District Headquarters	CAO and District Chairperson	3rd/July/2023

District Water Office	District Water Office Premises	District Water Engineer	3rd/July/2023
Kochi S/C technical office	Sub-county headquarters	CDO	3rd/July/2023
Kochi S/C leaders	Sub-county headquarters	LCI Chairpersons from Goboro RGC	4th/July/2023
Kochi S/C political head	Sub-county headquarters	LCIII Chairperson	4th/July/2023
Goboro HCII	HC Offices	Midwife	4th/July/2023
Goboro Primary School	Headteacher offices	Headteacher	4th/July/2023
Goboro community	Goboro RGC	Residents	4th/July/2023
Goboro women groups	Goboro RGC	Goboro shea butter women group Goboro (Maru & Kelunya) women group	4th/July/2023

Entry meeting held with Yumbe District leadership, MoWE and Consultant

Meeting with Red Cross and District Water Engineer and the Consultant

	
Meeting with District Officials and the Consultants	*Engagement with Water Engineer (Yumbe District)*
	
Meeting with Kochi Sub-County Official	*Meeting with Kochi Sub-County Official*
	
Meeting with the Community at Goboro Trading Centre	*Meeting with women in Goboro Trading Centre*

 *Community meeting at Kochi Sub-county*	 *FDG meeting with the elderly within the project area*
 *Meeting the S/C Chief and CDO, Kochi S/C*	 *Meeting wothKochi Sub-County technical team*

Plate 6-1:Pictorial evidence of consultations during the ESIA Study

6.8 Stakeholder consultation findings

Findings from the National, district, sub-counties and community have been summarized as presented below. Detailed minutes of the ESIA study have been appended E to the report.

6.8.1 Emerging Issues from Yumbe District stakeholders' engagement

Table 6-5:Emerging Issues from Yumbe District stakeholders' engagement

No	Emerging issue	Description	Response from Consultants
1.)	Need for safe water	The district chairperson was happy about the project and was optimistic that the initiative would reduce the incidence of people using unsafe water sources. He pointed out that waterborne diseases such as cholera have a high occurrence in	Noted

No	Emerging issue	Description	Response from Consultants
		the area because of limited access to safe potable water.	
2.)	Mobilisation of the community	The district chairperson noted that the community has been mobilised and aware of the project	Noted and appreciated
3.)	Safe water coverage	Safe water coverage will be enhanced, currently, the district stands at 50% while the national level is at 70% meaning the district coverage is still very low.	Goboro Rural Growth Centre piped water supply system will supply about 10 villages within the Goboro parish, these include; Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi, Wadri. This will increase clean and safe water coverage in the district
4.)	Project delay	The project started in 2021 yet nothing much has been done to date., MoWE should move very fast with the project activities to have the project implemented as early as possible	The consultant informed the stakeholders that the current assignment was for feasibility studies and design after this is done, the MoWE will move to the next stage of procuring a Contractor to do the construction of the water supply project
5.)	Compensation for the PAP	Will damage to private property be compensated?	Compensation will be done in three aspects include payment for easement where private land is affected, payment for crops and trees and compensation for structures affected.
6.)	The number of Water systems in the district	Yumbe is extremely grateful to the government particularly, MWE because if you look at the district, having 6 water systems is something they appreciate	Noted
7.)	Consultants to work with locals	consultant to work closely with the team on the ground for the guidance of the geographical establishments of the proposed location of the project components for example reservoir locations because they have a better understanding of the area.	This was noted and the consultant promised to work together with the locals

6.8.2 Emerging Issues from Kochi S/C technical and political leadership stakeholders' engagement

Table 6-6: Emerging Issues from Kochi S/C technical and political leadership stakeholders' engagement

No	Emerging issue	Description	Response from Consultants
1.)	**Water stressed areas**	There are villages in the catchment area such as Kololo, Maru B, Kerunga and Mongochi which are water-stressed yet not among the beneficiary villages. How will these be included.?	Goboro Rural Growth Centre's piped water supply system will supply about 10 villages within the Goboro parish, these include; Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi, Wadri. Maru, Monigochi and Kololo are part of the benefiting villages for the project
2.)	Shoddy work by the contractor	Yumbe district should ensure that the contractors have modern equipment to avoid shoddy work	MoWE will procure a qualified and experienced contractor to carry out the construction of the water supply project. The contractor will be supervised by district technical staff to ensure they deliver quality work and avoid shoddy job
3.)	Workers' contracts	The contractors and sub-contractors should sign contracts with the casual workers to avoid exploitation of labourers and unfair termination.	Sub-contractors and workers will be provided with contracts highlighting their duties, terms and remuneration
4.)	Land acquisition for the reservoir tank	The land for siting water reservoir belongs to the Catholic Church and a formal transfer needs to be done to avoid future claims and disputes.	The project is mindful of the need and importance of compensating PAP. The land owners for the different project components will be identified and compensated before the actual acquisition of land
5.)	Compensation of the PAPs	Where the pipelines go through private land, the landowners should be adequately and promptly compensated.	The primary objective will be to utilize road reserves however, if any private property is affected compensation will be done on land and any developments on the affected section. Sufficient time will be allocated for the collection of salvage After laying off the pipeline, residents are expected not to plant trees and other long-term crops on the wayleave, they will also not be allowed to put up any structures on the sections.
6.)	Adequate compensation	Compensation for PAPs should be fair and adequate.	This is a GOU project funded by the World Bank Project and therefore, relevant laws and international best practices will be followed to ensure that all PAPs are compensated fairly adequately and timely.

No	Emerging issue	Description	Response from Consultants
7.)	Maintenance funds	The project should put aside funds for major breakdowns.	There will be a small fee paid by users part of this fee will be used to repair in case there is a breakdown
8.)	Constant power to run the system	The water supply system should have a standby generator for emergencies that may be caused by the disruption of a solar-powered system due to heavy rains.	There will be a standby generator to provide power during the rainy season
9.)	Sensitisation of the community	The project should undertake sensitization campaigns to overcome the prevent social ills that may be brought by external workers including elite sexual relations, and drug and alcohol abuse among others	Meaningful, timely, adequate and proportionate engagements will be done throughout the planning and project execution process.
10.)	Supervision the contractor	The office of the CAO should take the lead in the supervision of the project because the community lacks the technical capacity to monitor the construction works	The contractor will be supervised by district technical staff to ensure they deliver quality work
11.)	Security of the installed solar and pump system	The project should hire a guard to protect the installed solar and pumping systems. This will safeguard against vandalism	The ministry will ensure that proper security measures are installed at the intake and the reservoir tank. The sites will be fenced off and a guard hired to guard the sites
12.)	Water supply for future population	The reservoir tanks should be able to hold enough water and supply the entire Goboro community during off-picks. The design of the reservoir tanks should cater to the increasing population of the rural growth centre.	The design horizon for the water supply was based on the projected population up to 2044. There the ever-increasing population has been taken care of.
13.)	Water stressed areas	The design needs to take into consideration the water needs of Goboro which is a water-stressed area.	Goboro Rural Growth Centre piped water supply system will supply about 10 villages within the Goboro parish, these include; Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi, Wadri.Maru, Monigochi and Kololo
14.)	Project ownership	The Goboro community should be empowered to take the lead in O&M of the water supply system for its sustainable management.	The project belongs to the community of Goboro, not the government therefore the community should own the project right from inception to implementation and operational

No	Emerging issue	Description	Response from Consultants
15.)	Local given priority in employment opportunities	The residents of Goboro RGC should be given priority by the contractors when recruiting casual workers	The top priority of the contractor's workforce is the youths and women in the project area. Both unskilled and skilled labour will be sourced from the local community. The youths however should look for opportunities, organize and avail themselves. They should work diligently and responsibly to avoid termination before the completion of the project.

6.8.3 Emerging Issues from Goboro Community Meeting

Table 6-7: Emerging Issues from Goboro Community Meeting

No	Emerging issue	Description	Response from Consultants
1.)	Water fees	The project should desist from charging exorbitant fees which may be access barriers to the poor and vulnerable individuals.	There will be a small fee paid by users part of this fee will be used to repair in case there is a breakdown and pay workers working on the project during operations
2.)	Site for the sanitation facility	The project should together with Goboro leaders establish a suitable place for constructing a sanitation facility because the existing ones are inadequate	proposed sites for the public toilet at Goboro Trading Centre, the design team has taken note of the site and a final decision will be given when the final design is completed
3.)	Public water taps	Adequate water points including taps should be installed at the different accessible locations to cater for the increasing population of the area.	The project will identify central places, especially at trading centres, schools, and health centres to have public stand taps accessible to the community
4.)	Water stressed community	The neighbouring water-stressed villages within the Goboro catchment area should be included to avoid constraining the established water points.	Goboro Rural Growth Centre's piped water supply system will supply about 10 villages within the Goboro parish, these include; Bulibui, Busia, Gaga, Kelunya, Lobanga, Malanga, Maru, Maru West, Monigochi, Wadri.Maru, Monigochi and Kololo
5.)	Distribution lines to private homes	The water supply should allow private extensions to homes at the request of interested individuals	Upon completion of the transmission line, a distribution line will be constructed to allow private individuals to apply and connect to their private homes
6.)	Compensation	Where the water pipelines are laid into private land, the	The primary objective will be to utilize road reserves however, if any private property is affected

No	Emerging issue	Description	Response from Consultants
		landlords should be adequately and promptly compensated.	compensation will be done on land and any developments on the affected section. Sufficient time will be allocated for the collection of salvage After laying off the pipeline, residents are expected not to plant trees and other long-term crops on the wayleave, they will also not be allowed to put up any structures on the sections.
7.)	Employment opportunities for local	Priority should be given to the locals when recruiting for casual labour. This will create employment opportunities, especially for young people.	The top priority of the contractor's workforce is the youths and women in the project area. Both unskilled and skilled labour will be sourced from the local community. The youths however should look for opportunities, organize and avail themselves. They should work diligently and responsibly to avoid termination before the completion of the project.
8.)	Water supply for future population	The water supply system should be designed to ensure that the water volume and flow are stable and can cater to the water needs of the increasing population of the Goboro catchment area.	The design horizon for the water supply was based on the projected population up to 2044. Therefore, the ever-increasing population has been taken care of.

6.8.4 Emerging Issues from Goboro HCII Administration Engagement

Table 6-8: Emerging Issues from Goboro HCII administration engagement

No	Emerging issue	Description	Response from Consultants
1.)	Water source at the facility	The health facility has a water source but is shared with the community and Goboro Primary School and is not adequate to meet the water needs of the facility. The proposed water supply system should install a water point for the facility.	Noted
2.)	Reduction of water-borne diseases	The water supply project will help us reduce the spread of communicable infections through a constant flow of water to support the washing of hands by our patients and the community.	Noted
3.)	Water demand for locals and refugees	The water supply system should cater for the increasing water demand due to the increasing number of patients at the facility i.e. both the locals and refugees.	Noted
4.)	Water point at the staff quarters	The water supply project should also install water points at the staff quarters. The existing facility at the staff	Noted

		quarters is shared between the patients and the medical staff.	

6.8.5 Emerging Issues from Goboro Primary School Administration Engagements

Table 6-9:Emerging Issues from Goboro Primary School Administration Engagements

No	Emerging issue	Description	Response from Consultants
1.)	No water points for the school	The school has a population of 1475 pupils with 757 boys and 738 girls. It has the highest number of refugees in Kochi sub-county but with no water source.	Noted
2.)	Water for staff quarters	The project should install water points for the school and staff quarters.	Noted
3.)	Water supply during the dry season	Connecting the school to the proposed water supply system will be key in resolving water challenges, especially during dry seasons when the yields are very low and absenteeism especially among girls is high.	Noted
4.)	Payment for water user	We are ready to contribute water user fees for the sustainable operation and maintenance of the water supply system. Currently, the school pays 10,000 for O&M.	Noted
5.)	Water tap for children	With the introduction of the water supply system, the school will be in a position to provide drinking water for the pupils hence reducing break-offs	Noted
6.)	Rain harvesting	The project will reinforce the capacity of the 2 rain harvesting tanks i.e. 5,000 litres donated by KCB bank. The proposed project will improve the school sanitation and hygiene since there will be adequate water for cleaning the toilet facilities	Noted

6.8.6 Emerging Issues from Goboro Women Groups Engagement

Table 6-10: Emerging Issues from Goboro Women Groups Engagement

No	Emerging issue	Description	Response from Consultants
1.)	Water for irrigation	The project is likely to enhance crop production through the provision of water to support micro-irrigation during the dry season i.e. March & May.	The proposed water supply is to improve access to safe water for households not meant for irrigation

2.)	Support for the women	During construction works, the project should support women by encouraging workers to buy their food crops	The top priority of the contractor's workforce is the youths and women in the project area. Both unskilled and skilled labour will be sourced from the local community. Women will be allowed to work and supply equipment and food to the contractors.
3.)	Vulnerable group	The project should target vulnerable and marginalized groups by extending water supply lines and stand posts close to their homes.	Noted
4.)	Job opportunities for youth	The female youth should be considered for causal labour as a measure to fight idleness which exposes them to early marriages and unwanted pregnancies.	The top priority of the contractor's workforce is the youths and women in the project area. Both unskilled and skilled labour will be sourced from the local community.
5.)	Empowerment of the local community	Local people should be empowered to use the small income gained from causal labour as start-up capital to diversify income sources.	Noted
6.)	Need for more water kiosks	The project should install more water points across the Goboro community to strengthen the institution of marriage as women will have more time for their loved ones	More public water kiosks will be installed in different villages as requested

6.8.7 Emerging Issues from Goboro elders/landlord's engagement

Table 6-11: Emerging Issues from Goboro elders/landlord's engagement

No	Emerging issue	Description	Response from Consultants
1.)	Compensation	The project should compensate people for affected private land especially where water pipes are laid on private land	The primary objective will be to utilize road reserves however, if any private property is affected compensation will be done on land and any developments on the affected section. Sufficient time will be allocated for the collection of salvage After laying of the pipeline, residents are expected not to plant trees and other long-term crops on the wayleave, they will also not be allowed to put up any structures on the sections.
2.)	Compensation of the land owners	Ensure that consent is given by landlords where the water sources/boreholes are drilled. This	The project is mindful of the need and importance of compensating PAP. The land owners for the different project components

	for the reservoir and borehole sites	will avert future claims and disputes by family members	will be identified and compensated before the actual acquisition of land for the reservoirs and borehole sites
3.)	Adequate sensitisation	Undertake massive sensitization for the community in Goboro RGC to embrace the project as a development initiative because the area is water-stressed. There should be a mechanism to avert unnecessary delays in construction works by the contractor including penalties. Delays in work may result in the vandalization of the project equipment.	Sensitisations will be ongoing throughout the project cycle
4.)	Security at the water intake site.	The installed water supply system should hire a night guard to safeguard the solar and pumping systems from being vandalized.	The ministry will ensure that proper security measures are installed at the intake and the reservoir tank. The sites will be fenced off and a guard hired to guard the sites
5.)	Appreciation token	The project should give land landlords private connections as an appreciation token for giving land to the project.	Noted

7 PROJECT ALTERNATIVES

7.1 Introduction

Analysis of feasible environmentally and socially sound alternatives for this project touches on several aspects including a no-project development option, the water pipeline construction intervention option, alternative sites for the pipelines, timing and scheduling and environmental classification alternatives.

7.2 The No Project Alternative

SDG target 6.1 aims to increase universal and equitable access to safe and affordable water supply for all by 2030. Uganda's Vision 2040 aims to transform Uganda's economy to a middle-income status and have a portable water supply to every parish in the country. In a bid to achieve sustainable and equitable economic development for all, the Ministry of Water and Environment intends to establish Piped water supply systems in Rural growth centres in Refugees hosting Districts

According to Yumbe District Development Plan (2021-2025), The safe water coverage for the district is only 48% (based on a source man ratio of 300 people served by 1 deep borehole, 300 people served by 1 shallow well, 200 people served by 1 protected spring, and 150 people served by 1 Tap stance). The district has for a long time been struggling to cope with chronic water shortages and the inadequacies of their existing water infrastructure. During dry seasons residents are forced to walk long distances (1-5km) in search of water, hence wasting significant economic time and energy in addition to poor hygiene.

A No Project alternative will leave the residents of Goboro in this current dire situation and deny them adequate drinking water, sanitation, and hygiene which are essential ingredients to ensure human health.

7.3 Alternative Sources of Water

7.3.1 The surface water source (Stream)

As regards surface water, the nearest surface water source within the project area is Nyawara Stream, a tributary of River Kochi. However, according to the feasibility study, the source would not be able to provide the required water quantity since the stream is seasonal meaning during the dry season there would be no supply. Besides the source being seasonal, the cost of treating this water would be very expensive since the river is highly polluted and water quality is very low due to high turbidity

Therefore, the option of exploiting surface water sources as an alternative to the Goboro RGC Water supply system is not a feasible one. It's very expensive and not achievable.

7.3.2 Roof Catchment:

A roof becomes a catchment when it is used for harvesting rainwater. Then it can be called a "Roof catchment". Roofs are the most common type of catchment used for harvesting rainfall. Rainwater

harvesting from impervious roofs made of corrugated iron sheets corrugated plastic and clay tiles is a popular method for providing portable water directly from rainfall. The system provides water at home, is affordable, easy to practice regardless of physical or climatic conditions and can be designed to suit different conditions (available finances, roof area, family size, rainfall or roof area).

Institutions such as schools, health facilities, offices, churches and other such buildings have large roofs that can be used to harvest larger quantities of water.

They however need good management to regulate water abstraction rates as the water will be used by many people. Wherever possible, the roofs of individual households are preferable to communal systems. Roof water harvesting is particularly attractive where the main alternatives are surface water sources are unavailable and groundwater is either difficult to secure or has been rendered unusable by fluoride, salinity or arsenic.

Roof catchment was not ideal because tapping roof water is not capable of meeting the water demands of Goboro RGC since most of the houses in the project area were grass-thatched making it impossible to harvest rainwater. However, it was recommended for the key institutions like Goboro Primary Schools, Goboro Health Centre and Sub-County Offices since they had large roofs for rainwater harvesting to supplement the Piped water system.

7.4 Alternatives Pipeline Material

Materials commonly used to construct water pipes include polyvinyl chloride (uPVC), cast iron, copper, steel and in older systems concrete or fired clay. Joining individual water pipe lengths to make up extended runs is possible with flange, nipple, compression or soldered joints.

In this project, the use of concrete, cast iron and copper was not considered.

The type of pipelines to be used will be polyvinyl chloride (uPVC) and galvanized pipe steel. This galvanized coating keeps the water from corroding the pipe. The project will also use High-density polyethene (HDPE) or polyethene high-density (PEHD) is a thermoplastic polymer produced from the monomer ethylene with a high strength-to-density ratio, HDPE is used in the production of corrosion-resistant piping. The use of asbestos concrete pipes was rejected owing to the environmental and social risks and so is the use of concrete pipes or copper pipes due to cost implication and conformity with the best practice in the industry which has scaled down on their usage.

7.5 Alternative Project Routes

Alternative siting will involve re-routing the water pipeline network to other sites other than along road networks. This will be very costly for the proponent as it will require them to search and

negotiate for land. It also does not make any economic sense not to take advantage of the land available along road networks demarcated for such projects.

7.6 Sanitation options

Wastewater will be produced due to the increased consumption of water after the installation of the piped water supply system. The principal objective of wastewater treatment is generally to allow human and industrial effluents to be disposed of without danger to human health or unacceptable damage to the natural environment.

a.) Conventional treatment

A centralized water treatment approach, also known as conventional treatment, uses a combined process of coagulation, flocculation, sedimentation, filtration, and disinfection. It treats water in a central location and then distributes water via dedicated distribution networks.

A centralized water treatment system can treat large volumes of water at high rates to accommodate all residential, business, and industrial uses. This approach is well-developed and can effectively remove practically any range of raw water turbidity along with harmful pathogens, including bacteria, viruses, and protozoa. However, the capital cost and operating and maintenance costs for a centralized system can be significant. It consists of water source development, construction of significant infrastructures (e.g., the treatment facility, reservoir, and water distribution main), implementation of automated monitor and control systems, and on-site operators

However, a centralized conventional water-borne sewerage system is not practical in the project area due to the low levels of water consumption rate, the semi-permanent type of housing structures and affordability by the majority of the residents.

b.) Natural biological treatment systems

Natural low-rate biological treatment systems are available for the treatment of organic wastewater such as municipal sewage and tend to be lower in cost and less sophisticated in operation and maintenance. Although if properly designed they are more effective in removing pathogens processes, they tend to be land intensive by comparison with the Decentralized Waste water treatment facilities.

However, a Natural biological treatment system is also not practical in the project area due to the low levels of water consumption rate, the semi-permanent type of housing structures and affordability by the majority of the residents.

c.) Decentralized Waste water Treatment System

Decentralization appears as a logical solution to tackle sustainability problems of wastewater management systems, as it focuses on the on-site treatment of wastewater and on local recycling and

reuse of resources contained in domestic wastewater. Decentralized solutions in general will tend to be compatible with local water use and reuse requirements, where locally treated water could support agricultural productivity or (in more urban areas) be used as a substitute for drinking-quality supply water for compatible uses.

A part from occupying a small size of land, decentralized treatment is also cost-effective compared to conventional treatment methods.

Soak-away pits are recommended for wastewater disposal for households, institutions and public places that cannot afford a water-borne system such as septic tanks.

Households and institutions without plumbing fixtures will continue using pit latrines for human/faecal waste disposal.

Households and institutions with water-borne sanitation facilities and private water service connections are expected to have septic tanks for faecal waste treatment. These facilities should be private installations.

Households and institutions should be encouraged to construct lined pits that can be emptied when filled. Line pit latrines save on cost and space in constructing new latrines when the old ones are full. The pit lining also minimizes ground water pollution in the area.

The project option is that the project will provide 1 public toilet (water-borne toilet type of 9 stances each) to be located at Goboro Trading Centre next to the market.

7.7 Power supply options

Goboro RGC has no grid power supply system currently. Therefore, two alternative sources of power supply have been considered for the running of the submersible borehole pumps, viz;

- Generator sets
- Solar power system

An analysis of the above power supply system has been made as follows.

7.7.1 Generator sets

The following capacities of prime generator sets have been sized for each pumping station respectively.

A comparison of the solar power and the diesel generator power supply systems is presented below.

Table 7-1: Comparison between solar power and diesel power generator

FACTORS	GENERATOR POWER	SOLAR POWER
1. Reliability	Offers reliable constant power supply	Solar can be affected by weather leading to failure to adequately charge the batteries for full efficiency to run the system.
2. Capital Cost	The capital cost for the generator is lower compared to the solar system of similar capacity.	Solar initial infrastructure costs are very high. The current estimate is at UGV 406 million and UGX 435 million for Maru and Malanga stations respectively. The recovery period of the capital cost for the solar system is less than 3 years (based on the O&M elements that are eliminated for the generator sets)
3. Environmental impact	Environmentally less friendly due to air pollution, noise and dirt.	Environmentally friendlier.
4. Vulnerability	Minimal vulnerable risks such as vandalism	Very vulnerable to vandalism.
5. Space (land) requirement	Minimal land space	The solar system required will occupy a minimum of 536m^2 of land.
6. Useful economic life	Economically viable for 15 Years	Economically viable for 30 years
7. O&M costs	Generator operating and maintenance costs are high and regular in terms of fuel, frequent periodic servicing, repairs of the equipment and spare parts replacements.	Cheaper operating and maintenance costs require changing of batteries every 3 years, lamps, cleaning and replacement of panels.
8. Suitability for backup	Generators can act as a backup for the solar system.	The solar system charges batteries during the day and pumps at night.

Based on the power supply analysis, Solar energy poses a number of advantages compared to generator power source. Goboro RGC water supply project will run fully on solar energy but will be supplemented by a stand by generator when the sunshine is off.

In conclusion, the sources of water for this project are groundwater sources which include Malanga and Maru boreholes with a sustainable yield of 13 m^3/hr and 17 m^3/hr respectively. Both are located in Kochi Sub- County, in the respective villages of Malanga and Maru. Therefore, the groundwater sources shall ensure sustainable water supply systems to serve both the host communities and refugees which will contribute to the elimination of water trucking in refugee settlements. The existing surface water sources are seasonal meaning during the dry season there

would be no supply in addition the high cost of treating this water due to pollution and high turbidity.

Except for the high initial costs and the large space for land take, the solar system offers more cost-effective operation and maintenance costs over the design horizon and would therefore be the preferred option. The generators remain the only option given the limited budget.

The specifications for electrical wiring, installations and fittings shall be of approved international standards.

8 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

8.1 Introduction

Impacts were identified using checklists as well as information from the stakeholder/public participation exercise and considering the baseline conditions. The project will have both positive and negative impacts. Some safeguard risks can affect the expected outcomes and benefits of the water supply and sanitation project. This section discusses the positive and negative impacts and risks of the proposed construction and operation of the Goboro RGC Water Supply and Sanitation Project.

8.2 Impact Evaluation and Analysis

This section evaluates the prospective impact level according to several factors, such as the impact severity, length, geographic reach, and the availability of easily recognized, reasonably priced mitigations. The effects noted by the stakeholders contacted are also taken into account in the impact assessment. The effect evaluation methodology is covered in section 2.7 of chapter 2. Potential and apparent consequences have been determined by on-site specialist investigations, a consultative process with key stakeholders, and proposed activities, as summarized in the environmental and social matrix. Table 8.1 is provided below.

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Table 8-1: Environmental and Social Impact Matrix

Impact	Source	Probability of occurrence	Receptor	Magnitude				Overall Significance		
				Frequency (1-3)	Duration (1-3)	Extent (1-3)	Intensity (1-3)	Impact Sensitivity	Magnitude	Impact Significance
Air quality alteration & emissions	machinery and construction activities	M	Community and fauna	2	2	2	2	Medium (2)	Medium (8)	Medium
Noise and Vibration	machinery and construction activities	M	Community and fauna	1	2	2	2	High (3)	Medium (7)	Medium
Visual Alteration	visual scenery alteration in the project area	L	Community, Landscape and fauna	1	2	1	1	Low (1)	Low (5)	Low
Erosion and siltation of water resources	Increased water runoff and erosion, Vegetation clearance	L	Community, flora	1	2	1	2	Low (2)	Medium (6)	Low
Loss of Flora	Pre-construction and Construction phase site clearing	M	Community, flora and fauna	2	1	2	2	Medium (2)	Medium (7)	Medium
Disturbance of Fauna and Habitat Alteration	Construction phase disturbance, noise, human presence and pollution	M	All vegetation Mammals, reptiles amphibians, fish	2	1	2	2	Low (1)	Medium (7)	Medium

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Impact	Source	Probability of occurrence	Receptor	Magnitude				Overall Significance		
				Frequency (1-3)	Duration (1-3)	Extent (1-3)	Intensity (1-3)	Impact Sensitivity	Magnitude	Impact Significance
Poor sanitation/Waste Management	Wastes generated could be both hazardous and non-hazardous	L	Community, flora and fauna	1	1	1	2	Low (1)	Low (5)	Low
Increased Spread of HIV/AIDS & communicable Diseases	An influx of migrant labour, sexual behaviours	M	Community	2	2	2	2	Medium (2)	Medium (8)	Medium
Increase in Traffic accidents and Safety	Traffic and Road accidents	L	Community and fauna	2	1	1	1	Low (1)	Low (5)	Low
An influx of construction workers and Labour social ills	lack the security of a definite tenure and basic social and employment protection, social ills	H	Community and workers	1	3	3	2	Medium (2)	High (9)	High
Occupational Safety and Health Hazards	Risks in terms of occupational health and safety	H	Community	2	3	2	2	Medium (2)	High (9)	High
Gender & vulnerable groups related impacts	An influx of migrant labour and increased income in the communities	H	Community	2	3	3	2	Medium (2)	High (10)	High
Land take	ROW Acquisition	H	Community	1	3	2	2	Medium (2)	Medium (8)	Medium

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Impact	Source	Probability of occurrence	Receptor	Magnitude				Overall Significance		
				Frequency (1-3)	Duration (1-3)	Extent (1-3)	Intensity (1-3)	Impact Sensitivity	Magnitude	Impact Significance
Operational Phase										
Hazardous Chemicals	Accidental spills of chemicals	H	Community & Workers	1	2	1	2	Low (1)	Low (6)	Low
Water system leaks and loss of pressure	Poorly installed or deteriorated joints and connections	M	Community and fauna	2	2	2	2	Medium (3)	Medium (8)	Medium
Siltation from excavated soils	Inadequate sediment control measures during excavation, such as silt fences	M	Community and fauna	2	1	1	1	Low (2)	Low (5)	Low
Solid waste management	Wastes generated could be both hazardous and non-hazardous	H	Community, flora and fauna	2	2	1	2	High (2)	Medium (7)	Medium
Deficiencies in water distribution	Inadequate design or layout of the distribution network	M	Community & Workers	2	2	1	2	Medium (3)	Medium (7)	Medium
Traffic and road safety	Traffic and Road accidents	M	Community and fauna	2	1	1	2	Medium (2)	Medium (6)	Low
Fire Hazards	Electrical faults, short circuits, overloaded circuits, or damaged electrical equipment	M	Community and property	1	1	1	2	Low (1)	Low (5)	Low

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Impact	Source	Probability of occurrence	Receptor	Magnitude				Overall Significance		
				Frequency (1-3)	Duration (1-3)	Extent (1-3)	Intensity (1-3)	Impact Sensitivity	Magnitude	Impact Significance
	within the water supply system infrastructure, such as the pumping station									

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8.3 Construction Phase Environmental and Social Impacts

8.3.1 Potential Construction Phase Positive Impacts

The positive impacts are presented below separately for the construction and operation phases.

8.3.1.1 Creation of local employment opportunities

The construction phase of the project will entail several activities that will require both skilled and unskilled labour such as clearance of land, excavation and laying of pipes, concrete and masonry building works, site levelling, and establishment of workers' campsites among other construction activities. The contractor will be obliged to get the bulk of his unskilled labour from Yumbe District and specifically Goboro rural growth centres with 30% of the jobs preserved for women. Given the youthful population outlook the young people presented in the baseline conditions will greatly benefit from the created employment opportunities and the project will be a source of livelihood for many households. It's anticipated that 175 individuals shall be employed in the project activities

Operation and maintenance of the water supply system after it has been commissioned will also present employment opportunities for the operators.

The overall impact assessment is hence **minimal positive** and **short-lived** and applies mainly to the months of intensive excavation. The long-term jobs for O&M of the water supply system and providing security to the solar system house and other project infrastructure will also benefit a few individuals making the benefits minimal.

Enhancement measures

a) The selected contractor will work with the local leaders especially the LC1s to ensure that the locals are given priority during the recruitment process of local workers
b) The LC1 chairpersons give recommendations for the locals who meet the requirements to avert contractors and sub-contractors from bringing external workers. However, should be available strictly to persons above 18 years of age;
c) Advertise the available jobs through the Local chairpersons and Community Development Officer from Kochi Sub-County
d) The contractor is to reserve 30% of the local jobs reserved for women to make the process more gender sensitive.
e) Deliberate efforts be made to ensure women get opportunities to work on the project during its construction phase;
f) The contractor should evaluate worker performance;
g) Worker grievance redress mechanism be established with the involvement of District Labour Officers.

8.3.1.2 Increased market for agricultural produce and local goods

It is anticipated that the during construction phase, there will be an increased market for agricultural produce and local goods. Goboro RGC residents engaged in crop farming will benefit

by selling their produce to contractors' workers, especially raw food crops and cooked food. In addition, locally available goods such as construction materials will be sold to the contractor and sub-contractors which in the long run will improve the income and livelihood of the residents of Goboro RGC.

The overall impact assessment is minimal because it will be short-lived and applies mainly to the periods of construction work. The benefits will only accrue to locals engaged in crop farming and dealing in local goods with high demand by the contractors.

Enhancement measures

a) The selected contractor(s) will be encouraged to purchase materials that can be locally available from the local markets including food crops, mineral water, bricks, sand, timber, and stone aggregates among others;
b) The sub-country/parish through sensitization will encourage local people to start up small enterprises, for example, kiosks and sale of food items and domestic supplies, to serve the construction crew.
c) The contractor should ensure timely payment to workers;
d) Encourage workers to form saving groups;
e) Local Content Policy provisions should be ensured.

8.3.1.3 Income to Material/ Equipment Suppliers and Contractors

The project will require the supply of various materials and/ or equipment. For example, construction will require cement, aggregates, sand, etc. some of which can be sourced locally. Some equipment and materials, for example, pumps, and solar panels, required for the project will be sourced nationally and internationally to ensure that the desired quality is achieved. Local suppliers of materials and equipment who get involved in the project will benefit financially. The project-affected communities would benefit mostly during the construction phase.

Enhancement measures

a) Earth materials needed for construction, for example, murram, and aggregate (stones and sand) are obtained from quarry operations. These should be largely obtained from the project district. However, conscious or unwitting purchase of these materials from unlicensed operations indirectly promotes environmental degradation at illegal quarry sites and can cause medium to long-term negative impacts. It will therefore be a contractual obligation for contractors to procure construction materials from quarries legitimately licensed by the project District Local Governments and duly approved by NEMA

8.3.1.4 Improved Skills for Local Communities

The Project is under contractual obligation to maximise the use of local people for construction works. The benefit that is in for the locals lies in the unique chances for the transfer of skills and technical knowledge in construction and related technical sectors. A considerable number of the employed workforce will convert themselves into fully skilled labourers in work such as plumbers

among others. These skills will not only benefit the locals by providing long-term employment opportunities but also contribute to local human resource development in Project areas that otherwise have restricted opportunities.

Enhancement measures

a) Hiring local workers is a priority, especially for unspecialized jobs. Adopt procurement policies promoting local products and services;
b) Encourage the recruitment of female workers, with equal payment for male and female workers, for equivalent jobs;

8.3.1.5 Improving the growth of the economy

Through the use of locally available materials during the construction phase of the project including cement, concrete and ceramic tiles, timber, sand, pipes etc., the project will contribute towards the growth of the economy by contributing to the gross domestic product. The consumption of these materials, fuel oil and others will attract taxes including VAT which will be payable to the government hence increasing government revenue while the cost of these raw materials will be payable directly to the producers.

Enhancement measure

a) Hiring local workers is a priority, especially for unspecialized jobs. Adopt procurement policies promoting local products and services;
b) Encourage the recruitment of female workers, with equal payment for male and female workers, for equivalent jobs

8.3.2 Potential Construction Phase Negative Impacts

8.3.2.1 Impacts on air pollution

Construction activities are likely to generate air pollutants which will have the potential to adversely affect the local air quality, and thereby affect human and vegetation health.

The project area is mainly rural, and most local roads are of earth surfaced. The edges of most of these roads are covered by vegetation such as grass, shrubs and trees. Dust levels along these roads are ordinarily low, with an appreciable increase during the dry season. Construction activities such as site clearance (both at the intake site, the reservoir site and along the pipeline alignment), vegetation removal and grading, excavations/earthworks, stockpiling of materials and spoils, and vehicular movements in the project area will generate additional dust and affect the local air quality.

Once airborne, dust will generally travel downwind before resettling. The distance travelled depends primarily on wind speed and particle size. For example, smaller particles and strong winds result in greater dilution effects but mean that the dust is deposited over a larger area.

The potential impacts are a nuisance and adverse health effects on workers and people in the surrounding area, coverage of crops (possibly leading to reduced yields) and deposition on natural vegetation especially during the dry season.

The long-term impact of nuisance dust will decline as disturbed areas of land re-vegetate. Due to the temporary nature of construction, dust emissions are not anticipated to have a long-term impact on local air quality

In addition to this, construction vehicles and machinery are likely to emit oxides of carbon, nitrogen, and sulphur. Emission levels will depend on the state of maintenance of the vehicles and machinery and the type of fuel used. Exhaust gases will be quickly diffused in light wind conditions and would most probably only affect receptors near the point source.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Alteration of air quality	Local	Medium	Short term	Almost certain	Medium

Mitigation measures

- Construction sites shall be hoarded off to restrict dust to within site boundaries;
- Sprinkle water on vehicle pathways, especially along the Goboro Trading Centre;
- PPE-like dust masks shall be availed to workers whenever needed;
- Material delivery trucks will be covered and material loads will be undertaken in a manner that reduces spread during transportation;
- Limit vehicle speed to 30 Km/hr on Earth roads.
- Maintenance schedules of vehicles and equipment should be developed and adhered to in line with manufacturers' requirements.
- Install rumble grids at construction site exit points to minimise on-ground loosening; and
- Shield stockpiles of construction materials from wind using materials or tools such as tarpaulins. Stockpiles should be developed at low heights.

Cumulative Impacts

Impacts may occur from the compounding of an issue (e.g. pollution from different sources affecting the same receptor). Such impacts include Inhalation of dust particles generated by the movement of construction vehicles within the project area can pose respiratory health risks, especially to vulnerable populations such as children, the elderly, and individuals with pre-existing respiratory conditions. The impact significance is medium

Mitigation Measures

- Implement dust control measures such as watering roads and construction areas, use of dust suppressants, and covering materials to minimize dust emissions.
- Raise awareness among local communities

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Proper site management practices, including minimizing the area of disturbance and scheduling construction activities to minimize dust generation during sensitive times.

8.3.2.2 Impacts on ambient noise and vibration levels

The predominantly rural nature of the project area means that significant point sources of noise are absent, except in the trading centres. Noise sources in the Goboro trading centre were from various commercial and industrial activities such as welding, and vehicular traffic which blend into a din typically exceeding the Guidelines for Community Noise (WHO) and the National Environment (Noise Standard and Control) Regulations of 2003, which set the maximum limit at 50dB. Elevated background noise levels at the trading Centre are attributed to commercial activities, vehicle and motorcycle movement (Boda Boda).

Construction works (mainly excavations and breaking of rock), carting away of spoil and the use of machinery/equipment will introduce new sources of noise and vibrations at construction sites and the immediate surroundings, resulting in elevated noise levels.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Impacts on ambient noise and vibration levels	Within limited area	Medium	Short term	Possible	Medium

Mitigation measures

- No employee should be exposed to a noise level greater than 85 dB (A) for more than 8 hours per day without hearing protection (National Environment (Noise) Standards and Regulations). Workers operating equipment generating noise levels greater than 80 dBA over long hours must be given earmuffs;
- Workers be provided with the necessary personal protective equipment (PPE) such as ear muffs as found appropriate;
- The use of hearing protection by all workers should be mandatory. The mandatory use of hearing protection equipment (earmuffs) should be enforced by the management of the Water Treatment Plant.
- Before the issuance of hearing protective devices as the final control mechanism, the use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible.
- Annual medical hearing checks should be performed on workers exposed to high noise levels.
- Sites must be hoarded to curb noise impacts on neighbouring communities.

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- Works should be undertaken during day time i.e., from 8 am to 6 pm.
- Communities will be notified before undertaking noise operations associated with the project

Cumulative Impacts

The increase in noise levels from construction activities will most likely lead to noise pollution and this is likely to occur in the same project footprint, which can have adverse effects on human health and well-being in receptor areas such as Goboro trading center, institutions along distribution lines etc. The impact significance is High.

Mitigation Measures

- Engage with local communities to raise awareness
- All entities should follow the limits provided in the National Environment (Noise standards and Control) regulations 2003

8.3.2.3 Visual and landscape impacts

The aspects of the project that will impact the landscape and visual integrity of the area are the clearance of natural and planted vegetation for permanent components such as the intake works, treatment works, pipelines, access roads, and the temporary use of land for construction (the pipeline Right of Way (ROW), construction camps and materials storage yards). The reservoir area near the Goboro Catholic Church shall require some cuts and fills to attain a stable ground that is levelled.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Aesthetics pollution	Within a limited area	low	Short-Long-term	Likely	Low

Visual and landscape mitigation measures

- All disturbed areas should be restored following the project's restoration specifications.
- The Contractor should prepare a Restoration Plan for the project based on the specifications. The main objective of the restoration of the sites should be to return the visual integrity of the landscape as closely as possible to its previous condition.
- Excavated soil shall be heaped for a short time (1-5 days) and re-used for backfilling. In case the soil is not required for backfilling, it shall be utilized for landscaping of nearby construction sites in Lobe or Yumbe Town Council.
- The affected area shall be restored through landscaping and leaving it to undergo natural colonization by plants.

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- The materials shall be stored in a way that the height does not cause visual intrusion. Preferably the height should not be more than 2 metres.

Cumulative Impact

The visible construction activities may be perceived differently by different stakeholders, with some considering them unsightly or disruptive to the natural environment. The impact significance is medium

Mitigation Measures

- Design infrastructure and construction activities to minimize visual impact and blend harmoniously with the surrounding landscape.
- Engage with local communities and stakeholders to understand their concerns and incorporate their feedback into the project design and implementation.
- Use natural or man-made screening, such as vegetation or fencing, to visually shield construction activities from view

8.3.2.4 Impacts related to soil erosion

Soil disturbance is likely to occur at several locations, including around the intake works site where the boreholes site, pump house and treatment plant will be located, borrow pits, workers' camp, along the pipeline route and reservoir location. Significant disturbance will arise from excavation of soil trenching, and grading. Access roads to these sites will also be created to enable construction vehicle movement. Loosening of soils and compaction in other areas by construction traffic has the potential to cause soil erosion.

The site earthworks during the construction of project infrastructure and trenching will destabilise the soil making it more susceptible to erosion, especially during the rainy season. The impact of soil erosion is likely to be Negligible-Minor since the width of the trenches for the pit is not big (for transmission lines the trenches are Diameter 6 feet x Depth 1.2m, and for the distribution its Diameter 3feet x Depth 1m), excavated soil will be used to backfill the trenches immediately after laying the pipes and the impact is localised and for a short time. Whereas for the pump house and offices, the soil that will be excavated is a lot (more than $50m^3$) and if not well handled, may be washed away by stormwater down the flow covering vegetation thus affecting the integrity of the area.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Increased susceptibility to soil erosion	Within a limited area	Low	Temporary	Likely	Low

Mitigation measures

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- An efficient drainage system will be incorporated in the project design to ensure that stormwater especially along the access roads construction is efficiently and effectively managed to avoid damage to lower areas
- The construction sites for the water treatment plant, sanitary facilities, and storage tanks will be hoarded off to intercept any eroded material and any soil material will remain within the site until it is taken away for proper disposal or used for backfilling to avoid loose soil being washed away by stormwater.
- No spoil soil shall be temporarily placed in waterways especially along the stream in Maru area which is next to the borehole site.
- The Project Contractor should backfill all trenches immediately after laying the pipes and compact such areas as to near level before excavation. The topsoil shall be kept separately so that it is used last in backfilling the excavated areas. This is to ensure that the living soil (topsoil) is available for plant growth in disturbed areas.
- MWE will also ensure that proper landscaping and vegetation restoration is carried out to further reduce the possibility of soil erosion. Native vegetation must be used for re-seeding the excavated site.
- The excess soil shall be spread along the trench by the Contractor but in liaison with the local people; special attention would be made not to dispose of such construction wastes in swamps on any sensitive ecosystem.
- The excavated soil from the pit for the water treatment plant, sanitary facilities and water storage areas shall be used for backfilling uneven areas at the site and then stabilized through the planting of grass and trees.

Cumulative Impacts

The construction activities of projects such as the electricity distribution network and road upgrading envisaged will lead to increased siltation of the water streams in the area since it is located downstream of the production source as sediments will carry pollutants and contaminants into the stream, affecting its safety for consumption by animals and the local community if not well mitigated. The impact significance is medium to Low.

Mitigation Measures

- Implement erosion control measures such as terracing, reforestation, and erosion control blankets to reduce soil erosion.
- Regular maintenance of water infrastructure to remove sediment buildup and repair erosion damage.

8.3.2.5 Impact on Flora (Loss of vegetation and destruction of crops)

The analysis of the impact discussed in this section is related to the possibility that construction of the project infrastructure may involve site clearance which could remove and/or disturb vegetation in affected areas. For instance, construction of the pump and guard house, office and reservoir may

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lead to clearance of vegetation at such locations leading to loss of terrestrial, agroforestry and crop vegetation.

Project infrastructure such as the pump house/office, transmission line traverses through savanna grassland, trees and crop gardens. The most dominant tree species within the project area were *Combretum adenogonium, Maytenus senegalensis* few scattered *Piliostigma thorningii*. *Isoberlinia doka, Daniehcliveri and Afzelia Africana*. Among the herbs, *Asparagus africana* was common. *Panicum deustum and Hyperrhenia ruffa* were the most common grass species.

Species of high conservation value such as *Afzelia Africana and Vitellaria paradoxa* which are rated as vulnerable according to IUCN also exist in the area.

The clearing of corridors, movement of equipment and contractor staff and laying of pipes will lead to spot destruction of vegetation especially in areas under fallow. These areas are mainly farmlands, savannah grasslands and woodlands. The location of the water treatment plant will result in the noticeable destruction of vegetation from a grassland.

Although the systematic clearing of the 3-meter strip of land in the road reserve will destroy vegetation, Species of high conservation value were not observed along the project route hence the risk to the species of conservation is none. The impacts on the affected flora & ecosystems are expected to be minor-low. The extent of damage is also minor-low.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Loss of vegetation and terrestrial habitat alteration	Local	Low	Temporary	Likely	Medium

Mitigation measures

- A RAP shall be developed and implemented by MWE to ensure that affected crops are compensated. Compensation should be in line with the World Bank and Government Chief Valuers approved RAP report.
- Before compensating destroyed crops, and the affected persons, adequate community sensitization meetings shall be carried out to ensure that the PAPs are aware of the entire program including the visitation schedule per village, parish and or sub-county and how each PAP with be contacted and approached for payment.
- The construction of the proposed water transmission and distribution lines shall only commence when all the affected farmers have been fully sensitized to the pending activities. Before the construction phase, farmers shall be sensitized on the pending project at least 6 months in advance such that cultivation under the line and within the water pipe corridor is stopped or reduced. This will give affected farmers ample time to plan.
- The contractor must be instructed to move in a definite order and the pattern of movement must follow the established corridor as agreed upon by the local government authorities and

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the Developer. Movement of equipment (vehicles, contractors and the entire construction crew) must follow designated pathways or agreed-upon access roads. This must be followed to avoid further destruction of crops by the contractor after compensation has already been affected.

- Movement of equipment (vehicles, contractors and the entire construction crew) must follow designated pathways or agreed-upon access roads. The designated path must avoid the threatened species as those identified in section 5.3.2. This will avoid unintended damage to vegetation.
- MWE and the nominated contractor must guard against fires arising from construction negligence because the impact of fire on vegetation and biological diversity can be immense, especially in the savannah woodlands and grasslands. Therefore, the contractor must have a fire management plan in place. That at minimum covers the following mitigation measures:
- If the site has flammable substances like petrol and diesel, the Contractor shall maintain on-site a serviced fire extinguisher.
- A fire break shall be maintained around the construction site and existing woodland/grassland
- The line alignment shall be inspected and all the trees that will be affected identified, and marked (for cutting or retained) and the conservation status identified before route clearance
- After construction, there should be landscaping and then grass left to recolonize the disturbed area naturally. The Developer shall set aside funds to contribute towards local environmental programs. MWE shall remit funds towards district and sub-county afforestation projects as part of the catchment management program to compensate for biomass lost during corridor clearing and habitat fragmentation. In case the destruction is due to the contractor's negligence, it will be the responsibility of the contractor to make compensation. MWE shall take the overall responsibility however, the contractor takes the liability for those plants/trees destroyed either knowingly or unknowingly and which are outside the Corridor.
- The contractor should restore sites where activities will be carried out at all the project sites. The topsoil that will have been removed before pitting the trenches for the pipeline should be put back to cover the trenches so that the crops can regrow in a natural environment. Excess soil, stones and boulders should be dumped in an area that has been approved by the District Environment Officer.
- MWE should also identify and support afforestation initiatives to enhance tree cover areas as a way of reducing its project footprint.
- Restrict vehicle movements to and from the project site to the project access road - off-road driving should be prohibited.
- Site restoration should be undertaken for areas where temporary project infrastructure will be established during the construction phase. The affected areas will be restored and only indigenous vegetation replanted.
- Engage local communities in conservation efforts, including sustainable resource management practices and alternative livelihoods that reduce pressure on the identified species which are categorized as threatened species and their habitats.
- Species of conservation concern should be identified within the project sites, marked out or protected during the project implementation.

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- Including threatened species in restoration projects, can lead to the successful conservation of these species, many of which do not currently have conservation measures in place, Specific restoration activities such as re-planting of appropriate indigenous trees and domestication of some indigenous tree species such as shea trees, bamboo among others can be promoted.
- Tree planting for Watersheds: The watershed approach is seen as a better way to identify and conserve watersheds so that they continue to provide ecosystem services through water source protection plans.
- Support appropriate alternative livelihood enterprises such as tree nurseries and distribution of seedlings as a measure for water source catchment protection
- Raise awareness among local communities, stakeholders, and policy makers about the importance of these species and the need for their conservation

Cumulative Impact

At the time of assessment, no visible projects were being implemented or planned, however, it was noted that extension of the electricity grid and Koboko-Yumbe -Moyo Road upgrading project to the rural areas is likely in the future. Therefore, the compounding effect on Vegetation clearance as a result of other projects may lead to increased soil erosion, as vegetation helps to hold soil in place. This will lead to the sedimentation of water bodies such as Kochi River and other streams affecting its water quality and aquatic habitats. The impact significance is medium to High.

Mitigation Measure

- Plant trees and restore vegetation to mitigate the impacts of climate change.
- Encourage sustainable land use practices, such as agroforestry and re-afforestation in local communities

8.3.2.6 Impact on Fauna (invertebrates, birds) etc.

The baseline data presented on fauna indicated that the project area is highly modified with farming activities and human settlements and a few natural vegetation maintained. Birds and invertebrates were the main fauna identified in the area. Clearing of vegetation will disrupt or alter habitats for some of the birds and invertebrates while at the same time, new and invasive species could gain ground. Similarly, noise and vibrations associated with the project construction activities including earth-moving equipment and construction-related activities are likely to hinder/ interfere with fauna.

At all stages of planning, construction, operations and post-construction, it is possible to integrate biodiversity consideration to address the potential biodiversity impacts of the project.

Risk assessment matrix

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Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Loss of biodiversity	Local	Low	Temporary	Likely	Medium

Mitigation measures

- Movement of equipment (vehicles, contractors and the entire construction crew) must follow designated pathways or agreed-upon access roads. This will avoid unintended damage to fauna.
- The contractor should restore sites where activities will be carried out at all the project sites.
- Trenching, pipework laying as well as well and backfilling will be done concurrently. The contractor shall plan to only excavate trenches after securing and delivering pipes to be laid to reduce on maintenance of open pits.
- Implement environmental awareness programs/training among all project employees, particularly during construction. They should be trained to identify arboreal or burrowing species exposed by vegetation and soil stripping and should have immediate access to a competent specialist on site (e.g. the Environment Officer) who can capture and translocate them to an undisturbed area.
- There are no specific measures for the protection of invertebrates because of the difficulty in identifying these species for those unfamiliar with entomology and practical reasons for topsoil collection and storage. However, all mitigation measures related to minimizing habitat fragmentation, prevention of soil and water pollution, minimizing trampling and control of invasive species should be applied.
- Restrict vehicle movements to and from the project site to the project access road - off-road driving should be prohibited.
- Following construction, rehabilitation of all areas disturbed during the construction phase and that are not required for regular maintenance operations must be undertaken.
- All exposed areas are to be re-vegetated using indigenous species

Cumulative Impact

Construction activities and infrastructure development will most likely lead to the loss or fragmentation of habitats, affecting the local fauna of species. The key indicator species have been studied an included in the report that formed the basis of the biodiversity assessment. Increased projects within the same footprint may not result in significant impacts since most of the animals close to the project area were domestic. However, this does not rule out any migratory species that may be encountered. The impact significance is medium.

Mitigation Measures

- Implement habitat restoration measures to offset habitat loss and fragmentation.
- Schedule construction activities to minimize disturbance during sensitive times such as breeding seasons.
- Reduce traffic speeds to avoid road kills from speeding vehicles

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8.3.2.7 Impacts of generated waste due to construction wastes

The analysis of the potential project impact discussed in this section is related to the possibility that during the implementation of project activities, waste will be generated and if not properly handled and disposed of, may result in a nuisance to both the project environment and surrounding community.

A significant amount of solid waste will be generated in the construction phase through the clearing of vegetation and construction activities which will generate related solid wastes including cement bags, stones, wood, containers, used HDPE and PVC pipes rods of metal, sharp objects (nails) etc. The proponent should take the initiative of segregation wastes at source to enable the recycling and removal of unrecyclable solid wastes.

Improper waste management at construction sites and camps will interfere with the aesthetic status of the surroundings while creating health and safety hazards. Improper disposal of the wastes off-site could also cause nuisance, health and safety hazards, and create breeding grounds for vermin

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Improper solid waste management	Within a Limited area	Low	Temporary	Likely	Low

Mitigation measures

- All sorts of waste generated during construction such as HPDE and uPVC offcuts and other accessories associated with water and sanitation projects shall be collected by the contractor and given to recycling facilities. Other forms of waste which are inert or ceramic may be collected by NEMA gazetted waste handlers (Who shall be engaged by the Contractor) and taken to a NEMA gazetted waste disposal facility for disposal.
- All organic waste generated at eating places during construction such as foodstuff shall be collected and transported by the contractor to designated landfills for disposal. This activity shall be supervised by the District Environment Officer and the supervising consultant.
- All plastic waste generated at rented residences for the workers or campsites in the course of work such as mineral water bottles, polyethene bags, jerrycans and cups shall be collected and given/sold either to the local people for re-using or taken for recycling in respective factories.
- The Contractor shall develop and implement a Waste Management Plan that takes into consideration sorting at the source, proper storage and transportation. That will at minimum contain the types, nature and quantities of wastes expected to be generated as well as their corresponding methods of treatment and disposal. The plan shall also indicate the sites of the proposal as well as the frequency of collection and disposal.

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- Adequate and appropriate sanitary facilities shall be constructed at the campsite while workers along the construction sites shall be provided with mobile toilets that shall be cleaned and emptied promptly.

8.3.2.8 Increased spread of HIV/AIDS and communicable diseases due to population influx

The analysis of the potential impact discussed in this section is related to the possibility that during the implementation of the proposed Goboro RGC, there may be an increased spread of sexually transmitted diseases. The potential for increased spread of sexually transmitted diseases to occur is assessed below.

The proposed project is expected to attract various categories of people in search of employment opportunities at the project, especially during construction. Some of these will be locals while others will come from outside the project area. The migrant workers may be largely male and of young age. Their continuous movement from place to place keeps them away from their wives and families rendering them susceptible to commercial sex, which normally exposes them to the risk of HIV/AIDS or other sexually transmitted diseases (STDs). Though the workers are at the greatest risk, the people in the community are also at risk due to possible sexual relations with migrant construction workers. Though the impact is temporal (exists only as long as the construction is taking place), the consequences of catching a disease like HIV/AIDS may be irreversible.

However, the extent of disease transmission between the communities and in-migrants will depend on the level of interaction between the two, the size of the workforce and their health status the nature of the casual migrants, and their susceptibility to disease infection. In addition, the living conditions, access to healthcare and workforce management, will also influence the significance of disease transmissions.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Increased spread of HIV/AIDS and communicable diseases due to population influx	Local	Medium	Short term	Almost certain	Medium

Mitigation measures

- Undertake awareness and sensitisation campaigns on the dangers of sexually transmitted diseases including HIV/AIDS and methods of spread and control. The HIV/AIDs awareness trainer will be expected to collaborate with local NGOs, CBOs and District Health Officers for sustainability and integration of activities into the existing structures of the local health institutions
- Carry out pre-employment medical checks on new and potential employees as part of the recruitment process;

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- Ensure that the workers' camp and construction areas are open only to formal employees;
- Provide the workforce with access to primary healthcare onsite, insecticide-treated mosquito nets, prescriptions, prophylactics and condoms, and basic testing for TB, STDs and HIV/AIDS;
- Engage an NGO to prepare community institutions for any influx of in-migrants (for example, by developing by-laws and community policing systems for larger numbers of in-migrants);
- Support local healthcare facilities through training of local healthcare professionals, regular supply of medical supplies and up-to-date equipment; and
- Establish a community health programme including providing support to existing or new local programs such as mother and child nutrition, community health awareness, HIV/AIDS awareness, hygiene and immunisation, malaria control measures (indoor spraying of insecticides, personal protection measures, and control of mosquito larvae), and local Voluntary Counselling and Testing (VCT) programmes.
- Induct workers in relevant codes of conduct that minimise exposure to risky lifestyles including unsafe sex practices.

Cumulative Impact

The increase in the migrant population with its associated social impacts such as increased Sexual encounters between migrant workers and community members in GoboroRGC can serve as a conduit for the increased spread of HIV/AIDS and other sexually transmitted diseases (STDs) within the community. This can result in higher infection rates and pose a significant public health challenge. The impact significance is Medium to High.

Mitigation Measures

- Establish Voluntary Counselling and Testing (VCT) centres to encourage individuals to know their HIV status.
- Liaise with the concerned entity of common community liaison or engagement
- Undertake continuous sensitisation of communities in the affected areas

8.3.2.9 Impact on Traffic and Road Safety

The proposed project will cut across several access roads within the project areas. All the roads within the project area have been presented in Section 5.7. The proposed project infrastructure will cross some of the existing public roads like Goboro- Midigo Road, Malanga A Access Road, Lobanga A, Maru B Road, and Malanga B Access Road to Maru Borehole thus disrupting traffic flow. Access roads within the project area are likely to be temporarily blocked by excavated materials. Road surfaces may also be interfered with as a result of trenching works.

Risk assessment matrix

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Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Interference with traffic and diminished road safety	Within limited area	Low	Temporary	Possible	Low

Mitigation measures

- To minimize interference with traffic, digging trenches and piping across roads shall be conducted in hours with less traffic preferably on weekends.
- The trench excavated across the roads, after laying the pipes should be backfilled with marram, compacted and levelled to the level of the existing road immediately. This is to ensure that the integrity of the road is not affected by the water line construction activities.
- Conspicuous notices shall be well placed on roads and guides on the ground shall direct traffic in case of diversions or open trenches.
- The contractor will have to notify local leadership and the community in advance and work with it during trenching across highways and other major roads.
- All drivers to be employed by the Developer or Contractor shall be qualified, and skilled with valid driving permits. Only approved drivers will operate the equipment.
- The roads that will be affected by the repair and restored immediately after the laying of pipes
- The Contractor will develop and implement a Traffic Management Plan that is approved by the Supervising Engineer.

Cumulative Impact

An increase in vehicular traffic may lead to increased accidents involving heavy trucks and vehicles that are likely to result in injuries and fatalities among both livestock and people in the vicinity of the construction site and along community roads in Goboro RGC. The impact significance is medium.

Mitigation Measures

- Ensure that all vehicles and equipment used in the construction project are properly maintained to reduce the risk of accidents
- Implement traffic management measures such as speed limits, signage, and road markings to improve road safety along Goboro- Midigo Road, Malanga A Access Road, Lobanga A, Maru B Road, and Malanga B Access Road

Schedule major deliveries and heavy construction tasks during off-peak hours.

8.3.2.10 Social ills or Influx of construction labour

The influx of workers, typically young males seeking construction jobs will likely be associated with a series of social challenges such as crime, alcoholism/illicit drug abuse, Sexual Exploitation

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and Abuse (SEA) of women and girls and prostitution. These are often related to the spread of sexually transmitted diseases including HIV/AIDS. Vices such as drug abuse and prostitution would affect social coherence and security in project communities tarnishing the image and intent of an otherwise good project.

- **Crime, drug abuse and prostitution**

Unless sensitization of all workers is undertaken by the contractor, this impact is highly sensitive (considering that the project area hosts refugee settlements). Duration of the above-mentioned social ills will be short-term ending with the completion of road construction but associated social and health effects can be **long-term** and **irreversible,** especially addiction to drugs making the impact magnitude **high**.

- **HIV/AIDS Risk**

The influx of male workers into the project area may increase the risk of HIV/AIDS transmission. The concentration of young males in worker's camps may lead to illicit and unsafe sexual behaviour that may push up infection rates in the local areas. However, since most of the labour force will be below 40 years and residents, it is expected that behavioural change will help stabilize the infection rate. Risky sexual behaviour and drug abuse are ranked as likely to occur due to common attitudes of contract labour though this will be moderated by high rates of sensitization on HIV/AIDs. However, should infections occur due to lapses in awareness, sensitivity is **high** and impact magnitude is **high.** This is therefore an impact of **Major** significance.

- **Sexual Harassment (SH)**

Sexual harassment can occur between workers, particularly male workers against female workers when there is insufficient sensitization of workers against prohibitions for sexual harassment, as well as the absence of reporting and disciplinary measures.

- **Sexual Exploitation and Abuse (SEA)**

Construction workers are predominantly males. When attitudes that condone gender inequality and abuse of power are prevalent in the work sites and/or the culture, this may increase the risk for women and girls in the community of sexual exploitation and abuse committed by construction workers, particularly in settings where there is impunity for this violence. A large influx of male construction workers may also contribute to human trafficking, whereby women and girls are forced into sex work.

- **Gender-based violence (GBV) at the community level**

This impact refers to GBV that women and girls may experience as a result of Project implementation. This includes, for example, an increase in intimate partner violence (IPV) when compensation schemes that share funds equally among husband and wife at the household level do not provide adequate sensitization and safety measures to reduce the potential for increased tensions due to females receiving funds. This also refers to other GBV-related risks incurred as a result of projects creating changes in the communities in which they operate and causing shifts in power dynamics between community members and within households. Male jealousy, a key driver of GBV, can be triggered by labour influx on a project when workers are believed to be interacting with community women with the fear that it could exacerbate the risk of family breakdown.

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Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Public Health Concerns	Local	High	Short –medium term	Possible	High

Mitigation

- The contractor shall involve local (LC) leaders in labour recruitment to ensure people hired have no criminal record.
- Local governments and the contractor shall collaborate with police to contain criminal activities.
- A register of all construction workers shall be filed with local authorities to aid in tracking cases of child neglect.
- With the assistance of a competent sub-contractor, the contractor shall draft an HIV/AIDS policy
- A service provider for professional HIV/AIDS activities shall be procured and engaged
- The contractors shall put in place worker place committees to oversee the implementation of HIV/AIDS control activities.
- The contractor will provide counselling support and a work-based positive culture to project workers
- The contractor will provide condoms to all workers free of charge placed in private and areas of confidence.
- Peer-based awareness and counselling shall be instituted within the workforce.
- All workers (permanent or temporary) will be required to sign the project code of conduct before commencing their assignments.
- A worker Grievance mechanism shall be established and operated.
- Signing of codes of conduct by workers
- Ensure that there is recruitment of (a) service provider(s) to support prevention (sensitization) and response (referral pathway) activities.
- Develop and implement a SEA/SH action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA/SH action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing Involving Major Civil Works (Sept 2018). The SEA/SH action plan will include how the project will ensure necessary steps are in place for:
    - Prevention of SEA/SH: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance;
    - Response to SEA/SH: including survivor-centred, multi-sectoral referral and assistance to complainants; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level
    - Engagement with the community: including the development of confidential community-based complaints mechanisms GM; mainstreaming of SEA awareness-

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raising in all community engagement activities; IEC materials; regular community outreach to women and girls about social risks and their SEA-related rights;
    - Management and Coordination: including integration of SEA/SH in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA/SH, including whistleblower protection; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated SEA focal points and trained community liaison officers as applicable.
- Develop and implement provisions that ensure that gender-based violence at the community level is not triggered by the project, including:
    - effective and ongoing community engagement and consultation, particularly with women and girls; review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; resettlement; etc.
    - A specific plan for mitigating these known risks, e.g., sensitization around gender-equitable approaches to compensation and employment; etc.

Cumulative Impact

The presence of a large number of migrant workers in Goboro RGC, coupled with social challenges such as crime and substance abuse, will strain social cohesion and lead to increased tensions and conflicts within project communities as well as the availability of alcohol and illicit drugs among migrant workers which can contribute to substance abuse and addiction, leading to adverse health outcomes and increased risk of accidents and violence in the project area. The impact significance is medium to High

Mitigation Measures

- Implement substance abuse prevention programs targeting migrant workers, including education on the risks of drug and alcohol abuse and access to counselling and treatment services.
- Implement community engagement and integration programs to foster positive relationships between migrant workers and residents.
- Establish community policing initiatives or neighbourhood watch programs to enhance security and prevent criminal activities

8.3.2.11 Risk of Child Labour

The project has the potential to cause child labour and other forms of violence against children. This is based on the fact that according to UBOS Population and Housing Census – 2014, 48% of Yumbe district population falls between the age category of 10-19. Given the fact that the project will result into increased opportunities for the host community to sell goods and services to the incoming workers can lead to child labour to produce and deliver these goods and services, which in turn can lead to enhanced school dropout. School children both boys and girls may also be lured to drop from school to work as casual labourers during construction.

Risk assessment

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Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Child abuse/violence against children	Within alimited area	Low	Short term	Likely	Low
Residual Impact	There is a likelihood of minor residue negative impact even after the implementation of the proposed mitigation measures during the operation of the Goboro Water Supply and Sanitation System.				
Reversibility	Yes				

Proposed Mitigation Measures to labour related impacts

a) The contractor will be required to ensure their employment policies include no child labour to be employed on the project and a national Identity card will be required. Parents and school administrators will also be informed about the need to retain and monitor school attendance and inform the local authorities about those who drop out.
b) The Contractor will develop and implement a Child Protection Strategy; this strategy will ensure that no person under the legal age of 18 years is employed in the project
c) Collaboration with communities through the grievance resolution mechanism to determine whether accusations are justified,
d) Dismissal of workers at fault and reporting to public authorities if accusations are indeed justified, as well as compensation of victims and communities through non-monetary mechanisms to be determined in common agreement.
e) Mandatory and regular training for workers on required lawful conduct in the host community and legal consequences for failure to comply with laws;
f) Commitment/policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence;
g) Creation of partnerships with locals to report workers' misconduct and complaints/reports on gender-based violence or harassment through the Grievance mechanisms;
h) Information and awareness-raising campaigns for community members, specifically women and girls

Cumulative Impact

Increased economic activity and migration to Goboro RGC during the construction phase may also heighten the risk of violence against children, including physical, sexual, and emotional abuse. The impact significance is medium

Mitigation Measures

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- Conduct training sessions for project staff, community leaders, and service providers on identifying and addressing signs of child abuse and exploitation.
- Establish safe spaces and support networks for children to seek assistance and counselling in cases of violence or abuse.
- Engage with local authorities and law enforcement agencies to strengthen enforcement of child protection laws and ensure perpetrators are held accountable for their actions.

8.3.2.12 Impacts on gender

Discrimination against women and girls continues to constrain them from equally participating in, contributing to, and benefiting from sustainable natural resource management, as well as sustainable development.

According to community consultations, Women continue to face constraints related to access to, control over and ownership of businesses and productive resources such as land and credit. Overall, there is limited employment of women and this constrains further women 's income potential. Women are also marginalized in skills development, access to financial resources, employment and inheritance rights.

According to the study findings, men are considered leaders and have the privilege to make decisions over their wives, sisters, daughters and mothers on most aspects including ownership of land and other productive resources as well as decisions that impact the socioeconomic life and health of women. Women and girls are excluded from decision-making; however, the boys (males) are usually part of decision-making, they attend public consultations and clan meetings where decisions on major productive resources and other important issues are made.

The lack of social and economic value for women and women's work and accepted gender roles perpetuates and reinforce the assumption that men have decision-making power and control over women including what they produce. This creates unequal power relations in the home between men and women, boys and girls which further contributes to increased vulnerability of women and girls to GBV and poverty.

Goboro piped water supply and sanitation project need to put this at the centre of their implementing strategy to ensure that women can be assisted to overcome the hurdles rural women face in the world of work.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Gender discrimination	Within a Limited area	Medium	Long-term	Possible	Medium

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Mitigation Measures

a) An important starting point to overcome discrimination is the right to equality of opportunity and treatment in respect of employment and occupation within the recruitment process. To increase gender (and other) diversity in the applicant pool, work to:
   - Ensure that the minimum job requirements are not so high that they exclude women simply because this group has been denied opportunities in leadership until relatively recently. This does not mean lowering standards but rather assessing them more realistically.
   - Increase the diversity of the applicant pool through general and targeted recruiting such as 30% of the workforce should be women
   - Create a clear, unbiased, non-retaliatory discrimination policy that ensures employees have a proper way to comment or report inappropriate treatment in the workplace.
   - Implement severe penalties for sexual discrimination and harassment.

b) A key consideration for the proposed project is the ability to effectively involve key stakeholders in a realistic and positive participatory process to combat gender violence and the abuse and mishandling of women and children on such government infrastructure projects and the Contractor must present a plan to address such.

c) Conducting appropriate sensitization on gender issues at all levels within the Project Area and creating awareness of the responsibility of all concerned during the various phases of the project to address specific gender concerns. This should entail consultation with both women and men in the Project Area within the construction teams and later within the operation of the facility.

d) The contractor should mainstream Gender Inclusivity in the hiring of workers and entire Project Management as required by the Gender Policy of 1997.

e) The existing community structures headed by the LC 1 chairman should be involved in local labour hire, emphasising the requirement of hiring women, youth and people with disabilities.

f) Ensure safe employment for women, including training for all staff on sex-disaggregated latrines, regular consultation with female employees and other measures to ensure the physical safety and dignity of female employees

g) GBV constitutes acts of gross misconduct and is therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV including grooming are unacceptable in the work site, the work site surroundings, or at worker's camps (if any). Prosecution of those who commit to be pursued.

h) Do not use language or behaviour towards women or children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.

i) Sexual activity with children under 18-including through digital media is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence

j) Exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading or exploitative behaviour should be prohibited.

k) Sexual interactions between contractors and consultant employees at any level and members of the communities surrounding the workplace that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the

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withholding, and 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.

l) Where an employee develops concerns or suspicions regarding acts of GBV by a fellow worker, whether in the same contracting firm or not, he or she must report such concerns following Standard Reporting Procedures.

m) All employees are required to attend an induction training course before commencing work on-site to ensure they are familiar with the GBV Code of Conduct

8.3.2.13 Occupational health and safety of workers

Construction will involve excavations, and compaction, working with cement, welding, and woodwork and working at elevated heights among others. The workers will be exposed to various forms of hazards including wastes, dust, noise, gaseous emissions from vehicular movements, the possibility of accidents, injuries, and exposure to communicable diseases and HIV/AIDS.

The construction site is expected to employ about 175 workers on average to participate in the construction of the project infrastructure. These will be involved in a range of activities like excavation, masonry, steel fixing, carpentry, excavations, lifting, working at heights, stonework, drilling, welding, demolitions, offloading materials from trucks, and mechanical and electrical works among others.

In the event that no mitigation measures are in place, the construction site with all its features presents a hazard to the health and safety of workers and visitors on site. Nevertheless, most of the potential hazards are avoidable although minor injuries have been reported to be inevitable at most construction sites. These may include shallow cuts and bruises. Deaths have been reported at construction sites within Uganda, the probability of this occurring is low considering that in most cases, death has occurred at sites due to other reasons mainly pertaining to inappropriate architectural drawings being adapted in areas other than those where structures were originally intended, or lack of supervision and adherence to standard construction best practices. There are also cases of failure of mechanized equipment.

The extent of this impact will be limited to the site and the magnitude will be medium considering the number of workers at the construction site, the sensitivity of the receptor will be high.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Occupational health and safety of workers	Local	High	Short-Long term	Likely	High

Proposed mitigation measures

- Use the lightest tools for any given job;
- Ensure that equipment and machinery are securely fastened down and where necessary rail guarded;

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- Deploy properly trained personnel/ flagmen to control traffic, especially for construction vehicles turning to the site;
- Regular toolbox meetings will be conducted;
- Ensure adequate planning and supervision of trial mixes and works;
- Ensure regular inspection of formwork, falsework and temporary supports before loading or pouring concrete;
- Ensure barriers are in place before work including guardrails and warning tape;
- Use properly trained personnel to carry out construction works;
- Regularly inspect equipment and machinery and routinely maintain them according to manufacturer's instructions;
- Provide warning tape for example "falling debris", and any other suitable barriers to prohibit unauthorized access to the workplace;
- Progressive wetting of work areas to minimize dust emission will be done;
- Work areas will be cleaned up Progressively to prevent debris/rubbish from becoming a trip hazard;
- Undertake job risk analysis and provide appropriate Personal Protective Equipment to all workers. These may include hard hats, dust masks, ear plugs, safety goggles, safety boots, gloves and overalls
- Ensure safe access to work at height using appropriate ladders, scaffolds, harnesses and safety belts.
- Ensure the proper use of PPE for example helmets, nose masks, safety shoes, gloves, welding goggles, safety belts, and overalls. This may be achieved through regular training on the proper use and handling of PPE;
- Ensure even spreading of heavy loads on temporary structures;
- Secure site boundaries with fences or hoardings as appropriate;
- Mechanical aids will be used for the movement or placement of heavy loads;
- Ensure safe working heights through the provision of work platforms, scaffolds and adequate supervision;
- Ensure proper record keeping of incidents at the construction area;
- Provide workers with safe drinking water and food where needed;
- Establish contact with the nearest referral medical facility for assistance during an emergency;
- A well-equipped First Aid kit for use during minor incidents will be available on-site, and training in administering first aid will be provided;
- All workers will be trained in occupational health safety and incident response;
- All areas on site will be demarcated and labelled appropriately using instructional and cautionary signs

Cumulative Impact

Workers engaged in diverse construction activities will most likely be exposed to various occupational hazards, including machinery accidents, exposure to hazardous substances, and musculoskeletal injuries. The impact significance is Medium-High.

Mitigation Measures

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- Conduct comprehensive risk assessments for each construction activity to identify potential hazards and implement appropriate control measures.
- Provide personal protective equipment (PPE) such as hard hats, safety goggles, gloves, and harnesses to all workers, and enforce their use at all times.
- Implement safety protocols and procedures for working at heights, including the use of guardrails, safety nets, and fall arrest systems.
- Provide training and certification programs for workers on safe work practices, equipment operation, and emergency procedures.

8.3.2.14 Impact on Vulnerable Groups

This impact is related to the effect of the project on vulnerable groups (women, children, persons with disabilities, adolescents, poor, and persons living with HIV/AIDS) who were identified as some of the vulnerable groups in the project area. Stakeholder consultations conducted in the project identified child abuse as a problem that has emerged from previous infrastructure projects affecting children.

The project has the potential to make a positive and significant contribution to women's livelihoods through the provision of employment opportunities, increased income levels, improved maternal healthcare and gender empowerment through increased incomes and improved health service delivery and consideration of different needs based on gender, context and marginalized communities.

The behaviour of construction workers can cause a level of disruption of culturally acceptable modes of conduct and behaviour of the communities in the Project Site and thus impact negatively social cohesion amongst members of these communities.

In addition, some workers or community members may be subjected to Gender-based violence or Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH).

Women and older adolescent girls may be hired as domestic staff by project workers, and/or may congregate around project sites to sell food and other goods. Proximity without appropriate supervisory and preventative measures may increase the risk of sexual exploitation by project workers of female domestic workers and vendors. This is compounded when workers are not adequately supervised, or when there is inadequate lighting and other safety measures.

In general, incidents of child abuse, gender-based violence, sexual harassment and exploitation of women, as well as the exclusion of persons with disabilities are issues of serious concern that require considerable attention and remedial action by all concerned parties within the project implementers and Contractors.

Risk assessment matrix

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Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Vulnerable group impacts	Local	High	Long term	Almost certain	High

Mitigation Measures for Gender-based Violence or Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH).

Good Practice in addressing SEA/SH involving Civil Works

- **Be survivor-centred:** Approach considerations related to GBV prevention, mitigation and response through a survivor-centred lens, by protecting the confidentiality of survivors; recognizing them as principal decision-makers in their care; and treating them with agency, dignity and respect for their needs and wishes.
- **Emphasize prevention:** Adopt risk-based approaches that aim to identify key risks of SEA/SH and undertake measures to prevent or minimize harm.
- **Build on existing local knowledge**: Engage community partners local leaders, civil society organizations, and gender and child advocates as resources for knowledge on local-level risks, effective protective factors and mechanisms for support throughout the project cycle.
- **Be evidenced-based:** Build on existing global research and knowledge on how to address GBV effectively.
- **Be adaptable:** Adapt and adjust prevention and mitigation measures to respond to the unique drivers and context in any given setting as a foundation for an effective SEA/SH risk management approach.
- **Minimize harm to women and girls**: The project staff must be trained on how to preserve the safety of women while interviewing/collecting data on this topic. Women may suffer physical harm and other forms of violence if partners/perpetrators discover that they have been talking to others about their relationships. Because many violent partners/perpetrators control the actions of women with whom they are in a relationship, even the act of speaking to another person without their permission may trigger a woman's beating. As such, asking women about violence should be confidential, and should take place in complete privacy, except for children under the age of two. Consent for any data collection, even as part of a case file, should be offered and if anonymity can be guaranteed, it should also be provided.
- Enable continuous monitoring and learning: Ensure operations integrate mechanisms for regular monitoring and feedback to track effectiveness and to build internal knowledge of what works to prevent, mitigate and respond to SEA/SH.
- A specific Grievance Redress Mechanism for GBV/SEA/HS complaints shall be developed by the Contractor

Mitigation Measures Against Child Abuse

a) A Child Protection Plan should be developed by the Contractor before the start of project construction activities as part of the Contractors Environmental Social Management Plan (CESMP) to discourage the use of child labour.

b) The contractor will also be required to keep records that show the ages of their workers.

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c) Ensure that the community and local leadership have access to and know of and report abuse.
d) Talks with the Contractor and his workforce by relevant officials (including the police, Ministry of Water and Environment -Project Implementation Unit, Yumbe District Administration, Ministry of Gender, Labour and Social Development, Yumbe District and Goboro Subcounty Community Development Officer, and Local Councils of the area) on child protection should be encouraged and appropriately scheduled, including continuous popularization of the child rights.
e) The Contractor should carry out HIV/AIDS awareness campaigns for workers and local communities and activities promoting access to health services, treatment and counselling.
f) Enforcement of legislation on child labour and Compliance to Employment Act 2006, Section 7 on sexual harassment and violence and National Gender Policy as well as the National Policy on the Elimination Gender-based Violence.
g) Locate worker camps at a minimum distance of 1km from towns and villages to limit worker-community interactions;
h) Preparation and implementation by the Lead Contractor of a strict Employee Code of Conduct complying with the Environmental Social Management Plan and including among others a strict prohibition of sexual abuse and sexual intercourse with partners younger than 18 years old (underage sex).
i) It is the Lead Contractor's responsibility to take necessary measures so that its employees and subcontractors' employees do not commit acts of sexual abuse and/or underage sex;
j) Immediately report any suspected case of sexual abuse or underage sex to the supervising engineer and the Project Implementation Unit. Management of such cases should be based on the following principles:
k) Immediate suspension of employment for the accused worker;
l) Trigger grievance redress mechanism processes if not done already and invite an impartial observer such as a representative from the Ministry of Labour, Gender and Social Development, to follow the process;

8.3.2.15 Land take

Land in the project areas is mainly communally owned and governed by the customary system of land tenure system (see section 5.4.16). The project infrastructure will acquire land for the intake site, pump house, water treatment plant, access routes to the borehole sites and site for the reservoir tank.

Land for hosting such structures shall be compensated for in accordance with the Land Act and World Bank Environmental and social safeguard policies.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Loss of land to the water infrastructure	Within a Limited area	Medium	Long term	Almost certain	Medium

Mitigation measures

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- Land required for project infrastructure such as the pump house and associated components will be legally acquired and paid for.
- A RAP shall be developed and implemented by MWE to ensure that affected crops are compensated. Compensation should be in line with the World Bank and Government Chief Valuers approved RAP report.
- Limit the project activities to the footprint of the required project area;
- Prohibit off-road driving and parking outside of the project area, perimeter fence and designated parking area;
- Establish a containerized storage for construction materials to limit the number of movements; and
- Stockpile the surface soil on the side of the project site for future use in landscaping.
- MWE shall engage all affected landowners and obtain consent before their land is used as a water transmission corridor/way leave for the proposed Goboro water and sanitation project.
- Where the landlords object to using their land without any compensation, MWE shall obtain an alternative route for the proposed water pipes.
- The compensation for married couples should be done after the wife has consented. This is aimed at promoting gender equality given that in the area, women rarely own land

Cumulative Impact

The increased land take from other projects may affect the agricultural activities of local communities, particularly those who depend on agriculture and fruit harvesting for sustenance. The combined cumulative land take for all developments in the area represents a minor reduction in the overall land available for crop farming and animal husbandry, which is likely to minimally reduce the overall agricultural production over the short to medium term at least. The impact significance is medium due.

Mitigation Measures

- Seek community input on land-use decisions to ensure development aligns with local priorities
- Liaise with the Land acquisition committee for standard rates and compensation timing to avoid double impact or disruption of the same community or individuals
- Develop and implement land use planning strategies that ensure minimal disruption to agricultural activities. This could involve identifying alternative areas for project development that have less impact on agricultural land

8.3.2.16 Accidents and Injuries to workers and residents

Activities associated with construction such as excavating of trenches, movement of construction vehicles, the use of equipment and the congregation of workers and staff on site increase the risk of injury. Construction activities will also result in access to the area by vehicles delivering materials to the site that may result in accidents/incidents. Work at the proposed site may involve hazards such as accidental falls into open trenches, slippery walkways, working at heights,

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exposure to energized circuits, and heavy equipment. Work at the project site may also involve entry into confined spaces, including manholes and storage tanks among others.

Mitigation Measures

- The Contractor shall conform to all the stipulations of the Occupational Health and Safety Act, 2006.
- The contractor shall provide ample warning signs, guard rails, warning tape, etc., around open excavations, stacks of material, debris, etc. and shall be held liable for all claims as a result of neglect of such precautions and provisions;
- Proper access control should be enforced to ensure that no unauthorized persons enter the site;
- Material delivery vehicles should be under the control of competent personnel. Ensure that persons handling equipment and materials are suitably trained, supervised and adequately instructed;
- Valves to storage tanks should be locked to prevent accidental flooding during maintenance;
- Use of requisite Personal Protective Equipment (PPE) at all times during construction works
- Use fall protection equipment when working at heights;
- Use proper techniques for trenching and shoring;
- When installing or repairing mains adjacent to roadways, implement procedures and traffic controls, such as the establishment of work zones to separate workers from traffic and the equipment as much as possible; reduction of allowed vehicle speeds in work zones to 10km/hr; and use of high-visibility safety apparel for workers in the vicinity of traffic

Cumulative Impact

Workers engaged in diverse construction activities will most likely be exposed to various occupational hazards, including machinery accidents, exposure to hazardous substances, and musculoskeletal injuries. The impact significance is Medium-High.

Mitigation Measures

- Conduct comprehensive risk assessments for each construction activity to identify potential hazards and implement appropriate control measures.
- Provide personal protective equipment (PPE) such as hard hats, safety goggles, gloves, and harnesses to all workers, and enforce their use at all times.
- Implement safety protocols and procedures for working at heights, including the use of guardrails, safety nets, and fall arrest systems.
- Provide training and certification programs for workers on safe work practices, equipment operation, and emergency procedures.

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8.4 Operational Phase Environmental and Social Impacts

8.4.1 Potential Operational Phase Positive Impacts

8.4.1.1 Increased access to clean and safe water

Water supply is essential for human health and survival, for food security and the empowerment of women as well as the education of girls, for the reduction in productivity losses due to morbidity and malnutrition, and for the management and protection of natural resources. Although the crucial importance has been widely recognized, the right to safe water remains a promise unfulfilled for the world's poorest citizens. The lack of access to safe drinking water impedes economic development, thwarts progress toward gender equality and puts health in danger.

The project will ease the current water deficit in the project area and the environs consequently promoting economic growth; the community will get access to quality clean water for drinking and domestic use. This will minimize cases of waterborne diseases resulting in a healthy community; reduce drudgery associated with water collection and result in gender balance

This impact will be enhanced through the following:

- Ensuring that most of the communities in the project footprint are connected or have access to the piped water.
- Ensuring that water is affordable and available all the time

8.4.1.2 Eradication of poverty and improved livelihoods of the local people

The proposed project will also increase the volume of water for production which could result in improved livelihoods of the local people. Water is indispensable for survival and improving the quality of life – for health (drinking, eating and bathing) and for economic development (agro-processing and business). The project would, therefore increase productive activities through reduced sick days and time saved in fetching water. This impact will be enhanced by giving priority to local communities while recruiting workers for the project and putting in place initiatives to promote the productive use of water.

8.4.1.3 Increased Revenue to the government

This water supply and sanitation project will generate revenue for the districts and the country in general. This will be in the form of VAT on water supply and other taxes associated with extension such as expanded and improved business opportunities in the project areas. This will be enhanced by putting in place an efficient mechanism for revenue collection.

8.4.1.4 Increase in investment in the area

The business community could take advantage of the proposed development to establish businesses that would otherwise be impossible without piped water. This impact will be enhanced through embedding initiatives for promoting the productive use of water.

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8.4.1.5 Improved social services through the supply of water

The project will extend water to Goboro Health Centre and Goboro Primary School in the project area This would result in bringing improved water and sanitation services closer to the people. This impact will be enhanced through:

- Ensuring that most of the communities in the project footprint are connected or have access to the piped water.
- Ensuring that operations and maintenance are properly done to avoid issues of water contamination
- Ensuring that water is affordable and available all the time

8.4.1.6 Reduction in diseases

The proposed Goboro RGC water and sanitation project will contribute towards a reduction in the prevalence rates of waterborne diseases especially cholera, dysentery and diarrhoea in the project area. This is because the current water sources are prone to contamination and hence the source of waterborne diseases. The communities were also optimistic that the initiative would reduce the incidence of people using contaminated water and unsafe water sources and hence the water-borne diseases such typhoid, intestinal worms and cholera that have a high occurrence in the area because of limited access to safe potable water.

This is expected since the communities will access clean water for drinking and domestic activities. The project would have significant strategic benefits in reducing the burden on the cost of health care services as diseases could be reduced.

This positive impact will be enhanced if the following are done:

- Ensuring that most of the communities in the project footprint footprint are connected or have access to the piped water.
- Ensuring that operations and maintenance are properly done to avoid issues of water contamination
- Ensuring that water is affordable and available all the time
- The improved health conditions will significantly result in a reduction in health costs and time for collecting water which translates into substantial savings for rural households.

8.4.1.7 Reduction of child mortality

With Safe drinking water, personal/household hygiene and improved sanitation infant/child morbidity and mortality would be reduced. Communities of the project area also recognized the role of safe water in reducing child mortality rates. The marginal price of improved hygiene and sanitation promotion would make them cost-effective health interventions. Therefore, extending piped water would reduce such risks.

This impact will be enhanced through the following:

- Ensuring that most of the communities in the project footprint are connected or have access to the piped water.
- Ensuring that water is affordable and available all the time

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8.4.2 Potential Operational Phase Negative Impacts

8.4.2.1 Hazardous Chemicals

Water treatment will involve the use of chemicals for coagulation, disinfection and water conditioning. Chlorine is one of the most used chemicals in water treatment. Exposure to hazardous chemicals used in the water treatment process has the potential to lead to long-term impacts that may be felt both at the local and regional levels. The severity of the impact will be medium but will be low with the implementation of mitigation measures.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Hazardous Chemicals	Within a Limited area	Low	Long term	Possible	Medium

Mitigation Measures

- Minimize the amount of chlorination chemicals stored on-site while maintaining a sufficient inventory to cover intermittent disruptions in supply;
- Develop and implement a prevention program that includes identification of potential hazards, written operating procedures, training, maintenance, and accident investigation procedures;
- Develop and implement a plan for responding to accidental releases.

Cumulative Impact

Hazardous chemicals used in the operation and maintenance of the system can leach into the water supply, contaminating it and posing health risks to consumer

Mitigation Measure

- Implement proper handling, storage, and disposal practices for hazardous chemicals, as well as provide adequate training and protective equipment for workers. Additionally, regular monitoring and testing of water quality can help detect and address contamination issues early

8.4.2.2 Water system leaks and loss of pressure

Water system leaks can reduce the pressure of the water system compromising its integrity and ability to protect water quality (by allowing contaminated water to leak into the system) and increasing the demands on the source water supply and the quantity of chemicals. Leaks in the distribution system can result from improper installation or maintenance, inadequate corrosion protection, stress from traffic and vibrations and overloading among other factors.

Risk assessment matrix

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Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Water system leaks and loss of pressure	Local	Medium	Short-term	Almost certain	Medium

Mitigation Measures

- Ensure construction meets applicable standards and industry practices;
- Conduct regular inspection and maintenance;
- Implement a leak detection and repair program (including records of past leaks and unaccounted- water to identify potential problem areas);
- Consider replacing mains with a history of leaks or with a greater potential for leaks because of their location, pressure stresses, and other risk factors.

Cumulative Impact

Loss of pressure in the system can allow contaminants to enter the water supply through leaks or backflows, leading to water quality issues and potential health risks for consumers.

Mitigation Measures

- Conduct regular inspections of the water supply system to identify and repair leaks or damage that could lead to pressure loss. Implement a proactive maintenance program to ensure the integrity of the system.

8.4.2.3 Siltation from excavated soils

During the operation of the project, there will be new connections to be made or maintenance of the water line. These may require excavations and heaping of soils. The heaped soils may be washed away into nearby streams, therefore, leading to silt loading and causing water turbidity. The impacts stated above are localised and short-term and therefore not expected to lead to adverse effects to surface flow regimes resulting from temporary disruption of existing/natural drains occurring during site preparation or risk of surface water contamination due to erosion and siltation.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Siltation from excavated soils	Within a limited area	Low	Temporary	Likely	Low

Mitigation Measure:

- No spoil soil or any other materials shall be dumped or temporarily stored in a known drainage system

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- All excavated soils shall be used for backfilling immediately after laying pipes. The heaped soils at deep excavations shall be consolidated in an area with embankments to prevent them from being washed away.

Cumulative Impact

Silt and sediment buildup in pipelines can reduce the quality of the water supply by increasing turbidity and potentially introducing contaminants.

Mitigation Measures

- Implement proper erosion and sediment control measures during construction to minimize the amount of soil entering the water supply system.
- Regular inspection and maintenance of pipelines and other infrastructure can also help prevent siltation buildup

8.4.2.4 Solid waste management

Solid waste residuals generated by water treatment include process residuals, used filtration membranes, spent media and miscellaneous wastes. Process residuals primarily consist of settled suspended solids from source water and chemicals added in the treatment process, such as lime and coagulants. Pre-sedimentation, coagulation (e.g., with aluminium hydroxide [alum]), lime softening, iron and manganese removal, and slow sand and diatomaceous earth filtration all produce sludge.

The composition of the sludge depends on the treatment process and the characteristics of the source water and may include metals, lime, polymers, other organic compounds, microorganisms, etc. Spent media may include filter media (including sand, coal, or diatomaceous earth from filtration plants), ion exchange resins, granular activated carbon [GAC] and others.

Therefore, the different types of waste generated by the various water treatment processes shall be assessed for toxicity before they are disposed of. The public toilets that will be constructed by this project will also generate sanitary wastes which will require to be emptied and disposed of from septic tanks. If the emptying and disposal are not done promptly and properly, it may lead to environmental and public health risks.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Solid waste management	Limited area	Medium	Short-term	Likely	Medium

Mitigation measures proposed

- Minimize the quantity of solids generated by the water treatment process by optimizing coagulation processes.
- A NEMA-approved waste handler should be engaged to collect and dispose of solid wastes at a gazetted NEMA waste disposal facility

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- Alternatively, landfill solid wastes but not close to any surface or groundwater (residuals from WTPs are typically not hazardous (EPA, 2011a), thus can be landfilled).
- Regenerate activated carbon such as by returning spent carbon to the supplier.
- Promptly empty the public toilets and toilets at the water office and dispose of sewage to the Regional NWSC sewage treatment plant.

Cumulative Impact

Poor sanitation could be a result of the cumulative effect caused by the establishment and operation of different business enterprises in the area.

Mitigation Measures

- Establish and enforce proper waste disposal practices for businesses.
- Encourage waste reduction, recycling, and responsible disposal of both solid and hazardous waste.

8.4.2.5 Deficiencies in the water distribution system

The water distribution system is a critical component in the delivery of safe potable water. Even if water is effectively treated to remove contaminants and destroy pathogens, waterborne disease outbreaks can occur because of deficiencies in the water distribution system. Exposure of water to pathogens from storage facilities and external sources may lead to long-term impacts whose effects will be experienced regionally. The severity of the impacts will be high without mitigation measures.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Deficiencies in the water distribution system	Area-specific	Medium	Short-term	Likely	Medium

Mitigation measures proposed

- Construct, operate, and manage the water distribution system in accordance with applicable national requirements and internationally accepted standards;
- Construct and maintain the distribution system so that it acts as a barrier and prevents external contamination from entering the water system by:
- Inspecting storage facilities regularly, and rehabilitating or replacing storage facilities when needed. This may include draining and removing sediments, applying rust-proofing, and repairing structures
- Ensuring that all installation, repair, replacement, and rehabilitation work conforms to requirements for sanitary protection and materials quality
- Testing material, soil, and water quality and implementing best practices to prevent corrosion, such as cathodic protection

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- Preventing cross-connections with sewerage systems
- Maintain adequate water pressure and flow throughout the system by:
    - Implementing a leak detection and repair program
    - Reducing residence time in pipes
    - Maintaining positive residual pressure of at least 20 pounds per square inch (psi)
    - Monitoring hydraulic parameters, such as inflows, outflows, and water levels in all storage tanks, discharge flows and pressures for pumps, flows and/or pressure for regulating valves, and pressure at critical points, and using system modelling to assess the hydraulic integrity of the system
- Prevent the introduction of contamination from the distribution system itself by:
    - Minimizing microbial growth and biofilm development (e.g., by ensuring adequate residual disinfection levels). Collect samples from several locations throughout the distribution system, including the farthest point, and test for both free and combined chlorine residual to ensure that adequate chlorine residual is maintained
    - Using construction materials that do not contribute to the release of undesirable metals and other substances or interact with residual disinfectants

Cumulative Impact

Deficiencies in the distribution system can lead to damage to infrastructure, including pipes, valves, and fittings. This can result in costly repairs and disruptions in water supply.

Mitigation Measures

- Ensure that staff are trained in proper maintenance and repair techniques for distribution system infrastructure. This will help prevent damage due to improper handling or maintenance practices.
- Develop and implement an emergency response plan to quickly address infrastructure failures and disruptions in the water supply. This will help minimize the impact on consumers and reduce repair costs.

8.4.2.6 Transport – Traffic and road safety

During operation, the main activities will be maintenance and making new connections. The new connections and or maintenance activities may cut across some access roads. Currently, all the roads within the project area are earth-surfaced. The excavations for the new connections of maintenance activities across some roads will interfere with road traffic. Unless proper mitigation measures are put in place, new connections and or maintenance activities across and along the roads may interfere with traffic or cause accidents. It's therefore necessary that key precautions be undertaken at such road crossings to avoid accidents and impairing traffic activities.

Risk assessment matrix

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Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Interference with traffic and diminished road safety	Within limited area	Low	Temporary	Possible	Low

Mitigation measures

- To minimize interference with traffic, digging trenches and piping across roads shall be conducted in hours with less traffic preferably on weekends.
- The trench excavated across the roads, after laying the pipes should be backfilled with marram, compacted and levelled to the level of the existing road immediately. This is to ensure that the integrity of the road is not affected by the water line construction activities.
- Conspicuous notices shall be well placed on roads and guides on the ground shall direct traffic in case of diversions or open trenches.

Cumulative Impact

Traffic risks will be a result of the cumulative effect caused by construction project trucks on the existing cars using community Road

Mitigation Measures

- Coordinate construction activities to minimize impacts on peak traffic hours.
- Schedule major deliveries and heavy construction tasks during off-peak hours.

8.4.2.7 Fire Hazards

During the operation of the standby generators in the project infrastructure such as buildings, fire hazards are likely to occur which could lead to loss of life and property.

Risk assessment matrix

Impact	Extent	Magnitude	Duration	Probability of occurrence	Overall Assessment
Fire Hazards	Within limited area	low	Temporary	Possible	Low

Mitigation measures

- Ensure that the fuel for use in the standby generators is transported by certified transporters who are licensed by the Uganda Energy Regulation Authority
- Ensure that there is a storage area for the fuel that meets the storage design for fuel as provided by the Uganda Energy Regulation Authority
- Install warning signs (fire hazards) in the generator house area

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- Provide fire-fighting equipment in the generator house (fire extinguishers, sand bucket)
- Provide workers in the generator house with PPE for use

Cumulative Impact

Fires can damage infrastructure, including pipelines, pumps, and storage facilities, leading to disruptions in the water supply. This can impact firefighting efforts and increase the risk of further damage and loss.

Mitigation Measures

- Conducting regular inspections of infrastructure to identify and address fire hazards.
- Installing and maintaining fire detection and suppression systems.
- Providing training to personnel on fire safety and emergency response procedures.
- Developing and implementing an emergency response plan for fires.
- Collaborating with local fire departments and emergency services to coordinate response efforts.

8.5 Decommissioning phase Impacts

8.5.1 Introduction

Decommissioning normally takes place both at the end of the construction period and during the final phase of a project life-cycle. Environmental planning is, therefore, necessary before any decommissioning activities should be allowed to commence. The reason for this is that a project earmarked for decommissioning has in all likelihood been operational for some time, and as such, the environment within which it lies has stabilised in response to the presence of the associated infrastructure, activities and facilities. At the end of the construction phase, decommissioning mainly targets temporary facilities associated with construction camps and site restorations.

The decommissioning of one or all components of the proposed project will therefore have some effect on the environmental status quo of the project site, either positively or negatively. This section contains various environmental guidelines that will assist decision-makers in making environmentally responsible and sustainable decisions in terms of which infrastructure to retain, which to develop further (and how to do this), and which to remove completely in so far as construction and operations of this project are concerned. In this way, the positive aspects of decommissioning may be maximized and the negative aspects minimized or even avoided.

8.5.2 Purpose and objectives of decommissioning

The generally accepted purpose of decommissioning is the release of valuable assets such as machinery and sites for alternative use, recycling and reuse of materials and the restoration of environmental amenities. In all cases, the basic objective is to achieve an end-point that is sensible in technical, social and financial terms, that properly protects workers, the public and the environment and, in summary, complies with the basic principles of sustainable development. Stringent regulatory controls protect the public, the environment and workers from the hazards associated with decommissioning activities.

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8.5.3 Decommissioning at the end of the construction phase

The construction process for the proposed project site will involve several activities that may contribute to some changes in the local environmental conditions. The decommissioning exercise will involve the dismantling of site facilities; backfilling all disturbed areas and transportation of materials out of the site for disposal or re-use in similar future projects. Materials from the site will remain from construction activities and include scrap metals and plastic pipes among others. These materials can be reused, recycled and donated to other organizations. Scrap materials can often be reused or refurbished. Some items could be used by the proponent for their next job, and many items can be sold to used-materials stores, scrap recyclers, waste exchanges or other outlets.

Various items shall be accumulated separately to facilitate recycling.

The table below gives a summary of mitigation measures proposed for decommissioning during the construction stage

Table 8-2: Decommissioning at the end of Construction Phase

Issue	Action required	Responsibility
Impacts related to the procurement of construction materials	Close all borrow pits in accordance with an approved plan to maximise future use and minimise health and safety hazards.	Contractor
Solid waste arising from construction activities	The site is to be cleared of all construction materials, including litter before handover	Contractor,
Fences, barriers and demarcations	Fences, barriers and demarcations associated with the construction phase must be removed from the site	Contractor,
Disturbed areas	The site must be fully rehabilitated and stabilised (for example, through revegetation)	Contractor
Contractor camp	Decommission all contractor camp services including electricity, water and sanitation facilities	Contractor
Site Remediation	A meeting must be held on-site between the Engineer, Environmentalist and Contractor to approve all remediation activities and ensure that the site has been restored to a condition approved by the Engineer	Contractor and supervising consultant
Hazard to workers	I) Implement full H&S programme (Health and Safety Plan) and labour welfare provisions. II) Establish and operate an emergency evacuation	Contractor

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Issue	Action required	Responsibility
	procedure for casualties.	
Environmental cases identified	Rehabilitation Activities of Environmental Cases identified must continue throughout the defect liability period	Contractor and supervising consultant

8.5.4 Decommissioning during the final phase of the project

Decommissioning of the project infrastructure is anticipated to be after the end of the design life of the water supply and sanitation infrastructure. Decommissioning of the Project is envisaged after 20-30 years however this will only be in the event that the entire pipeline requires overhaul and replacement. Otherwise, pipelines will be frequently replaced during routine operation and maintenance and thereby unlikely to be decommissioned. However, if they were to be decommissioned, before decommissioning, the contractor would prepare a decommissioning plan for the elements that will require decommissioning. Some of these pipelines if uncovered can have negative impacts on the health of those that come in contact with these materials.

Mitigation measures are outlined in Table 8-5 below.

Table 8-3: Decommissioning during the final phase of the project

Steps	Activity	Actions required	Responsible party
Step 1	Initiation	• Development of an objective worksheet and checklist incorporating references, legal and policies	Proponent
Step 2	Prepare a road map for decommissioning design	• Conduct a design review to validate elements of the design and ensure design features are incorporated in the decommissioning design. • Carry out public consultations	Proponent
Step 3	Prepare and award contract	• Prepare a contract that incorporates validated project information and award to a contractor as per the procurement rules.	Proponent
Step 4	Implement the project.	• Implement design elements and criteria on the project in accordance with specifications and drawings. • Inspect during decommissioning and at project completion to ensure that all design elements are implemented according to design specifications.	Contractor and proponent
Step 5	Non-conformance,	• Determine root cause	All responsible

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Steps	Activity	Actions required	Responsible party
	corrective/preventive action	• Propose corrective measures • Propose future preventive measures.	

8.6 Positive impacts

The proposed project will have positive impacts and these are outlined as follows with recommendations for their enhancement.

9.6.1 Employment opportunities

Employment opportunities will be available to construction-related professions, and other non-skilled employment opportunities for casuals. Cumulatively the project will present a beneficial social economic impact upon development. Other employment opportunities shall present themselves in the form of, security personnel, housekeepers, and porters at the construction site among others. The employment opportunities will, however, be temporary during the construction phase for about 12 months.

Enhancement measures

- Workers employed to work at the construction site or facility should be paid on time and have signed contracts.

9.6.2 Improved Site Aesthetics

Construction of the proposed water supply system and proper landscaping will give a better outlook of the area making it more visually attractive and appealing.

Enhancement measures

- Ensure proper clean-up and landscaping work after completion of the construction phase.
- There is a need to have a maintenance plan to keep the premises more visually attractive and appealing.

9.6.3 Market for Construction Materials

Some of the construction materials will be procured locally and this will provide revenue to the local economy. Some of the materials produced locally can be procured from local supplies. These will include sand, bricks aggregate stones, and cement. The proceeds from the sale of the raw materials for construction purposes at the proposed project site will boost the local economy in the form of increased earnings

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9 ENVIRONMENTAL SOCIAL MANAGEMENT AND MONITORING PLAN

9.1 Overview

The ESMP outlines the mitigation measures, monitoring activities and institutional arrangements to be followed during construction and operation phases to avoid or control impacts as well as indicating the timing and budgets for the recommended mitigation and monitoring activities.

9.2 Scope and Objectives of the ESMP

This ESMP focuses on mitigating the impacts identified during the environmental assessment. It is an instrument that will allow the project component and the contractor to integrate environmental and social management measures during the various phases of the proposed project. This plan is meant to establish measures and procedures to control the identified impacts and monitor the progress of implementation of the recommended mitigation measures.

It will achieve the following in the long run:

a.) Provide the National Environment Management Authority (NEMA) with a tool to make easy the evaluation of the implementation status of commitments made by the proponent during the ESIA study phase;

b.) Provide clear and mandatory instructions to the contractor concerning their environmental and social responsibilities during the project implementation phase;

c.) Ensure continuous compliance of the contractor with National legislation and policies regarding environment conservation and management;

d.) Assure the regulators and interested and affected parties the satisfaction of their demands in relation to the environmental and social performance of the project;

e.) Ensure that adequate financial and human resources are allocated to the project to give effect to such requirements or commitments, and to ensure that the scale of ESMP-related interventions is consistent with the significance of identified impacts;

f.) Provide a coherent and pragmatic framework for the implementation of the requirements, ranging from the formation of structures to administer the implementation, through the roles and responsibilities of the key project role-players, to the auditing and reporting of compliance; and

g.) Ensure suitably qualified personnel with adequate power of authority are integrated with the various project implementation organisations to timeously identify and render appropriate and proactive corrective actions to unforeseen changes in project implementation not considered in the ESIA process.

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9.3 Detailed ESMMP

Table 9-1: Detailed Environmental and Social Management and Monitoring Plan (ESMMP)

	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
Construction phase							
Potential Construction Phase Positive Impacts							
(i)	**Short-Term Employment Opportunities** <u>Enhancement measures;</u> a) Recruit labour from the project area with the involvement of Local leaders b) Ensure gender equity in employment c) Development and implementation of a workers' code of conduct; d) Every worker should take the form of Oral and Witten contracts (Section 25 of the Employment Act)	• Tasks for locally available skills are given to the local people. • Competitive wages are paid.	• Percentage of employees/workers recruited from the project area.	Quarterly	Contractor, Supervision Engineer and MoWE	3000	None
			• Number of incidents registered on site.	Daily	Contractor and Supervision Engineer		Occupational health and safety
			• Average salary/ wages paid to workers in comparison with salaries for similar jobs in the area.	Quarterly	Contractor, Supervision Engineer and MoWE		None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
			• Number of grievances recorded from project workers.	Weekly	Contractor, Supervision Engineer and MoWE	None	Grievance management
(ii)	**Improved Skills for Local Communities** Enhancement measures; • Recruit labour from the project area with the involvement of Local leaders • Encourage the recruitment of female workers, with equal payment • Training of the labour force in work skills and health and safety	Tasks for locally available skills are given to the local people. Competitive wages are paid.	Percentage of employees/workers recruited from the project area.	Quarterly	Contractor, Supervision Engineer and MoWE	2000	None
			Average salary/ wages paid to workers in comparison with salaries for similar jobs in the area.	Quarterly	Contractor, Supervision Engineer and MoWE		None
(iii)	**Increase economic growth** Enhancement measures; • Recruit labour from the project area with the involvement of Local leaders • Encourage the recruitment of female workers, with equal payment	Improved economic growth	Changes in economic growth in the area	Annually	MoWE	None	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
(iv)	**Increased market for agricultural produce and local goods** <u>Enhancement measures;</u> • Contractor(s) to locally purchase materials that can be locally available from the local markets; •	High demand for agricultural goods and produce	Changes in economic growth in the area	Quarterly	Contractor, Supervision Engineer and MoWE	None	None
	Potential Construction Phase Negative Impacts						
(i)	**Air quality pollution** <u>Mitigation measures</u> • Construction sites shall be hoarded off to restrict dust to within site boundaries; • Sprinkle water on vehicle pathways; • PPE-like dust masks shall be availed to workers whenever needed;	Controlled air Pollution during works	Schedule of servicing of equipment	monthly	Contractor, Supervision Engineer, MoWE	Contractual sum	None
			Workers in appropriate PPE	Daily	Contractor, Supervision Engineer, MoWE	3000	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	• Material delivery trucks will be covered and material loads will be undertaken in a manner that reduces spread during transportation; • Limit vehicle speed to 30 Km/hr on Earth roads. • Maintenance schedules of vehicles and equipment should be developed and adhered to in line with manufacturers' requirements. • Shield stockpiles of construction materials from wind using materials or tools such as tarpaulins. Stockpiles should be developed at low heights		Risk Assessment and Management Plan implemented/ Enforced	Monthly	MoWE		None
(ii)	**Noise pollution and vibrations** <u>Mitigations measures</u> • Personal protective equipment such as noise-cancelling ear muffs should be provided to workers • Apply appropriate technology during drilling, pilling and other project activities with low vibration; • Idling time on trucks and other noisy equipment should be limited to a minimum • Monitoring of the grievance mechanism register for noise-related grievances from stakeholders • The contractor should endeavour to use equipment installed with noise abatement devices as much as practicable;	Controlled noise pollution	Provision of PPEs	Monthly	Construction Contractor	4500	None
			Construction equipment installed abatement devices	Annually	Construction Contractor		None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	• Communities will be notified before undertaking noise operations associated with the project		Noise-related grievances recorded and action taken	Monthly	Contractor, supervision Engineer, MoWE		None
(iii)	**Visual and landscape Impacts** <u>Mitigations measures</u>	Restored site to its normal state	Restoration Measures are implemented around the site	Daily	Contractor, Supervision Engineer, MoWE	Contractual sum	None
	• All disturbed areas should be restored following the project's restoration specifications. • The Contractor should prepare a Restoration Plan for the project based on the specifications.		Operational areas are sealed off.	Daily	Contractor, Supervision Engineer, MoWE	Contractual sum	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
(iv)	**Poor waste management** Mitigations measures • The contractor will segregate and separate the wastes properly to encourage the recycling of some useful waste materials. • Excavated wastes should be disposed of properly by backfilling and landscaping • Adequate and appropriate sanitary facilities shall be constructed at the campsite while workers along the construction sites shall be provided with mobile toilets that shall be cleaned and emptied promptly • •All organic waste generated at eating places during construction such as foodstuff shall be collected and transported by the contractor to designated landfills for disposal.	Proper waste management	Proper waste management practices observed on site for example waste sorting	Daily	Contractor, Supervision Engineer	5000	None
			Adequate waste management Plan implemented	Monthly	Contractor, Supervision Engineer		None
			Movement of equipment limited to approved areas	Daily	Contractor, Supervision Engineer, MoWE		None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
(v)	**Occupational Health and Safety and Community Health Concerns** Mitigations measures • Ensure that equipment and machinery are securely fastened down and where necessary rail guarded; • Deploy properly trained personnel/ flagmen to control traffic, especially for construction vehicles turning to the site; • Ensure adequate planning and supervision of trial mixes and works; • Ensure regular inspection of formwork, falsework and temporary supports before loading or pouring concrete;	Health, safe and secure work environment and the project area	An adequate health and safety, security, and pollution prevention plan developed and approved	Quarterly	Contractor, Supervision Engineer, MoWE	20,000	Health, safety &security management, pollution prevention

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	• Ensure barriers are in place before work including guardrails and warning tape; • Use properly trained personnel to carry out construction works; • Regularly inspect equipment and machinery and routinely maintain them according to manufacturer's instructions; • Provide warning tape for example "falling debris", and any other suitable barriers to prohibit unauthorized access to the workplace; • Progressive wetting of work areas to minimize dust emission will be done; • Work areas will be cleaned up Progressively to prevent debris/rubbish from becoming a trip hazard; • Undertake job risk analysis and provide appropriate Personal Protective Equipment to all workers. These may include hard hats, dust masks, ear plugs, safety goggles, safety boots, gloves and overalls		Type materials approved for the project	Monthly	Contractor, Supervision Engineer, MoWE	None	None
(vi)	**Impacts on water and soil resources** <u>Mitigations measures</u> • Adequate restoration to reduce the risk of soil erosion. • Vehicle and equipment maintenance activities should be done as much as possible away from construction sites while a designated area away from drainage courses should be identified to carry	Controlled soil erosion	Movement of equipment limited to approved areas	Daily	Contractor, Supervision Engineer, MoWE	Contractual sum	None
			Erosion control measures are implemented	Daily	Contractor, Supervision Engineer, MoWE	Contractual sum	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	out necessary onsite repair or maintenance activities.		around erosion-prone site				
			Adequate spoil management plan implemented	Daily	Contractor, Supervision Engineer, MoWE	Contractual sum	None
			Operational areas sealed off.	Daily	Contractor, Supervision Engineer, MoWE	Contractual sum	None
	Impact on Flora (Loss of vegetation and crops) <u>Mitigations measures</u> • A RAP shall be developed and implemented by MWE to ensure that the affected property is compensated. • Before compensating the affected persons, adequate community sensitization meetings shall be carried out to ensure that the PAPs are aware of the entire program • The construction of the proposed water infrastructure shall only commence when all the affected farmers have been fully sensitized to the pending activities	Adequate compensation	Number of complaints registered on the destruction of crops and other vegetation Number of disturbed sites that are restored Restoration plan and closure reports	Daily	NEMA, MoLUD, DLGs, MoWE	compensation costs shall be determined by the RAP	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	Impacts on fauna Mitigations measures • Movement of equipment (vehicles, contractors and the entire construction crew) must follow designated pathways or agreed-upon access roads. This will avoid unintended damage to fauna. • The contractor should restore sites where activities will be carried out at all the project sites • Trenching, pipework laying as well as well and backfilling will be done concurrently.	Restoration plan	Restoration plan and closure reports	Daily	Contractor, Supervision Engineer, MoWE	5000	None
	Impact of waste generation Mitigations measures • All sorts of waste generated during construction such as HPDE and uPVC offcuts and other accessories associated with water and sanitation projects shall be collected by the contractor and given to recycling facilities • All organic waste generated at eating places during construction such as foodstuffs shall be collected and transported by the contractor to a designated landfill • The Contractor shall develop and implement a Waste Management Plan that takes into consideration sorting at the source, proper storage and transportation.	Proper waste management	Number of waste bins on sites Records of quantities of waste collected and recycled or disposed of Waste Delivery Notes after Disposal	Daily	Contractor, Supervision Engineer, MoWE	5000	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	Impacts on land Mitigations measures • MWE shall engage all affected landowners and obtain consent before their land is acquired for the project • All land acquired for the establishment of the water treatment plant, transmission pipes, reservoir tanks and any other activity either by the developer or contractor shall be compensated for in accordance with the Land Act and World Bank Environmental and Social Safeguard Policies	Adequate compensation	Number of landowners engaged Number of PAPs that sign the consent forms Number of PAPs compensated for the land taken up by project components Complaints related to land take registered	Weekly	NEMA, MoLGSD, MoLUD, DLGs	compensation costs shall be determined by the RAP	
(vii	**Impact from traffic accidents** Mitigations measures • To minimize interference with traffic, digging trenches and piping across roads shall be conducted in hours with less traffic preferably on weekends. • The trench excavated across the roads, after laying the pipes should be backfilled with marram, compacted and levelled to the level of the existing	Enhanced road safety	Traffic control measures	Daily	Contractor, Supervision Engineer, MoWE	4000	None
			Placement of clear sign warnings	Monthly	Contractor, Supervision Engineer, MoWE	5000	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	road immediately. This is to ensure that the integrity of the road is not affected by the water line construction activities. • Conspicuous notices shall be well placed on roads and guides on the ground shall direct traffic in case of diversions or open trenches. • The contractor will have to notify traffic police in advance and work with it during trenching across highways and other major roads. • All drivers to be employed by the Developer or Contractor shall be qualified, and skilled with valid driving permits. • The roads that will be affected by the repair and restored immediately after the laying of pipes		Installation of speed control devices	Monthly	Contractor, Supervision Engineer, MoWE	2000	None
(vii	**Risk of social crimes** Mitigations measures • Adopt strict hiring guidelines to lock out the bad elements and limit movement outside the site. • Adequate security should be provided within the site to address crimes and regulate any activity interruptions • The local councils of the area should be included in the vetting process of some of the workers especially those from within the locality. • There should be a Grievance Redress Mechanism in place developed by the contractor before	Project to proceed with minimum interruption to the community setting	Number of project workers recruited from the project area	Monthly	Contractor, Supervision Engineer, MoWE	Contractual sum	None
			A grievance management mechanism was developed and implemented	Monthly	Contractor, Supervision Engineer, MoWE	2500	Grievance management
			Percentage of workers who	Monthly	Contractor, Supervision	None	Labour laws and general human rights

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	construction activities to resolve issues before they escalate. • Issues of security should be handled hand-in-hand with the local Council administration. • The project should in addition have a security system • Signing a code of conduct by workers on responsible behaviour and upholding values of the organization (contractor and the society) • There should be a Grievance Redress Mechanism in place to resolve issues • Each worker should sign a code of conduct upon commencement of their assignment.		have signed a code of conduct		Engineer, MoWE		
			Updated staff register for the project	Monthly	Contractor, Supervision Engineer, MoWE	None	None
(ix)	**Spread of HIV & AIDs** <u>Mitigations measures</u> • Provide condom dispensers that should be refilled on time. • Hiring workers from the local community to prevent social challenges associated with labour camps;	Healthy society	Provision of condom dispensers and well-refilled	Daily	Contractor, MoWE	15000	None
			HIV/AIDS prevention programs implemented	Quarterly	Contractor, Supervision Engineer, MoWE	10000	None

ggg

	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	• Education and sensitization of workers and the local communities on STIs, HIV/AID's and risks of contracting or spreading sexually transmitted diseases;		Number of project workers recruited from the project area	Monthly	Contractor, Supervision Engineer, MoWE	2500	None
	Labour Influx and Other Labour Related Impacts <u>Mitigations measures</u> • Local workers should be given priority during recruitment; • Recruitment of workers should be done in corroboration with the local authorities; • An adequate workers' code of conduct will be developed and implemented; and • Access to workers' camps will be restricted.	Reasonable number of people in the area due to the proposed project	• Percentage of employees/workers recruited from the project area.	Quarterly	Contractor, Supervision Engineer, LC1 Chairman	None	None
			Adequate workers' code of conduct developed and implemented	Quarterly	Contractor, Supervision Engineer, LC1 Chairman	None	None

ggg

	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	Impact on gender-vulnerable groups (Women, children, etc.) <u>Mitigations measures</u> • All workers shall receive adequate briefing and education on the laws against defilement and other sexual offences. • Workers will be sensitized about their sexual rights • The contractor shall conduct gender sensitization to the workforce on matters such as gender-sensitive communication and on the gender-sensitive conduct of workers towards women including putting in place toilets segregated by gender amongst others • A child protection plan will be developed by MWE and provided to all the contractors and school management to discourage the contractors from using children as labourers • Any person involved in child abuse shall be dealt with in accordance with the law. • Worker Code of Conduct will be part of the employment contract, and including sanctions for non-compliance (for example, termination);	Implemented gender protection plan	Number of complaints related to gender and other vulnerable groups Number of sensitisation on social protection requirements undertaken At least 30% of the workforce are women Number of complaints registered Child Protection Policy and implementation reports National abuse hotline availed to all the workers	Quarterly	NEMA, MWE, MoLGSD, DLGs	12,000	MoLGSD,

ggg

	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
			Number of cases of child abuse, SH and GBV reported to police				
Potential Operation Phase Negative Impacts							
	Hazardous Chemicals <u>Mitigations measures</u> • Minimize the amount of chlorination chemicals stored on-site while maintaining a sufficient inventory to cover intermittent disruptions in supply; • Develop and implement a prevention program that includes identification of potential hazards, written operating procedures, training, maintenance, and accident investigation procedures; • Develop and implement a plan for responding to accidental releases	Safe and clean water for all	Carry out analysis of Physicochemical and bacteriological parameters for water quality. Verify the degree of compliance in implementing the proposed mitigation measures	Quarterly	MoWE umbrella organization,	5000	None

ggg

	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	Water system leaks and loss of pressure Mitigations measures • Ensure construction meets applicable standards and industry best practices; • Conduct regular inspections and • maintenance; • Implement a leak detection and repair • program (including records of past leaks and unaccounted- water to identify potential problem areas); • Consider replacing mains with a history of leaks or with a greater potential for leaks because of their location, pressure stresses, and other risk factors.	No water leakage	Verify the degree of compliance in implementing the proposed mitigation measures	Weekly	MoWE umbrella organization	Use internal capacity	None
	Exposure of water to pathogens from storage facilities and from external sources Mitigations measures • Construct, operate, and manage the water distribution system in accordance with applicable national requirements and internationally accepted standards; • Construct and maintain the distribution system so that it acts as a barrier and prevents external contamination from entering the water system by: ➢ Inspecting storage facilities regularly, and rehabilitating or replacing storage facilities when needed. This may include draining	Safe and clean water for all	Carry out analysis of physicochemical and bacteriological parameters for water quality. Verify the degree of compliance in implementing the	Quarterly	MoWE, Umbrella organization	2000	None

ggg

	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	and removing sediments, applying rust-proofing, and repairing structures ➢ Testing material, soil, and water quality and implementing best practices to prevent corrosion, such as cathodic protection • Maintain adequate water pressure and flow throughout the system by: ➢ Implementing a leak detection and repair program ➢ Monitoring hydraulic parameters, such as inflows, outflows, and water levels in all storage tanks, discharge flows and pressures for pumps, flows and/or pressure for regulating valves, and pressure at critical points, and using system modelling to assess the hydraulic integrity of the system • Prevent the introduction of contamination from the distribution system itself by: ➢ Minimizing microbial growth and biofilm development (e.g. by ensuring adequate residual disinfection levels). Collect samples from several locations throughout the distribution system, including the furthest point, and test for both free and combined chlorine residuals to ensure that adequate chlorine residual is maintained.		proposed mitigation measures				
	Siltation from excavated soils Mitigations measures	Clean water	Number of complaints registered due to siltation	Weekly	MoWE, Umbrella organization	5000	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	➢ No spoil soil or any other materials shall be dumped or temporarily stored in a known drainage system ➢ All excavated soils shall be used for backfilling immediately after laying of pipes		No excavated trenches are left not backfilled Number of Draining systems with spoil soil				
	Solid waste management <u>Mitigations measures</u> • Minimize the quantity of solids generated by the water treatment process by optimizing coagulation processes. • A NEMA approved waste handler should be engaged to collect and dispose of solid wastes at a gazetted NEMA waste disposal facility • Alternatively, landfill solid wastes but not close to any surface or groundwater (residuals from WTPs are typically not hazardous (EPA, 2011a), thus can be landfilled). • Regenerate activated carbon such as by returning spent carbon to the supplier. • Promptly empty the public toilets and toilets at the water office and dispose of sewage to an approved waste treatment plant or lagoon	Good waste management practices	Amount of solid wastes generated by the treatment process Number of Residuals disposed of safely	Weekly	MoWE, Umbrella organization	1000	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	Contamination of drinking water from treatment operations Mitigations measures • Install alarm and safety systems, including automatic shutoff valves that are automatically activated when a chlorine release is detected; • Use corrosion-resistant piping, valves, metering equipment, and any other equipment coming in contact with chlorine, and keep this equipment free from contaminants, including oil and grease; • Ensure that treatment capacity is adequate to meet anticipated demand; • Construct, operate and maintain the water treatment facility in accordance with national requirements and internationally accepted standards to meet national water quality standards and WHO Guidelines for Drinking Water Quality; • Develop and implement a prevention program that includes identification of potential hazards, written operating procedures, training, maintenance, and accident investigation procedures; and • Evaluate the vulnerability of the treatment system and implement appropriate security measures, such as background checks of employees, perimeter fencing and video surveillance and improve the electrical power feeds to the facilities.	Implemented prevention program	Installed alarm and safety systems Well-maintained water treatment facility	Daily	MoWE, Umbrella organization	Operation costs	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	Deficiencies in the water distribution system Mitigations measures • Construct, operate, and manage the water distribution system in accordance with applicable national requirements and internationally accepted standards; • Construct and maintain the distribution system so that it acts as a barrier and prevents external contamination from entering the water system • Maintain adequate water pressure and flow throughout the system	Adequate water supply	No leaks detected No of repairs done	Quarterly	MoWE, Umbrella organization	Operation costs	None
	Transport – Traffic and road safety Mitigations measures • To minimize interference with traffic, digging trenches and piping across roads shall be conducted in hours with less traffic preferably on weekends. • The trench excavated across the roads, after laying the pipes should be backfilled with marram, compacted and levelled to the level of the existing road immediately. This is to ensure that the integrity of the road is not affected by the water line construction activities. • Conspicuous notices shall be well placed on roads and guides on the ground shall direct traffic in case of diversions or open trenches.	Smooth traffic flow	No of notices placed to guide traffic during the construction of the distribution line	Quarterly	MoWE, Umbrella organization	2500	None

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	Impact/ Mitigation/ Enhancement and Commitments	Preferred Outcomes	Monitoring/ Performance Indicators	Frequency	Responsible party	Indicative costs (USD)	Capacity Building Requirements
	The total for ESMP					**USD 116,000 Rate of 3800** **Equivalent to 440,800,000 Uganda Shillings.**	
	The total sum of the project cost of 5,956,076,898					**7.40%**	

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9.3.1 Frequency of Monitoring and Reporting

Monitoring will be undertaken throughout the project period (Table 9-2). Detailed monthly monitoring reports with clear illustrations of implementation of mitigation measures will be compiled by the contractor overseen by MWE. These detailed reports with evidence of compliance will be prepared and appended to summary monthly reports.

Table 9-2: Monitoring Frequency

Activity	**Monitoring frequency**	**Responsible party**	**Output**
Supervision and management	Daily	Contractor	Reports
Site operation	Daily	Contractor	Daily reports
	Weekly	Contractor MWE	Reports
	Monthly	Contractor MWE	Reports
Quarterly and Annual monitoring reports	Quarterly / Annually	Scheme Operator (SO)	Minutes and inspection records

9.4 Institutional and Implementation Arrangements

The Project will be implemented by MoWE through its regional entities (WMZs, WSDFs) in close collaboration with Yumbe District local governments and their partner (e.g., private sector operators). To facilitate integration within the sector, MOU/MOUs outlining joint responsibilities will be signed between the MoWE and Yumbe District Local Government.

The contractor is responsible for the full-time monitoring and implementation of the ESMMP and will be supervised and guided by MWE. The chain of ESMMP monitoring will follow;

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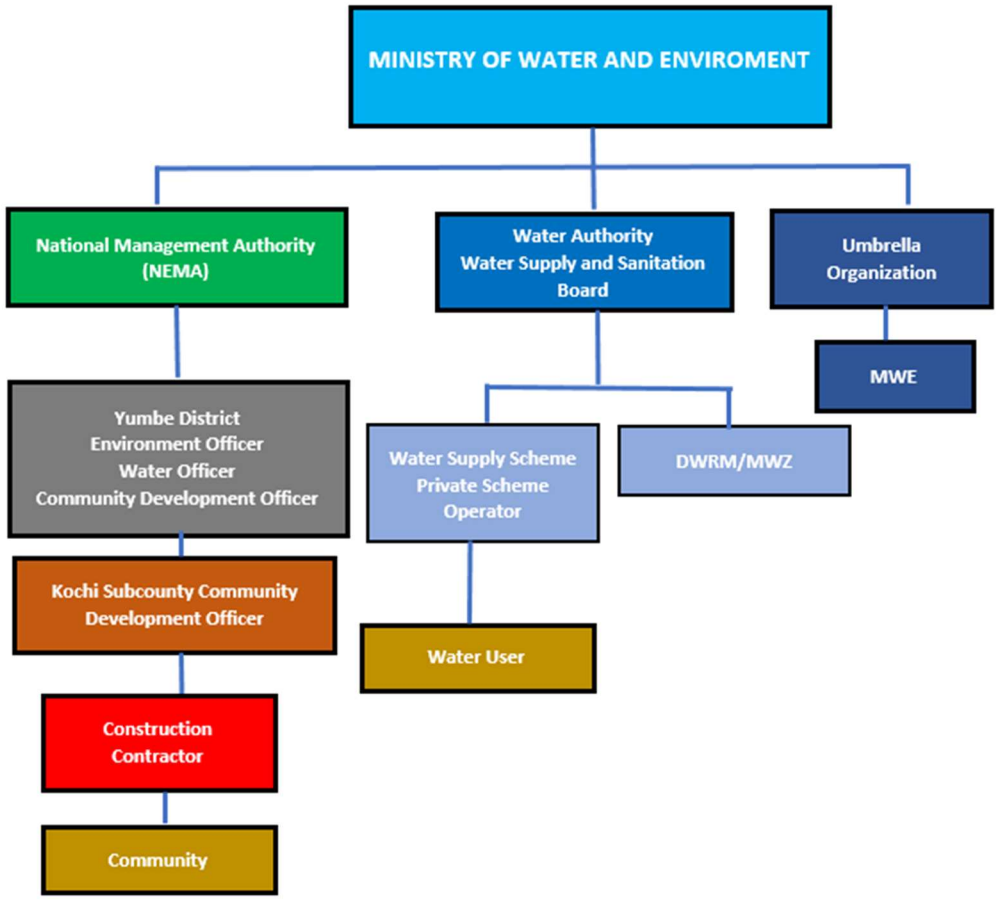

Figure 9-1:Institutional Arrangements

Who monitors and how: Implementation of the ESMMP and the project as a whole will be monitored by several entities right from the ministry level to lower local government.

a.) <u>Construction Phase</u>

- ▪**NEMA or the district environmental officer** who represents NEMA at the Local Administration Level will act as NEMA's representative at the site. Monitoring by NEMA is "third-party monitoring" but this is its regulatory mandate according to Part XII of the National Environment Act 2019.
- **The district Water Officer** will monitor the construction phase to ensure the proper installation of the project components using the appropriate materials and equipment.
- **Community** through its leaders will advise MWE and the contractor on matters of project community and their concerns.
- **Contractor** will undertake construction activities and oversee the implementation of mitigation measures as specified in this document and any other actions that will be deemed necessary. The contractor can undertake internal auditing and monitoring to assess progress in implementation of the ESMMP.

Monitoring in this phase will be done through site inspection, review of site records (Accident Log, issuance of PPE, waste records, trainings and inductions etc.), review of grievances logged

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by stakeholders and any discussions with affected persons (construction workers, residents near the project facilities).

b.) Operational Phase

- **The Northern Umbrella organization** will be in charge of the overall management of the system and will give operation and maintenance support to the scheme operators.
- **Water User Committee** (WUC) composed of two members from each tap stand in the 4 villages of the piped water system area, one of whom shall be a woman, these will monitor the day-to-day management and usage of the tap stands. The WUC will play mainly a community mobilization role and will support the scheme operator in the day-to-day administration of the scheme.

To enhance the potential for integrating sustainability concerns in the proposed project development and activities, it is important to assign clear roles and responsibilities to dominant professionals, contractors and/or sub-contractors to ensure that the project ESMMP will be implemented effectively.

9.4.1 Role of NEMA

The National Environmental Management Authority (NEMA) will, in consultation with a lead agency;

- review and assess the ESIA for this proposed project site and activities concerning its approval (before project construction).
- Monitor all environmental issues to assess any possible changes in the environment and their possible impacts (During both establishment and operation).
- Monitor the operation of the project activity to determine its immediate and long-term effects on the environment. (During project construction/operation).
- Appointing an environmental inspector by the authority; who may enter the project premises at free will to monitor the effects on the environment of any activities carried out on the premises (During project construction/operation).

9.4.2 Role of Yumbe District Local Government

- **Engineer;** inspect the project works as per the engineering specifications and verify all acquired permits.
- **District Water Officer (DWO);** inspects the project on behalf of the district technical administration wing/ Chief Administrative Officer (CAO). Monitor all technical waterworks.
- **District Environmental Officer (DEO);** inspect the project sites on behalf of NEMA and monitors against NEMA approval project environmental conditions.
- **Senior Community Development Officer (SCDO);** inspect the project sites on behalf of the district and monitor against NEMA approval project social conditions, review and approve community engagement minutes and reports, and assess the effectiveness of the project grievance system
- **District Labour Officer (DLO);** inspect the project sites on behalf of MGLSD, and monitors the project site working environment concerning OHS-defined standards.

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9.4.3 Role of MWE

MWE will have the secondary role in delivering on the measures set out in the ESMMP, as the developer.

- MWE has complied by utilization of services of a NEMA-registered environmental firm to guide in the preparation of the ESIA study for submission to the authority for its approval (before construction)
- Giving details of a proposed project before commencement and making copies of the non-technical summary of any Environmental Impact Statement available at the site (before construction).
- MWE will be responsible for ensuring compliance with all relevant legislation as well as adherence to all environmental and socio-economic mitigation measures specified in the ESMMP (during construction).
- MWE through its Yumbe field office will appoint the technical members, the project focal person to oversee the day-to-day implementation of the ESMMP, and to whom the contractor will report.
- Undertake scheduled site supervision to determine the state of environmental and social compliance.
- Overall supervision of this ESMMP and evaluation of its implementation.
- Review the proposed project activities, methodologies and plans concerning the requirements of the mitigation and management measures of this ESMMP.
- Receive, record, investigate any grievance and order the contractor to make corrective actions and respond to the public on the corrections conducted. Work with communities to address any social issues. Handle social issues during the project operation stage.
- Carry out sensitization sessions for the community members and contractor about the project, safety and health measures and environmental practices (during construction).
- Will serve to build strong and open communication with Local authorities, communities and faith organizations among others within this project area.

9.4.4 Role of Contractor

The hired contractor will have the primary role in delivering on the measures set out in the ESMMP, as a contractor.

- The contractor will be responsible for ensuring compliance with all relevant legislation as well as adherence to all environmental and socio-economic mitigation measures specified in the ESMMP (during construction).
- Ensuring that all environmental monitoring data is made available at regular intervals and that any divergences from performance standards will be fully explained, together with any necessary preventative (during construction).
- The contractor may appoint a Safety and Health officer preferably the site agent to develop and enforce safety and health precautionary measures for both the workers and the community at large (during construction).
- The contractor's site agent will act as the Contractor's Community Liaison Officer to bridge the gap between the contractor and the community, handle grievances, and face the project in the community (during construction). Ensure community concerns are addressed

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- Implement project site layout design and project daily operational activities to ensure compliance with project engineering design and the ESMMP with regard to environmental protection and impact mitigation.
- Day-to-day monitoring of environmental matters - this will include wider environmental aspects including matters not directly concerned with the actual construction.
- Awareness raising and training of contractor's staff concerning environmental issues; this will include notification of the severe penalties for non-compliance with instructions which may include dismissal. Design and conduct appropriate induction training for all workers on recruitment about safety, health and environment while working in the project areas.
- Preparation of weekly and monthly environmental inspection and monitoring reports in a format acceptable to MWE
- Undertake mainstreaming of gender issues into the entire project including but not limited to work placements, tools and fixtures, sanitary utilities, creating awareness on sexual harassment and any other forms of discrimination based on gender, ethnic background and race.
- Ensure that all workers are provided with appropriate PPEs and further enforce their use at all times

9.4.5 Role of the Umbrella organisation

After construction, the piped water supply and sanitation system will be handed over to the Northern Umbrella organization for management. This will play a number of roles as listed below;

- Provide operation and maintenance support to the scheme operators.
- Help to restore functionality in emergency situations and to implement repair works and scheme extensions,
- Provide training to local Water Boards,
- Promote payment for water services (water metering),
- Conduct advisory financial audits
- Monitor drinking water quality through regular sampling.

9.4.6 The Water User Committee (WUC)

It is recommended that a WUC be constituted where each tap stand shall nominate two representatives who shall represent the tap community in the central water user committee (WUC). At least one of the representatives of each tap stand shall be a woman. The WUC shall consist of these 2 representatives of each tap stand and a local council 1 representative; the committee shall then form an executive consisting of Chairman, Treasurer and Secretary. The rest shall be members. Since the scheme covers more than one village, each of the 2 villages shall nominate a local council 1 representative to the WUC.

The role and responsibilities of the CWUC shall be as follows:

- Mobilize user communities to meet their obligations towards any form of contribution to the construction, operation and maintenance of the scheme.
- Ensure effective representation of every tap stand at the WUC meetings.
- Make bylaws for the management of the piped water system.
- Report to the Umbrella organization on difficult repairs and replacements beyond the capacity of the System Operator.

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- Select local artisans to be trained on the job during construction.
- Sensitize beneficiaries over ownership of the scheme and mobilize the community to protect and maintain the scheme.
- Sensitize the beneficiaries on good hygiene practices and promote good sanitation in the households in the scheme area.
- Channel community interests and concerns to the Umbrella organization and other relevant stakeholders.

9.4.7 Role of the Scheme Operator (SO)

While the piped water supply and sanitation system shall be under the management of the Northern umbrella organisation, the water Scheme shall be operated by a Scheme Operator (SO). The SO shall be an individual with zeal and willingness to manage the day-to-day affairs of the scheme for and on behalf of the Umbrella organisation and the entire beneficiary community for an agreed management fee.

The roles and responsibilities of the SO will include:

- Ensure smooth running of the scheme and constant supply of water to the user community.
- Engage services of trained mechanics/plumbers to carry out repairs on the system when the need arises and pay them accordingly.
- Attend to community complaints and provide regular updates to the Umbrella organization and WUC about such complaints.
- Maintain order at the water collection point
- Ensure the security of the scheme at all times.
- Keep a clean working environment
- Prepare monthly / quarterly technical and financial reports on the scheme operations and report to the Umbrella organization.
- Report suspected system malfunctions or illegal connections to the Umbrella organization and where necessary to the WUC.

9.4.8 The Water Users

The role and responsibilities of the water users shall be as follows:

- Nominate two representatives who shall represent the tap community in the water user committee (WUC)
- Attend community meetings called upon by WUC in conjunction with the Local council
- Abide by the bylaws for the management of the piped water system.
- Report to SO and WUC on any difficulties, repairs, linkages faults in the water system
- Promoting good hygiene practices and good sanitation in the households in the scheme area.
- Sustainable usage of water from the system.
- Payment of O&M funds/ water user fees for the success of the project.

9.5 Communication and Progress Reports

This section describes the monitoring program and reporting required for ensuring the effective implementation of this project ESMMP, including the assignment of responsibilities and environmental and social performance monitoring to be conducted as part of the project.

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9.5.1 Emergency/Environmental Response

For monitoring emergencies, the Supervisor will target the following:

- The contractor's activities for non-compliance with environmental specifications
- Grounds for non-compliance are identified. If non-compliance is not rectified and the significance of the non-compliance warrants it, the procedure to halt construction will be initiated.
  MWE-appointed project focal person can instruct the contractor to halt work if:
- Construction activities are unexpectedly and significantly affecting key environmental features;
- There is the likelihood or actual occurrence of an environmental emergency;
- A government agency has ordered the work to halt to enable supervision of remedial activities before work can commence.

9.5.2 The Monitoring Indicators

The monitoring team should most particularly check for the following issues among others;

- The general cleanliness and good housekeeping in and around the project premises
- The project site preparedness capacity.
- Proper storage, handling and final disposal of the waste generated at the project site.
- Personal protective equipment of the workforce.
- Efficient and functional water and sanitation system during construction.
- Check the monthly monitoring reports
- Safety measures put in place
- Number of sensitization meetings
- Work plan updates

9.6 Penalties for non-compliance

Where actions have resulted in significant environmental and/or social impacts, with no remedy action being shown, a penalty mechanism and/or stop work order can be used against the Contractor for causing environmental and social harm. It should be specified as early as bidding for the construction work that high E&S performance is mandatory and non-compliance will be dealt with through the issuing of non-compliance fines, with no claims allowed for lost time by the Contractor.

This will ensure that Contractors take E&S compliance seriously and conduct all work within the specified guidelines of the ESMP. Failure to do so, resulting in fines and/or stop work orders, will show that full E&S compliance simply makes for better profits; it certainly supports better environmental and social governance, enhances positive benefits and reduces the risks and realization of negative project impacts.

9.7 E&S Action Plans and Method Statements

Action Plans from the Contractor will be required for overall E&S management. Action Plans will indicate what further plans/programs the Contractor has compiled to manage, for instance, HIV/AIDS, gender equality, gender-based violence and the abuse of children, amongst others.

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Method Statements from the Contractor are more specific and will be required for specific sensitive actions.

A Method Statement describes how sensitive area work takes place, and is a dynamic document in which modifications are agreed on between the Contractor and E&S Supervising Consultant/s during the construction phase, as construction works progress. A Method Statement describes the scope of the intended work in a step-by-step process for the E&S Supervising Consultant to understand the Contractors' intentions and methods. This will enable them to assist in linking mitigation measures, which would reduce environmental and social impacts during the execution of these construction activities. For each instance wherein, it is recommended that the Contractor submits a Method Statement to the satisfaction of the E&S Supervising Consultant, the format should indicate the following:

- Description of the activity to be undertaken;
- A detailed description of the process of work, methods, equipment and materials storage and movement to work sites;
- Description/sketch map of the locality of work;
- The sequence of actions with commencement dates and completion date estimates;
- Management of any emergencies, like contamination and spills, if they should occur; and
- Show how E&S risks will be managed.

The Contractor must submit E&S component-specific Action/Management Plan/s and Method Statement/s before the commencement of any particular construction activity, and work may not commence until these have been approved by MWE. The approval of the Methods Statement/s or E&S component-specific contractor management plan does not absolve the Contractor from other or additional obligations or responsibilities as contained in the terms of the contract, the ESMP and their E&S Action Plan.

In addition to mitigation measures, the contractor will be required to prepare the following management plans

- **Child protection plan**

The contractor shall have and implement a Child Protection policy that will state commitment of the contractor and his/her employees to upholding the rights of children including prohibition of the employment of children below the age of 18 in construction activities. The plan shall also emphasize the need to induct and disseminate the policy to subcontractors, suppliers, and all monitoring agencies who shall commit to the Child Protection Policy

Quality Management Plan,

To achieve quality in all project operations, the contractor shall have and implement a Quality Management plan. The competency needs of all personnel performing activities which affect the quality of manufacture/construction shall be identified by the contractor. Personnel performing specified assigned tasks shall be appropriately qualified based on training, skills and/or experience,

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which will be confirmed by the Contractors Project Management team and approved by the Supervising Engineer/consultant as required. Records of training and competencies (written confirmation by Contractors Project Manager) will be kept and maintained at the project office at the camp.

The status of the constructed works will be identified by the progressive completion of Inspection and testing documentation which are Work Inspection Procedures and Checklists.

The contractor shall be responsible for the quality of the works. Checklists will be signed for each operation (e.g. earthwork, concrete work, metal work, landscape work, etc. including mechanical, electrical and hydraulic works) to verify that works have been completed following requirements. In addition, the contractor shall submit to the supervising consult, a material approval request for inspection and approval of material before use

The Project Manager shall ensure that the Project Quality Management Plan is reviewed monthly to ensure that:

- The objectives and requirements of the Project Quality Management Plan are still valid and are being met.
- Forthcoming activities are reviewed and any necessary amendments to the Project Quality Management Plan are put in place before the relevant work begins
- QMP processes shall be reviewed to ensure continuing suitability and effectiveness

➢ **Waste Management Plan**

The Waste Management Plan should include the following:

- Waste sources and streams
- Management Hierarchy (3Rs)
- Practices (collection + storage + disposal) for non-hazardous waste
- Practices (collection + storage + disposal) for hazardous waste
- Logistics (bins, etc.)
- Permitting requirements
- Monitoring + Reporting (KPIs)

The Contractor will implement waste management measures and practices throughout the construction period to mitigate risks. The Contractor shall undertake measures to respond to all generated categories of wastes i.e. solid wastes (food residues, metal scraps, bottles, plastics, polythene sheets, wood pallets, papers, faecal matter and other parking materials), construction wastes such as rejects/offcuts of bricks, steel reinforcement, nails, iron sheets, timber among others and liquid wastes (waste oil, wastewater, urine etc.). The Contractor should be aware that large quantities of cut-to-spoil may be generated which will require disposal. Therefore, the contractor is expected to identify potential sites for waste disposal before excavation works commence to secure the requisite approvals on time.

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- **Occupational Health and Safety Plan**

The Contractor will have to prepare a document that presents the framework for occupational health and safety management and monitoring measures that he will undertake. The OHS plan should typically cover safety programs that will be applied for promoting health and safety, preventing harm, fatality and hazards to the employees, sub-contractors, properties and the general public.

- **Emergency Response Plan**

The Emergency Response Plan (ERP) will cover the required actions for all situations that could generate emergencies during the project's construction phase. The ERP will provide guidance to manage emergency events during different stages of construction. It will include general guidelines and procedures for the management of emergency events including emergency management command structure and mechanisms for incident reporting and investigation.

- **HIV/AIDS Management Plan**

The Contractor in pursuit of his commitment to health and safety will organize training, and conduct awareness and education on the use of infection control measures in the workplace. The Contractor is expected to provide appropriate PPE to protect workers from the risk of exposure to HIV/AIDS and incorporate HIV/AIDS information in occupational health and safety inductions, provide guidelines in preventing the spread of HIV/AIDS and other sexually transmitted infections (STIs), publicize knowledge related to HIV/AIDS and STIs to the work crews and the surrounding communities, provide information on good HIV prevention interventions, including promotion of the correct use of condoms and ensure sufficient resources are available for HIV programs. The contractor is expected to also come up with a Gender Management Plan (GMP).

- **Gender Management Plan**

The GMP will cover gender-related aspects, such as GBV risks at community and worker levels, Sexual Harassment to protect women workers as well as community members, mitigation measures, responses and who is in charge of different actions, show aspects of gender division of labour in terms of equality and equity, gender segregation (for example female workers having separate toilets and changing rooms from male workers), gender working conditions, provision of job opportunities where the contractor identifies areas where ladies are given high opportunities such as cleaning, human resource positions, working in laboratories, flag ladies among others. The GMP should show gender sensitivity and show a clear code of conduct. The GMP should also provide a checklist to help identify whether the project is a gender complainant.

- **<u>Stakeholder Engagement and Information Disclosure</u>**

Environment and Social Safeguards requirements recognize the importance of open and transparent engagement with project stakeholders. The success of any project is hinged on the level and quality of stakeholder engagement which is an inclusive process expected to occur throughout the project life cycle. Engagement is more useful when introduced in the early phases of project development and is mainstreamed into all levels of decision-making.

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Under Stakeholder Engagement and Information Disclosure, the following scope is envisaged:

- Stakeholder identification and analysis: This requires the identification of key project-affected parties and those with interests in the project. At this level, the emphasis is on vulnerable people or groups of people whose situations are likely to be accelerated by project implementation. Identification should be able to bring out different sets of affected people and their interests.
- Stakeholder Engagement Plan: A Stakeholder Engagement Plan (SEP) shall be drafted in consultation with the Bank. The SEP will be disclosed at all appropriate levels to afford all affected and interested input into project design and implementation.
- Information Disclosure: The borrower is obliged to undertake timely and effective disclosure of information regarding the project including its purpose, nature, scale, potential risks and impacts on the local communities and further present possible mitigation measures.
- Meaningful Consultations: Consultation is meaningful if a dialogue exists, communities and individuals should be allowed to interact with respect and dignity. Interactions should be based on prior disclosure of project-relevant information to all parties.
- Engagement during project implementation and external reporting: Continuous interaction with project-affected persons throughout the project lifecycle is key for the successful implementation of the project. Project-affected Persons shall be availed of all relevant information using appropriate means to enable them to reach an informed decision.
- Grievance mechanism: A grievance mechanism is expected to guide the resolution and management of concerns, complaints and issues that may arise during the entire project life cycle. The GRM will be proportionate to identified potential risks and impacts.
  Organizational capacity and Commitment: MWE shall define clear roles, responsibilities and authority and further designate properly skilled personnel to be responsible for the implementation of specific stakeholder assignments.

Before construction activities, and in pursuit of timely, meaningful and appropriate stakeholder engagement, the contractor shall develop a clear strategy for stakeholder engagement to assist in managing and facilitating engagement through the construction activities. The SEP at this stage will be guided by that developed by the Client at the project planning stage. This stakeholder engagement plan will adopt an inclusive perspective. The SEP will inform ongoing stakeholder engagement through the various stages of construction, decommissioning and the defects liability period.

9.8 Capacity Building in Environmental & Social Aspects of the Project

The goal of the IWMDP is to the maximum extent possible utilize existing institutional structures and capacity within the MWE to implement the Project. To successfully implement the ESMP, it is important to ensure that target groups and stakeholders who play a role in implementing it are provided with the appropriate and continuous Environmental and Social Safeguards for capacity development.

From the assessment, MoWE and NEMA have safeguards personnel that have some level of capacity in terms of equipment and training in environmental management and monitoring.

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However, the assessment ascertained that the beneficiary communities and District Local Government do not have sufficient capacity in terms of equipment, personnel and funds to monitor the implementation of the project. The contractors may also need awareness and training in the environmental and social aspects of the project. The ESMF also recommended capacity building in environmental management at the district and sub-district levels and refresher training at the National level as well.

The key institutions/groups of people whose capacity needs to be enhanced to effectively implement and monitor the ESMP of this project are:

- Beneficiary Communities: There is a need to carry out training and awareness training for the key community members on the safeguard aspects of the project through community policing and reporting.
- The staff of Yumbe District Local Government: The staff at the district level needs to be trained on key aspects of the project including but not limited to environmental monitoring, RAP implementation, health and safety, reporting and modelling as well as catchment management. They also need to be facilitated to enable them to effectively monitor the ESMP implementation process.
- MoWE and NEMA staff also need refresher training in environmental monitoring, RAP implementation, reporting and modelling as well as catchment management approaches.

There is also a need for the project to foster inter-institutional monitoring of the implementation of the project's ESMP. An interinstitutional monitoring committee should be formed, and trained and their activities facilitated. A capacity-building plan should be developed after instituting the inter-institutional monitoring committee.

In general, the human resource equation for the delivery of environmental and social safeguards compliance over-sight by environment and social safeguards experts of the Ministry has been reinforced with the recruitment of the Project Social Development Specialist and Environmental Specialist. Hence the Ministry has adequate capacity to monitor the implementation of the safeguard requirements of the project.

In the execution of the supervisory and monitoring role, the Ministry relies largely on physical site inspections, interviews and review of records without going into some in situ measurements of some physical and ecological parameters. The approach can be exploited by fraudulent contractors since they will have known that, there will be measures for on-site physical verifications. It is therefore important that the Ministry obtains some in-house equipment for rapid verification of noise, air quality, vibrations and water, and the results may be used to inform the resolution of related complaints. In the same vein, there should be readily available logistics in terms of vehicles for the environment and social personnel of the Ministry to rapidly respond to environmental and social safeguards emergencies in the projects as they happen.

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9.9 Environmental Monitoring Programme

9.9.1 Overview

The general approach to effective monitoring is to compare the pre- and post-project situations, measuring relevant environmental impacts against baseline conditions. Baseline data establish a reference basis for managing environmental impacts throughout the life of the project. A monitoring process will therefore be introduced to check progress and the resultant effects on the environment as the implementation of the Goboro RGC water and sanitation project proceeds.

MoWE will undertake the necessary monitoring measures for short- and long-term monitoring programs respectively. However, during monitoring close links shall be maintained with other relevant lead agencies. The key lead agencies that shall be kept in the loop will include Yumbe Local Governments, NEMA and DWRM. It is the role of the Developer to ensure that the Contractor implements the proposed mitigation measures presented in this ESIA report. The planned mitigation measures indicated in Chapter 8 (Project Impacts) and Chapter 9 (ESMP) shall be the starting point. These shall be planned and checked against their effectiveness in reducing the negative impacts/or enhancing the benefits identified in this report.

The process shall also include regular reviews of the impacts that cannot be contemplated at the time of doing this Environment Impact Assessment. Action shall be taken in response to the unforeseen changes and subsequently scale up the mitigation and monitoring measures. Monitoring shall undertake appropriate new actions to mitigate any negative effects.

The issues to monitor may include the following:

- Monitoring the clearing of the water transmission and distribution corridors including all forms of compensations and or resettlements made in respect of the displaced families or persons.
- Monitoring and supervision of the excavations for the water pipes and subsequent laying and burying of pipes.
- Monitoring the occupational health and safety of workers and the community among others.
- Monitoring the fate of solid waste/debris disposal and other wastes after it has reached and left the site.
- Monitoring behavioural changes among the community and Contractors' staff
- Monitoring Water Quality
- Monitoring Noise and dust pollution
- Monitoring Biodiversity changes

The Developer will monitor the actual environmental and social impacts of the proposed water and sanitation project to ensure that mitigation measures are implemented and standards are adhered to. To be able to fulfil this requirement, it will be necessary to work with indicators of environmental change outlined in the ESMP. The indicators will be monitored as indicated in the

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ESMP and for some impacts, it may be weekly, monthly, quarterly, annually and at project decommissioning. Capacity to conduct monitoring will be built through training.

The major objectives of the monitoring plan shall be;

- To assess compliance with the National Environment Management Authority (NEMA) EIA approval certificate conditions;
- Measure and improve the effectiveness of the Environment and Social Management Plan (ESMP);
- Assess the chemical, physical, and biological impacts of the project on the general environment.

A monitoring program will check on the progress of the project and the resulting impact on the environment. It will also include regular reviews of the impacts that could not be adequately assessed before the project started, or which may arise unexpectedly. In such cases, appropriate new actions to mitigate any adverse effects will be undertaken. Furthermore, an environmental audit report will be prepared annually and submitted to NEMA for review and approval.

9.9.2 Monitoring Team

While the MoWE (proponent) will do his internal monitoring; a monitoring team will be headed by the District environment officer, composed of the local environmental authority of Yumbe District representatives from the District and NEMA and any other lead agencies may also carry out monitoring. The Contractor shall undertake monitoring of key environmental and social parameters as per the ESMP like water quality, noise and air pollution etc. and make monthly reports to the developer.

9.10 Grievance Redress Mechanism

This section presents procedures for affected persons to lodge a complaint or express a grievance against the project staff or contractors during project implementation. It also describes the roles and responsibilities for addressing grievances. The objectives of the grievance process are:

- Ensure that appropriate and mutually acceptable corrective actions are identified and
- implemented to address complaints;
- Verify that complainants are satisfied with the outcomes of corrective actions;
- Avoid the need to resort to judicial proceedings.
- The project will operate two major grievance redress mechanisms, namely:
    i. Worker's grievance redress mechanism, and
    ii. Community Grievance Redress Mechanism.

Grievances are useful indicators of a project's performance therefore have to be treated with the due care they deserve.

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A high number of grievances may be an indicator of poor work practices. Likewise, a low number of grievances may not necessarily mean everything is working out smoothly but could point to a nonfunctional system that is inaccessible to PAPs or is inefficient and ineffective in handling project-related complaints.

The following guiding principles shall be followed during grievance and complaint redress;

a) Equity and fairness in project implementation.
b) Access and effective participation of stakeholders in grievance management
c) Transparency and accountability in implementing the sub-project at all times and levels
d) Independence from all interested parties, and bound by a clear set of rules and standards.
e) Predictability in terms of clearly defined procedures/processes for addressing complaints with clear timelines for solving complaints.

9.10.1 Village and District Grievances Redress Committees

Dedicated Grievance Management Committees (GMCs) will be established to manage grievances during project implementation. The committees will utilize existing administrative structures with the support of technical teams to ensure easy access and inclusion of stakeholders and to facilitate the appeal process.

When required, the GMCs shall be formed at village/ parish levels, Sub County, Town Council, Municipal Council, District levels and MWE level. This guideline does not propose a size fits all to structure, composition and level of GMCs for all projects. The principle of proportionality should guide the degree of effort.

It is proposed that dispute resolution will depend on Grievance Redress Committees (GRC) which will be initiated at the village level to record grievances and also help in mediation.

The committee shall be formed either at the village or parish level given that linear projects traverse several communities. Committees must be accessible to communities at the village or parish level.

Village and Parish GRM committees will be established as voluntary committees for each infrastructure to be constructed at village or parish levels depending on the community dynamics, area covered and nature of works. Community GRM Committees will have 10 members including:

- Chairperson,
- Vice Chairperson,
- Secretary,
- Other Members (7) including a youth, Elderly Person, PWD and at least 3 members should be female. Quorum sitting shall be of at least five (5 members).
- The LC I Chairpersons and Vice-Chairpersons will be ex-officials to these committees.

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NB: The committee shall be formed either at the village or parish level given that linear projects traverse several communities. Committees must be accessible to communities at the village or parish level.

9.10.1.1 Roles and Responsibilities of Community GMC

- Providing project information and attending to complaints that may be resolved by providing information
- Registering all grievances from the community or as referred to at different levels
- Addressing those grievances that are manageable by the committee
- Referring any grievances to higher levels for action and further follow-up.
- Escalating any unresolved grievances to appropriate levels as stated in these guidelines
- Liaising with local leaders to ensure the health, safety and security of the communities, workers and construction materials during the project implementation

9.10.2 Project Workers Grievances Redress Committees

Each construction site shall have a Site GMC responsible for handling all community grievances related to construction including those grievances referred by the village/ Parish GMC. The Site GMC shall comprise the following;

- The Resident Engineer/ Supervising Consultant (Chairperson)
- The Contractor's Contract Manager
- Sociologist for the Consultant
- Sociologist for Contractor (Secretary)
- Environmentalist for the Consultant
- Environmentalist for the Contractor
- Health and Safety Officer for the Contractor
- 2 Community Representatives (1 Female and 1 Male)

This committee shall consolidate and address all grievances from the community at the site and escalate any matters appropriately to the respective Local Government and MWE.

Under the supervision of the consultant Site Sociologist, the contractor shall make immediate, responses to matters related to the project construction, contractor's workers, agents, sub-

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contractors or suppliers. Unresolved matters by the contractors shall be escalated or referred to the MWE's Grievance Redress Committee.

Complaints are likely to arise during construction activities. Project Workers' Grievance Committees (WGCs) shall be set up to receive and resolve such complaints. This may include; physical violence, non-compliance in the use of PPE, Illegal drug taking, possession of drugs or the consumption of alcohol during operations, undesirable working conditions in physical terms, changes without prior notice, poor employee relations, improper wage adjustments, dissatisfactory office policies in case of promotion, demotion, leaves, overtime, violation of laws, labour-management hostility, incidences of workplace favouritism and nepotism, among others. etc.

9.10.3 Grievance Redress mechanism for Contractors' workers

9.10.4 Contractor/workers' GRM

Workplace concerns are usually different from issues raised by project-affected communities and other stakeholders and therefore call for a separate mechanism to address them. For better organisation and management of the contractor's workers' grievances and concerns, the contractor shall establish a Grievance Management Committee (GMC) to handle workers' welfare-related grievances including low pay, delayed payment, unfair termination of contracts, working overtime, heavy workload, sexual harassment, poor working conditions among others.

The workers' GMC shall be established and headed by a chairperson elected by workers representing the different sections of the contractor. The other members of the worker's GMC will include the Vice Chairperson, Secretary, Mobiliser and ex-officials who will be representatives of the workers from the different sections. The contractor's sociologist shall be the secretary to document and manage the grievance logbook, and minutes and writing the workers' GMC reports.

- At the beginning of the project, contractor workers should be sensitised to the grievance redress mechanism and the measures put in place to channel their grievances and concerns and the referral pathways. The principle of accessibility should be highly emphasized by the workers' GMC Workers' GRM shall, Provide a forum for consultation, frank exchange of information, discussion and joint problem-solving between management and employee representatives on issues on staff welfare, rights, discipline; and any proposed changes dealing with policies, procedures and working conditions.
- Receive and report workers' complaints/grievances to management and negotiate for timely redress, / participating in arbitration of cases between workers and management through disciplinary hearings and/or between fellow workers through conflict resolution meetings
- Represent the interests of workers on their terms and conditions of employment, staff welfare, staff development and other matters of concern to the workers, and negotiate with the contractor's management on their behalf accordingly.
- Educate Workers on their rights, discipline, code of conduct, and the spirit of staff unity across the project as well as on respect for cultural diversity among workers of different races, tribes, religions and other cultural differences

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- Regularly solicit employees' suggestions/opinions to management through appropriate and organized channels such as their representatives, suggestion box, or joint meetings from time to time
- Act as a point of contact between the employees and employer's management; establish and maintain good relations, foster effective two-way communication and mutual understanding between workers on one hand, and with management on another.
- Identify and represent concerns of special interest groups on the project such as women, expectant and lactating mothers, workers with disabilities etc.
- Organize and conduct monthly Workers' meetings to review and discuss staff welfare, discipline and related matters; compile and share on-time meeting minutes with the contractor, supervising consultant and MWE pointing to key action areas requiring attention.
- Report any incident(s) of violation of workers' rights, staff indiscipline and related issues to management for redress
- Keep adequate logs and other documentation of all matters that come before the Workers' committees for better reference and effective management

NB: Any appeals from the Workers' Council shall be referred to either the Site Disciplinary Committee (if disciplinary) or to the Site GMC

Site Disciplinary Committee

A Site Disciplinary Committee comprising the following members will be established to manage appeals from the workers' council;

- Consultant's Lead Sociologist (Chairperson)
- Contractor's Human Resource Officer (Secretary)
- Chairperson of Workers' Council

NB: The committee may adopt any other member deemed important depending on the issue being resolved.

The committee shall meet at least twice every month, during working hours based on a meeting schedule prior agreed upon with project Management (contractor and supervising consultant). A special

meeting, if required, may be held at the call of the Chairperson at short notice in consultation with the project management. The site disciplinary committee shall ensure fairness and make recommendations to the Contract Manager on the appropriate course of action**.**

NB: *Any resulting appeal against recommendations from the Site Disciplinary Committee shall be escalated to the Site GMC chaired by the Resident Engineer for overall guidance and appropriate actions. MWE may involve mandated offices including Labour Officers, and Labour Unions, among others to conclude the emerging labour issues.*

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Site GMC (act within 5 days upon receipt of Grievance)

For timely management of complaints, the project shall have a grievance desk at the site (Site GMC).

The Site GMC shall include the following members;

- Resident Engineer- Chairperson
- Site Engineer
- Contractor's Sociologist
- Contractor's Health and Safety Officer
- Consultant's Sociologist- Secretary
- Consultant's Environmentalist
- Elected Workers representatives

Under the supervision of the consultant's Sociologist, the Site GMC shall make immediate responses to grievances related to contractor's workers, agents, sub-contractors or suppliers. A toll-free telephone number can be provided at the site GMC desk to enable workers to report any complaints. For unresolved workers' grievances, the site GMC shall escalate these to MWE.

Stages of handling workers' grievances;

- **Option 1: Informal discussion**

If workers have a grievance or complaint regarding their work, they shall, wherever possible, raise their concerns with a supervisor or manager. Nonetheless, the issue and response shall still be logged and tracked from the perspectives of checking outcomes and monitoring

- **Option 2: Formal complaint**

If the grievance is not resolved by discussion with the supervisor/manager, the aggrieved shall proceed to resort to the formal grievance redress mechanisms, following the following steps;

Step 1: Lodging the complaint to the Workers' Council

If the worker wishes to raise the matter formally, the worker shall set out the facts of the grievance in writing to the committee, with support and guidance from the worker's representative who then forwards the complaint to the secretary. The secretary then records the complaint in the log book and notifies the chairperson. Alternatively, the worker may raise a complaint through suggestion boxes, phone calls, text messages or email to the secretary (Consultant's Site Sociologist).

Step 2: Assessment of complaint and investigation by Workers' Council within 5 days

On receipt of the complaint, the secretary shall make further investigations and in consultation with the Chairperson shall schedule a meeting (depending on the urgency of the complaint) to assess the complaint and determine the corrective action. The assessment shall also identify the key issues that have been raised, together with any root causes, and shall determine the outcome

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that the worker is looking for from the process. Any additional information shall be gathered to allow a full assessment.

The appropriate form of investigation will depend on the type of complaint and the seriousness of the allegation. In general terms, the committee shall try to understand the key issues and interview the individuals involved in a complaint, e.g. those managing the workers, or those responsible for the activity or service that is raised in the grievance. Concluded issues which require the attention of

management shall be communicated formally by the Secretary to the Contract Manager for action with a copy to the Resident Engineer. The issues which require escalation shall be referred to the Secretary of the Site Disciplinary Committee (Contractor's Human Resource Officer).

Step 3: Determination of corrective action by the Disciplinary committee within 7 days

A disciplinary committee shall hold hearings, and invite both the offender and the offended. The

the disciplinary committee shall give a fair hearing to anyone suspected as the offender to make a fair judgment guided by the Workers' Code of Conduct. On the assessment of the complaint and judgement derived from hearings convened for complaints of a disciplinary nature, the disciplinary committee will advise/recommend to the contractor's management in writing on the appropriate course of action to be taken against the suspected offender. The submission shall be made by the Chairperson to the Contract Manager with a copy to the Resident Engineer.

Step 4: Site GMC (act within 5 days upon receipt of Grievance)

The Site GMC shall handle workers' complaints with utmost commitment and to get a settlement. The Site GMC may review the views of the workers' council and/or the disciplinary committee to ascertain the merits and demerits of the complaint in a bid to find an amicable solution. The Site GMC shall handle grievance resolution in line with the safeguard provisions of the project and acceptable just mechanisms. For unresolved grievances, the site GMC shall escalate or refer these to MWE

Step 4: Feedback from the affected parties

The contractor or worker shall give feedback to the GRC on the implementation of the Committee

recommendation and this shall be recorded in the logbook.

Step 5: Appealing to MLHUD against the Verdict of the Site GMC

Any issues that require escalation beyond Site GMC shall be referred to MWE. The issues shall be referred by the Resident Engineer and addressed to Permanent secretary MWE with Attention to Social Development Specialist.

Upon the receipt of case the project management team shall review and handle the matter within 10 days. The team shall comprise at the minimum the following;

- Project Engineer (Chairperson)

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- Social Development Specialist (Secretary)
- Environment Specialist
- Communication Specialist

In the event that MWE finds a valid case, it would then re-visit the process of investigation in consultation with the District Labour Office and/or any other relevant office/ agency.

Feedback from the affected parties

The contractor or worker shall give feedback to the GMC on the implementation of the Committee recommendation and this shall be recorded in the logbook.

The steps of the Worker's grievance management process are illustrated below;

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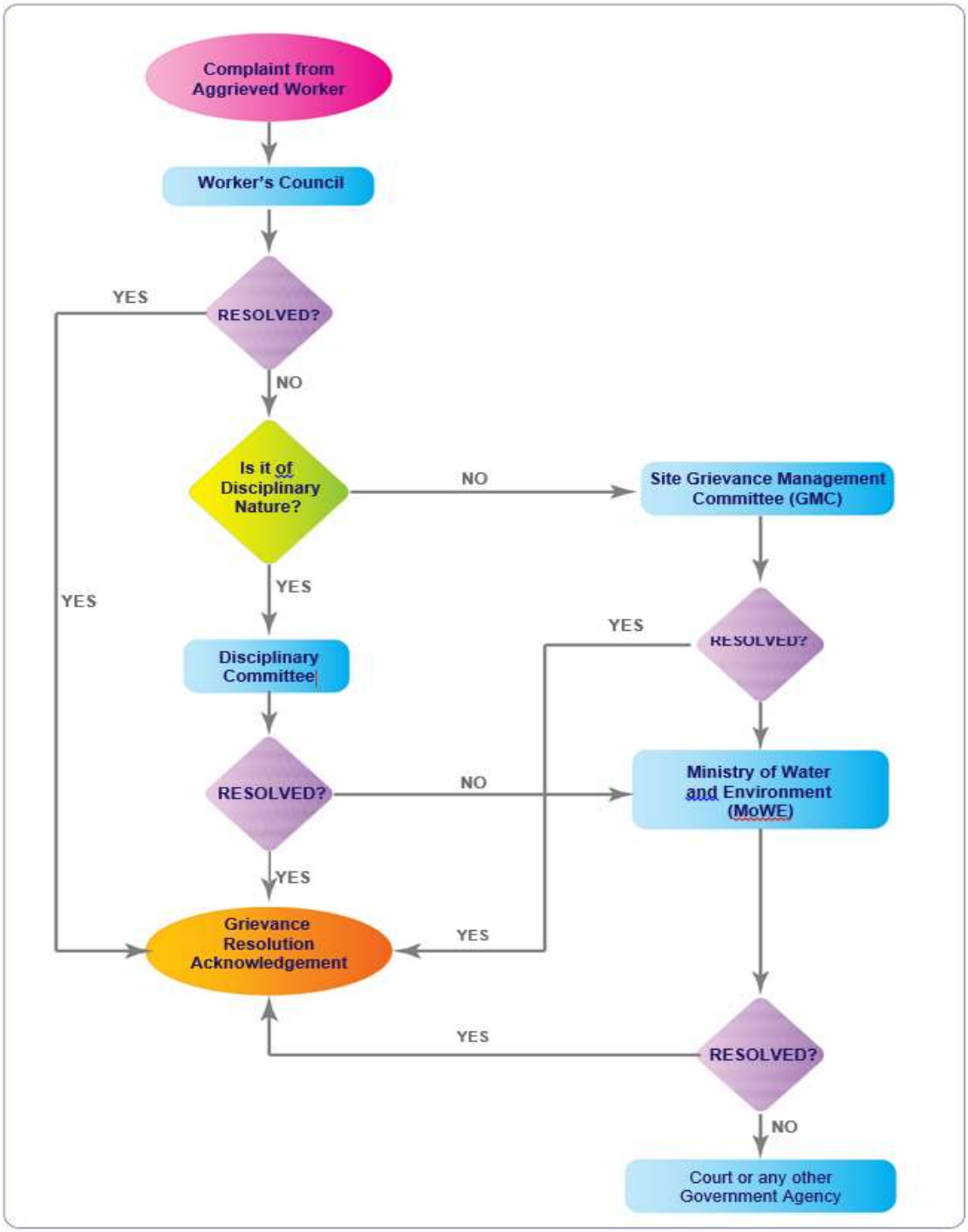

Figure 9-2: The Complaints Handling Flow for Workers (MoWE)

9.10.5 MWE'S Internal Grievance Redress Committee

At the Ministry of Water and Environment, a National Grievance Management Committee (GRM) shall consist of a MOWE Chair, the IWMDP Project Coordinator, the Coordinator for Social Safeguards (Secretary), the Coordinator for Environmental safeguards, the Social Safeguards

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Specialist, the Environmental Specialist, the chair of the community mediation board, and a member of a recognized non-government organization.

9.10.6 GMC at Sub County Level

The committee will be formed at the sub-county level and its membership shall consist of;

- Local Council III (chairperson);
- The Sub County Chief,
- Community Development Officer (Secretary)
- Environment focal person
- Representatives of PAPs
- Parish Chief of the respective area where the complaint originated from.

9.10.7 GMC at Town Council/ Municipal Level

Given its extended nature of staffing and complexity, the town council grievance management committee shall include the following members;

- LC III Chairperson/ Mayor (Chairperson)
- Town Clerk
- Council Community Development Officer (Secretary)
- Environment Officer
- Physical Planner
- Representative of the PAPs

9.10.8 GMC at the District Level

At the District Level, the Grievances Management Committee shall consist of;

- LC V Chairperson (Chairman)
- Chief Administrative Officer or his/ her Representative
- District Community Development Officer (Secretary)
- Head of Natural Resources
- District Water Officer
- Representatives from the PAPs
- District Lands officer

Note: Due to the complex nature of grievances, the committees can be extended to include any other relevant officers suitable for addressing the prevailing grievances.

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9.10.9 Contractor/workers GRM

Workplace concerns are usually different from issues raised by project-affected communities and other stakeholders and therefore call for a separate mechanism to address them. For better organisation and management of the contractor's workers' grievances and concerns, the contractor shall establish a Grievance Management Committee (GMC) to handle workers' welfare-related grievances including low pay, delayed payment, unfair termination of contracts, working overtime, heavy workload, sexual harassment, poor working conditions among others.

The workers' GMC shall be established and headed by a chairperson elected by workers representing the different sections of the contractor. The other members of the workers' GMC will include the Vice Chairperson, Secretary, Mobiliser and ex-officials who will be representatives of the workers from the different sections. The contractor's sociologist shall be the secretary to document and manage the grievance logbook, and minutes and writing the workers' GMC reports.

At the beginning of the project, contractor workers should be sensitised to the grievance redress mechanism and the measures put in place to channel their grievances and concerns and the referral pathways. The principle of accessibility should be highly emphasized by the workers' GMC.

9.10.10Process of Handling Community Grievances

9.10.10.1Receipt of Grievance, Hearing Process and Appeals

The following sub-section provides the procedure for receiving and hearing complaints as well as appealing against any decision from the grievance management committees at the village, construction site, sub-county/ Town Council/ Municipal Council, District, MWE and other mandated agencies.

a) Receiving and Registering Complaints at the Village/ Parish Level

The following procedure will be followed in registering a complaint at all community GMCs

- A verbal or written complaint is logged in to any member of the GMC by a complainant
- The secretary seeks clarification of the specified details of the complaint
- A complaint is registered into the complaints register provided by MWE
- If the complaint is not clearly understood, requires urgent attention, is grave, fatal and/or bears serious implications, the GMC will visit the site for spot assessment and consultations
- The Community GMC will sit and decide if the issue can be addressed at their level of required referral. If the concern can be addressed, the committee will sit with the complainant and decide on the course of action. The secretary will document the minutes and attendance list and if concluded, the complainant will sign off in the grievance register acknowledging the resolution of his/her grievance. If the matter cannot be resolved by the village GMC then the GMC will forward it to the construction site for immediate redress.

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NB: It is recommended that the Contractor transfer all grievances in the village GMC and consolidate them in the construction site grievance register every week and follow up to ensure that all grievances were well handled. This is because all grievances that are project-related have been triggered by construction activities. The construction team should therefore be the pivot of grievance documentation, redress and follow-up.

b) Screening, Assessing and handling Community Grievances at the Construction Site

All complaints from the village/ parish GMCs shall be collected and consolidated into the main complaints register at the construction site. The Grievances Officer/ Contractor's Sociologist at the Construction site, will screen all complaints received to determine whether action can be taken at the level of his/her office in consultation with other responsible officials, the project contractor and the complainant. The site team should ensure that resolutions are made and compliant resolved within 5 days.

c) Referral/ Appeals to Sub County/ Town Council and Municipal Council Grievance Management Committees

The Contract Manager for the Contractor will refer unresolved grievances to the Sub-County Town Council or Municipal Grievance Grievances Management Committee for consideration. The Sub County GMC/ Town Council/ Municipal Council GMC will ensure that the grievance is addressed within 7 days.

Where the grievance hearing session is required, the complainant will be invited to the grievance hearing and redress meeting. Depending on the matter being addressed, it will be important that the area LC I Chairperson of the village where the complaint was lodged be invited to attend the meeting along with the complainant. This is intended to ensure fairness and the LC I will be observing and making inquiries to ensure that both parties understand each other point of view.

This will instil confidence in the complainant as well. Upon successful resolution, the Chairperson of the Committee shall formally write to the complainant specifying details of actions, timeframes and any other details pertinent to the resolution. On agreeing to the resolution, the complainant will sign a consent form binding him/her to the negotiated resolutions.

d) Referral/ Appeals to District Grievance Management Committees (DGMC)

If the Sub County/ Town Council/ Municipal Grievance Management Committee fails to resolve the matter or if the complainant is not satisfied, the Chairperson on behalf of the GMC shall refer the matter to the District GMC. The DCDO will register the referred/ appealed case in the District Complaints Register that will be provided by MWE.

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The DCDO who will also act as the Secretary to the DGMC will screen the matter referred and bring it to the attention of the LC V chairperson who will write to invite the complainant together with the respective LC I Chairperson to the DGMC within Seven (7) days. A fair hearing process will then commence at the DGMC and upon satisfaction of the resolutions/ agreement, the complainant shall sign the consent form and the grievance chairperson will officially write to the complainant with a copy to the LC III, Sub-County Chief/ Town/ Municipal Clerk and the contractor/ Consultant.

If the matter cannot be resolved by the DGMC, then it will be referred to the Ministry of Water and Environment. The CAO on behalf of the District will officially refer the case to the Permanent Secretary MWE with a copy to the Project Coordinator IWMDP for action within 14 days. The Complainant can also lodge an appeal to the PS MWE if s/he was not satisfied with the outcomes of the DGMC.

e) Referrals/ Appeals to MWE

Any unresolved grievances will be referred to MWE for appropriate action. The Grievance Desk (Principal Sociologist) shall work with PST to establish all necessary facts within 14 days of receipt of the complaint. A report with the recommended course of action shall be forwarded to the Project Coordinator for implementation and follow-up.

As much as possible, the Ministry team will engage the complainant at the district, sub-county or village levels to arrive at amicable solutions. Upon arriving at an agreed understanding, the complainant shall sign a consent form witnessed by the LC I Chairperson to close the grievance. If no agreement is reached at this level, the complainant shall be advised or shall decide on his/ her own to use any other lawful arrangements as may be applicable.

f) Implementation and Verification of Negotiated Corrective Actions

Agreed corrective action will be undertaken by the responsible agency/ part for example a Local government, MWE, contractor or authorized sub-contractor in close consultation with the complainant within the agreed timeframe and completed action recorded in the grievance database.

To verify satisfaction, the Grievance Committee will upon receipt of a completion report from the GO verify that corrective actions have been implemented. A signature of the complainant will be obtained on the consent form. If the complainant is not satisfied with the outcome of corrective action, additional steps may be undertaken to reach an agreement or an appeal will be lodged by the complainant.

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9.11 Flow Chart of the Grievance Management Process

The grievance management process has several interdependent steps that will be followed as summarized below;

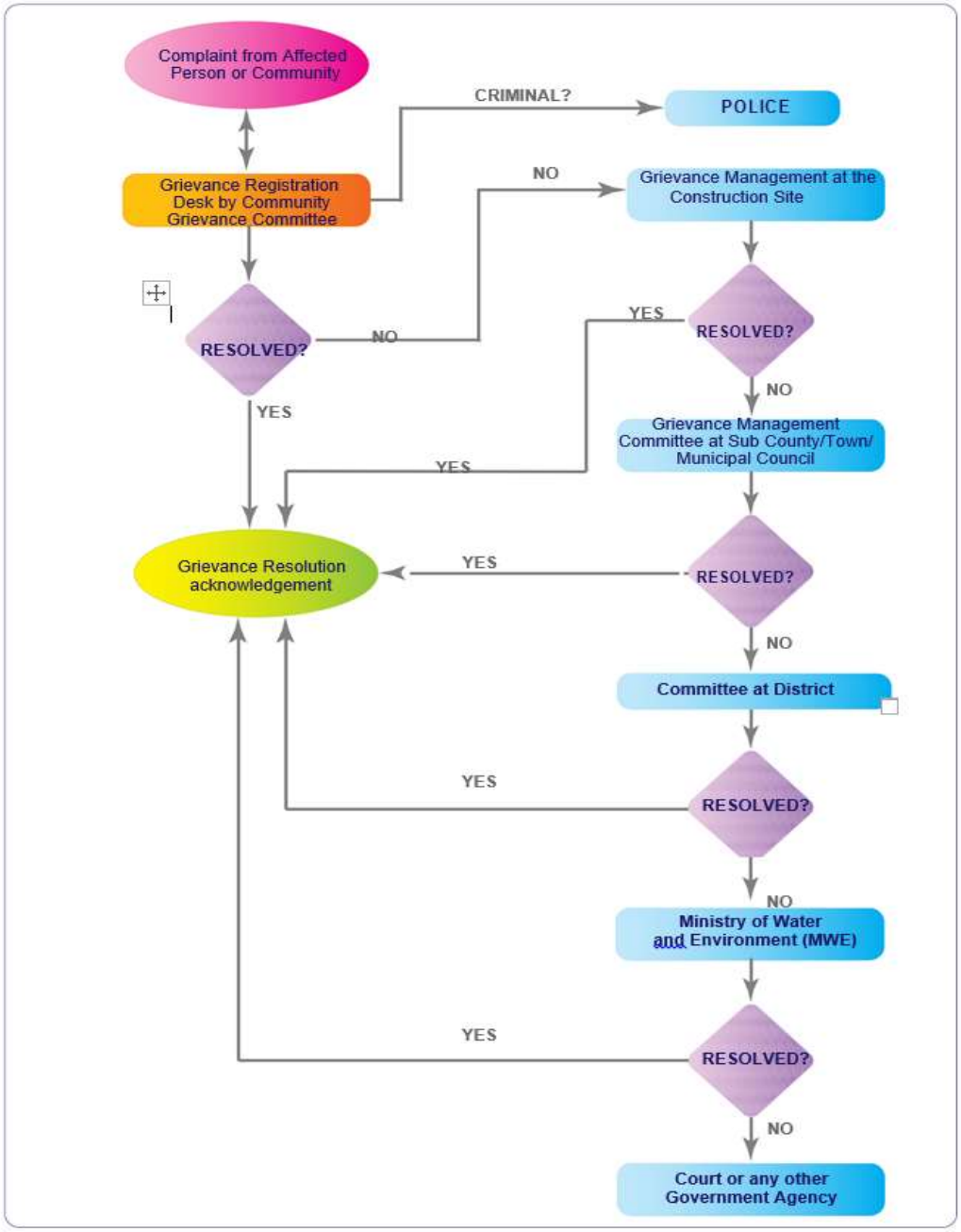

Figure 9-3: The Grievance Handling Flow for Community (MoWE)

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NB: In all cases, criminal matters (SEAH/GBV, CH etc.) shall be explicitly handled in accordance with the Criminal Code Act and other laws governing criminal issues in Uganda. i.e. these cases shall be directly referred to the police for investigations and submission to the Office of Director of Public Prosecution for sanctioning.

- In case the complainant is satisfied with the proposed solution, the solution will be effected and the grievance closed out. The complainant will sign a grievance closure form witnessed by the MWE or appointed representative.
- The second tier is where the complainant is not satisfied with the resolution at the first tier. A mediator will be identified to mediate between the complainant and MWE or contractor/consultant. Possible mediators include religious leaders, family/clan leaders, elders and CSO leaders or managers.
- At the second tier, a near process described in the table above will apply.
- In case the complainant is satisfied with the mediator's proposed solution, the resolution will be effected and the grievance closed out. The complainant will sign a grievance closure form witnessed by the mediator or appointed representative.
- In case the complainant is not satisfied with the mediation resolution, this GRM provides for recourse to the formal and traditional judicial system. For SEA/SH/GBV cases, the GRM shall adopt a survivor-centred approach facilitating safe and confidential access to services by complainants/survivors. The project shall support the survivor with psycho-social support by using the existing administrative, social and health structures like health centres.

9.11.1 Publicity of the GRM and GRCs

MWE shall ensure that stakeholder engagement plans include sensitization of stakeholders on the available grievance redress system for the project. The sanitizations shall be done through various channels including but not limited to meetings, IEC materials, radio talk shows and announcements among others.

It will be the responsibility of MWE to provide adequate resources including funds, personnel and equipment to operationalize grievance redress mechanisms on the project. On IWMDP, MWE has provided dedicated stakeholder engagement, environment and social risk management consultants for every sub-project with an adequate budget to implement a grievance redress mechanism for each sub-project. During stakeholder engagements, resulting feedback shall be utilized to continuously improve the GRM of the project.

9.12 Monitoring and Evaluation of the Grievance Handling System

Complaints and grievances redress mechanism will be an integral part of the M&E framework of all the sub-project activities including site visits, field visits and missions. Review of minutes of the committees, communications on file, updated complaints and grievances registers at the Community, Construction Site, Sub County, Town Council, Municipal, District and Ministry levels shall be among the verification modalities for the different stakeholders.

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Beneficiary satisfaction surveys which will be conducted by independent consultants that will be procured by MWE will also encompass the complaints and grievance mechanisms to assess the performance of the grievance redress mechanisms for each sub-project.

Monitoring and Evaluation Indicators shall among others include the following;

- No of GM Committees formed
- No of GM Committees trained
- No of grievance related community sensitizations conducted
- No of committees facilitated with basic stationery, standard grievance registers, & PPEs
- No of people (M, F) sensitized
- No of grievances registered
- Proportion of complaints resolved
- % of cases referred to higher committees
- % of cases appealed to other agencies of the Government
- % of resources spent on C&G

9.12.1 Training of the GRCs

The GRC will be trained on the following:

1.) Execution of the terms of reference
2.) Categorization of complaints/grievances
3.) Referral pathway for each category of complaints/grievances
4.) Basic mediation, conflict resolution techniques and skills
5.) Communication and basic public relations skills
6.) The property valuation process
7.) Scope of the project and the associated risks
8.) Code of conduct for the contractor
9.) The committee's mandate: The committee will be charged with the responsibility of ensuring the timely resolution of complaints from site workers and PAPs to ensure project success.

9.12.2 Facilitation of the GRCs

MoWE will provide the following to facilitate the GRC's work:

1.) Grievance Logbooks and related logistics;
2.) Orientation/training of GRCs on grievance resolution;
3.) Materials such as pens, notebooks; and
4.) Branded items such as MWE T-shirts, pens, folders etc. for motivation.

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9.12.3 Reporting Requirements

All grievances and any cases detected on-site and in the community that are project-related are recorded in the grievance register at all levels. Cases which are criminal for example sexual harassment, and gender-based violence shall be reported to Uganda Police and the Ministry notified within 12 hours. Any other life-threatening grievances and incidents like accidents, homicides, etc. shall be reported to the Ministry immediately.

The Ministry shall then give initial notifications to the World Bank within 24 hours, and a detailed incident report submitted to the World Bank within 48 hours. All other mandate agencies like Uganda Police, and Community Development Officers shall be involved to have well-documented cases and investigations. The contractor shall provide in her monthly report the progress of implementing the grievance redress mechanism for the community and workers. The MWE shall also update the World Bank on the progress of grievance handling during monthly and quarterly reporting. During monitoring field visits by the MWE teams, there shall be meetings with GMC committees and reviewing their registers to ensure that all grievances are well documented and closed.

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10 CONCLUSIONS AND RECOMMENDATIONS

10.1 Recommendations

The proposed Goboro Water Supply project is timely and the local people will significantly benefit from it. The project will result in better access to safe drinking water and sanitation facilities leading to an improved standard of living and changes in exposure to both communicable and non-communicable diseases.

It was noted during this study that the proposed project will lead to several environmental and social impacts both during the construction and operation phases of the project. The adverse impacts will be on air pollution, vegetation and crops, traffic movement, influx of workers among others. Analysis of the anticipated adverse impacts revealed that most of the impacts are low in significance and can be adequately mitigated through the implementation of the recommended mitigation measures contained in Chapter 8 of the Study Report. Monitoring of progress with regard to the implementation of these mitigation measures shall be implemented by the Project Proponent to ensure sustainable coexistence of the project and neighbouring populations and land uses.

Based on the immense project benefits of the piped water supply Project, which have been stated above, and the identified negative impacts that can be mitigated in the proposed ESMP, we strongly contend that NEMA will find this ESIA study satisfactory and the project environmentally and socially viable to be permitted to take off.

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BIBLIOGRAPHY

1.) BirdLife International (2011) IUCN Red List for birds. Downloaded from http://www.birdlife.org on 15/08/2011
2.) Eggeling, W.J. & Dale, I.R. (1952) The indigenous trees of Uganda. Government Printers Entebbe- Uganda
3.) IUCN. (2018). IUCN Red List of Threatened Species. Available at: http://www.iucnredlist.org. (Accessed: 21 September 2018).
4.) WCS (2016). Nationally Threatened Species for Uganda: National red list for Uganda for the following taxa: mammals, birds, reptiles, amphibians, butterflies, dragonflies and plants, Kampala, Uganda.
5.) WHO (2006). Guidelines for Drinking-water Quality First Addendum to Third Edition Volume 1
6.) MoWE(2018)Integrated Water Management and Development Project-
7.) MWE. (2017). Uganda Water Supply Atlas 2017.
8.) MWE. (2018). Uganda Water and Environment Sector Performance Report
9.) Yumbe District Development Plan 2021-2025
10.) Kochi Subcounty Development Plan 2021-2025
11.) National Environment Management Authority. 2007. State of Environment Report for Uganda, NEMA, Kampala 2006/2007. 332pp.
12.) Kalema J. & Beentje H. (2012) Conservation Checklist of the Trees of Uganda. Royal Botanic Gardens, Kew
13.) Ministry of Water and Environment (2013) Solar Powered Water Systems Design Guidelines

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APPENDICES

APPENDIX A: APPROVED TERMS OF REFERENCE

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

NEMA House
Plot 17,19 & 21, Jinja Road.
P.O.Box 22255, Kampala, UGANDA.

Tel: 256-414- 251064, 251065, 251068
342758, 342759, 342717
Fax: 256-414-257521 / 232680
E-mail: info@nemaug.org
Website: www.nemaug.org

NEMA/4.5

9th June, 2023

The Permanent Secretary,
Ministry of Water and Environment,
Directorate of Water Development,
Rural Water Supply and Sanitation Department,
Plot 3-7, Kabalega Crescent, Luzira,
P. O. BOX 20026, Kampala, Uganda
E-mail: nmalizah@yahoo.com

REVIEW OF THE SCOPING REPORT AND TERMS OF REFERENCE PERTAINING TO THE PROPOSED LARGE SOLAR-POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN LOMUNGA, LOBE, AWOBA, NYORI-LODONGA, GOBORO AND RODO RURAL GROWTH CENTRES IN YUMBE DISTRICT

This is in reference to the Terms of Reference (**EIATOR10493**) for carrying out the Environmental and Social Impact Assessment (ESIA) for the above-mentioned project, which was submitted to this Authority on 31st May, 2023, for review and approval. This Authority has finalized the review and grants formal APPROVAL of the said TOR.

Please note that the approval of the TORs DOES NOT grant permission to start implementing any of the proposed project activities. This is not a Certificate of approval.

In addition, you are advised to consider the key aspects below during the conduct of the environmental impact study and the preparation of the ESIA report.

i. Ensure that the project description is comprehensive for each of the project components, including the designs of the different project components, in addition, clearly indicate the chemicals that will be used in the water supply system and how these will be stored, handled and associated waste disposed of.

ii. Undertake geotechnical and hydrogeological investigations of the proposed project sites/water sources so as to inform the design and construction of the Water Supply and Sanitation System.

iii. Carry out comprehensive consultations with all the relevant stakeholders including Yumbe District Local Government, Directorate of Water Resources Management, and the local community in the neighborhood of the proposed project sites. The views of the stakeholders consulted should be well documented/ addressed and lists of persons consulted appended in the EIA report.

Page 1 of 3

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iv. Ensure that the relevant local government departments including, the Environment, water, Physical Planning and the Engineering departments, are consulted and concerns that may arise taken into account and incorporated in the design, construction and operation of the project.

v. Study the land tenure and identify potential project affected persons/properties at the proposed sites. Propose plans for land acquisition and/or compensation where required, including resettlement action plans, where applicable.

vi. Provide current baseline information of the project sites, the associated project components and their neighborhood, accurate GPS coordinates clearly indicating the boundaries of the project sites and the associated components and images/maps of the project sites.

vii. Provide site specific baseline information. In particular, assess site baseline soils and air quality taking into account key parameters relevant to the nature of the project. Append the results of the analysis from an accredited laboratory to the ESIA report.

Carry out an evaluation of all the negative impacts associated with the proposed Lomunga, Lobe, Awoba, Nyori-Lodonga Goboro and Rodo RGC Water Supply and Sanitation System and provide detailed mitigation and environmental management and monitoring plans that relate to the identified environmental impacts from the proposed project sites. In particular, the following issues should be comprehensively assessed and appropriate mitigation actions provided in the ESIA.

a. Potential waste streams from the construction and operation of the Piped Water Supply and Sanitation System and management of such waste, as well as measures for preventing pollution of the environment and degradation of any sensitive ecosystems that may be within the vicinity of the project sites;

b. Occupational health and safety issues likely to arise from the operation of the factory.

viii. Provide a clear and legible copy of the site layout plan (preferably on A-3 sized paper) showing the equipment, clear boundaries of the project sites and the associated components in relation to its environs.

ix. Include in the ESIA report comprehensive analysis of alternative /options to selected project location, design and technology among others.

x. Append to the ESIA report authentic copies of land ownership and acquisition documents.

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xi. Indicate the project cost of the project and append a certificate of valuation issued by a qualified and registered valuer in accordance with the provisions of Schedule 5, 3(f) of the National Environment (Environmental and Social Assessment) Regulations, 2020.

xii. Provide evidence of payments of the 30% ESIA fees as required under regulation 49 (2) of the National Environment (Environmental and Social Assessment) Regulations, 2020.

Note that only registered Environmental practitioners including the team leader should be contracted to carry out the ESIA for the proposed project.

This is therefore, to recommend that you carry out the ESIA study for the proposed Lomunga, Lobe, Awoba, Nyori-Lodonga Goboro and Rodo RGC Water Supply and Sanitation System incorporating the guidance provided above.

We look forward to your cooperation and receipt of copies of the ESIA report for proposed further consideration.

Waiswa-Anold Ayazika
FOR: EXECUTIVE DIRECTOR

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APPENDIX B: WATER QUALITY TEST CERTIFICATE

MAKERERE UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING
PUBLIC HEALTH AND ENVIRONMENTAL ENGINEERING LABORATORY
Tel: 041-543152 E-mail: rkulaba@coedat.mak.ac.ug

CERTIFICATE OF ANALYSIS -WATER QUALITY

CLIENT: Kagga and Partners

PROJECT: Consultancy Services for Feasibility Study, Detailed Engineering Design and Construction Supervision of Solar Powered Piped Water Supply Systems and Sanitation Facilities in Refugee Settlements and Host Districts in West Nile and Northern Uganda-Yumbe

Sampling date: 6th- 8th July 2023 **Delivery date:** 11th July 2023 **Date of analysis:**11th -13th July 2023

Sample ID	1	2	3	4	5	6	7	8	Uganda portable standards*
Parameters									
pH	7.57	7.87	7.44	7.90	7.29	7.40	7.57	7.81	**6.5-8.5**
EC (µS/cm)	618	453	705	493	511	705	582	584	**1500**
Apparent colour (Pco)	0	0	60	0	75	60	55	0	**ns**
Turbidity (FAU)	0	0	0	0	4	6	0	0	**5**
Total suspended solids (mg/L)	nd	nd	7	nd	13	10	3	nd	**Not detected**
Total Dissolved solids (mg/L)	450	348	492	378	418	552	462	390	**700**
Chlorides (mg/L)	3.8	1.4	2.5	1.6	1.4	2.5	1.1	0.1	**250**
Nitrates (mg/L)	0.37	0.09	0.11	nd	0.39	0.36	nd	0.19	**45**
Sulphates (mg/L)	3.0	11.0	1.0	0.3	2.3	0.5	4.2	0.6	**400**
Total Alkalinity (mg/L)	390	275	500	320	360	430	370	370	**ns**
Total Hardness (mg/L)	109	147	221	180	197	200	206	209	**300**
Fluorides (mg/L)	0.34	0.50	0.23	0.15	0.28	0.32	0.55	0.18	**1.5**
Ammonia (mg/L)	nd	nd	nd	nd	nd	nd	nd	nd	**0.5**
Total Iron (mg/L)	0.31	0.32	0.90	0.17	0.97	0.77	0.85	0.44	**0.3**
Sodium (mg/L)	50.8	50.2	50.6	47.8	80.7	50.9	60.3	70.4	**200**
Calcium (mg/L)	10.8	20.2	29.8	22.1	12.8	14.1	16.0	25.1	**150**

Page 1 of 3

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Parameters / Sample ID	Drachia 1	Oriajin 2	Maru Buli buli village 3	Ajujinga 4	Ndesia BH Nyori 5	Lumunga 6	Rodo 7	Malanga 8	Uganda portable standards*
Magnesium (mg/L)	20.0	23.5	35.7	30.2	40.2	40.0	40.3	35.6	**100**
Manganese (mg/L)	nd	nd	nd	nd	nd	nd	nd	nd	**0.1**
Copper (mg/L)	0.83	0.50	0.63	0.67	0.68	0.92	0.72	0.60	**1.0**
Zinc (mg/L)	27.05	20.70	12.01	10.41	15.45	20.25	19.89	23.43	**5**
Lead (mg/L)	nd	nd	nd	nd	nd	nd	nd	nd	**0.01**
Mercury (mg/L)	nd	nd	nd	nd	nd	nd	nd	nd	**0.001**
Arsenic (mg/L)	nd	nd	nd	nd	nd	nd	nd	nd	**0.01**
Cadmium (mg/L)	nd	nd	nd	0.012	0.011	0.011	0.015	0.013	**0.003**
Aluminum (mg/L)	0.16	0.09	0.08	0.06	0.03	0.19	0.46	0.11	**0.2**
COD (mg/L)	27	nd	nd	1	nd	30	25	nd	**ns**

*Uganda National Bureau of Standards-Uganda Potable Water Specification (US EAS 12:2014; ICS 13.060.20); ns- not specified; nd-not detected; Detection limit for Nitrates, Ammonia, Manganese, Lead, Mercury, Arsenic, Cadmium and COD is 0.015mg/L,0.008mg/L, 0.01mg/L, 0.01mg/L, 0.01mg/L, 0.01mg/L,0.01mg/L and 10mg/L respectively.

Commentary

National drinking water standards are used to assess the potability of the sampled water from the different borehole locations. All the tested parameters of the sampled locations (except Total Suspended Solids, Total Iron, Zinc and Cadmium, cells in grey highlight) comply with national drinking water standards for treated water where specified. This compliance implies that no health risks or aesthetic problems are envisaged with the water with regard to these parameters when used for drinking. Sampled boreholes 1, 2, 4 and 8 were with clear water without any suspended solids observed while the rest of the samples were with unclear water and visible suspended solids (except for sample 7). That this is the case likely explains the levels of suspended solids, apparent colour as well as turbidity measured in the water drawn from these boreholes.

The sampled water except sample 4, is with high iron levels (>0.3mg/L). Presence of iron at levels >0.3mg/l is associated with discolouration of water (brown), deposits in the water and staining of laundry. The presence of iron, may lead to the accumulation of deposits in the distribution system. It is probable that the source of iron in the sampled waters is either the soils through which the water flows or soils within the catchment of these water sources. However, on observation, none of the samples exhibited this brown colour suggesting that the measured iron levels as well as the suspended solids are with minimal impact on the aesthetics of these waters.

All the sources were with high zinc levels above the recommended values (>5mg/L). Zinc can be introduced into water naturally by erosion of minerals from rocks and soil, since zinc ores are only slightly soluble in water. Zinc is only dissolved at relatively low concentrations. High natural levels of zinc in water are usually associated with higher concentrations of other metals such as lead and cadmium (in this case, we observe relatively high levels of Cadmium in some of the sampled sources 4-8).

Zinc is an essential nutrient for body growth and developrrent. However, drinking water containing high levels of zinc (> 5mg/L) can lead to stomach cramps, nausea and vomiting. Exposure to low levels of cadmium in water over time may build up cadmium in the kidneys and cause kidney disease and fragile bones. Cadmium is considered a cancer-causing agent.

High Aluminum levels beyond the recommended values were measured in sample 7. Aluminum is the most abundant metal and the third most abundant element in the earth's crust. Aluminum is also present in air, water, and many foods. Aluminum enters environmental media naturally through the weathering of rocks and minerals. Anthropogenic releases are in the form of air emissions, waste water effluents, and solid waste primarily associated with industrial processes, such as aluminum production. Health effects of Aluminum include diseases of the nervous system.

Checked by: Robinah N. Kulabako (PhD)
In-charge PHEE lab

CIVIL AND ENVIRONMENTAL ENGINEERING DEPARTMENT
Environmental Engineering
14 JUL 2023
Laboratory
MAKERERE UNIVERSITY
P.O.BOX 7062, KAMPALA

APPENDIX C: NATIONAL AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME FOR AMBIENT AIR	EXAMPLES TO WHICH STANDARDS ARE APPLICABLE TO	STANDARD FOR AMBIENT AIR	STANDARD FOR EMISSIONS (POINT SOURCES)
Acid mist	24 hr	Acid manufacture, battery manufacture and acid changing, chemical stores and labs	100 µgNm^{-3}	
Ammonia	24 hr	Refrigeration, chemicals stores and labs, fish processing Combustion processes, boilers or any process involving sulphur burning	200 µgNm^{-3}	50 mg/Nm^3
Asbestos	24 hr	Construction industry, garages/car repairs,	0.01 fibres ml^{-1}	
Baggase	24 hr	Sugar processing plants	200µNgm^{-3}	
Carbon dioxide	8 hr	Breweries, soft drink industries, burning processes	9.0 ppm	
Carbon monoxide	8 hr	Combustion processes, boilers	9.0 ppm	
Cement	24 hr	Cement industries, construction	200 µgNm^{-3}	50 mg/Nm^3
Ceramics	24 hr	Tile and brick industries, ceramic industries, construction	200 µgNm^{-3}	
Chlorine	24 hr	Water treatment, fish processing, chemical stores and labs	200µg Nm^{-3}	< 3mg/Nm^3
Cobalt	1 month	Cobalt processing, copper mining	1.0 µgNm^{-3}	
Coffee dust	24 hr	Coffee processing and trading	200 µg Nm^{-3}	
Cotton fibres	24 hr	Cotton farming, ginning and export, textile manufacture	200 µgNm^{-3}	
Copper dust	1 month	Copper mining and processing, metal works and fabrication	1.0 µgNm^{-3}	0.5 mg/Nm^3

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Electrode manufacture emissions	24 hr	Electrode manufacture, garages/car repairs, welding, metal fabrication	150 μgNm^{-3}	20 mg/Nm^3
Grain dust	24 hr	Grain milling, bakeries, feed mills, breweries, agriculture	200μgNm^{-3}	
Hydrocarbons	24 hr	Chemical stores and labs, fuel depots and stations	5 mgm^{-3}	

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APPENDIX D: NATIONAL NOISE STANDARDS

MAXIMUM PERMISSIBLE NOISE LEVELS

PART I

Regulation 6(1)

Maximum Permissible Noise Levels for General Environment

Column 1	Column 2	
Facility	**Noise Limits B (A) (Leq)**	
	DAY	**NIGHT**
A. Any building used as hospital, convalescence home, home for the aged, sanatorium and institutes of higher learning, conference rooms, public library, environmental or recreational sites.	45	35
B. Residential buildings	50	35
C. Mixed residential (with some commercial and entertainment)	55	45
D. Residential + industry or small-scale production + commerce	60	50
E. Industrial	70	60

Time Frame: use duration

Day : 6.00 a.m - 10.00p.m.

Night : 10.00p.m - 6.00a.m

The time frame takes into consideration human activity.

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APPENDIX E: SOCIO-ECONOMIC SURVEY QUESTIONNAIRE –

SOCIO-ECONOMIC SURVEY QUESTIONNAIRE –

We are currently conducting a social survey study and you are being selected as one of the key respondents for this exercise. **Your** responses are aimed at aiding successful preparation of the feasibility study **only** and shall be treated with the highest level of confidentiality they deserve.

Date of interview: ____/_____/

Village: _____ County _____ Subcounty:_____

Parish: _____ District: _____

SECTION A: FAMILY INFORMATION

Name of Household Head (Surname, First Name) _____

Gender: _____ (M/F)

Age Range:

(18-25)	☐	(46-55)	☐
(26-35)	☐	(56-65)	☐
(36-45)	☐	Over 65	☐

Tribe:

Madi	☐	Langi	☐
Lugbara	☐	Acholi	☐
Kakwa	☐	Others specify	
Alur	☐		

Is the household head from this area? ? Yes ..... ☐ No ☐

If no, When did you migrate to this area? : _____

What was the cause of the migration?

Marriage	☐	Conflicts	☐
Business	☐	Others specify	
Employment	☐		

Marital status (tick appropriate response):

Single	☐	Widowed	☐
Married No:_____	☐	Others specify	
Divorced	☐		

What is religious affiliation of the HH head?

Catholic	☐	Pentecostal	☐
Protestant	☐	SDA	☐
Islam	☐	Others specify	

Have you attended any form of education? Yes ..... ☐ No ☐

If yes, what is the highest level of education you/ attained/currently in?

Primary Level	☐	Vocational Training	☐
Ordinary Level	☐	University	☐
A' level	☐	Others specify	

Do you know how to read and write the English language?	Yes ☐ No ☐
Do you know how to read and write in the local language?	Yes ☐ No ☐
Do you have any school going child in the Household	Yes ☐ No ☐
How do they access the schools?	Footing ☐ 3. Motorcycle ☐ Bicycle ☐ 4. Others (specify) ..... ☐
What problems affect the quality of education at school attended by your child?	.....

How many people live in the household? _____

Adult Males	
Adult Females	
Children Males	
Children Females	

How many people living in the household are elderly?.....

How many people living in the household are disabled?.....

What kind of vulnerability do you have (HH)? (Can be multiple response)

1. Very Old (Aged 65+)		Widowed		Child-headed	
2.Disabled		Displaced		Others (specify)	
3. Chronically ill		Female-Headed			

In what capacity do you live on this land? (Tick appropriate response)

Land Owner	☐	Squatter	☐
Tenant (Kibanja)	☐	Licensee	☐
Co-owner	☐	Encroacher	☐
		Others specify	

What land type is your piece of land?

Customary ☐ Lease Hold ☐

Freehold ☐ Others specify .....

How long have you lived on / used this land? ..... (Years)

How did you acquire this land?

Bought ☐ Squatter ☐

Inherited ☐ Allocation by LC 1 ☐

Renting ☐

What is the average size of your land .....(acres)

On average, What is the cost of an acre of land when sold? _____

Do you have any land related conflicts in your area? Yes ☐ No ☐

If yes, What is the main source of Land conflicts? _____

How are Land conflicts addressed or resolved in this area? _____

Apart from settlement, what do you use the land for?

Crop farming ☐ Bee Keeping ☐

Livestock grazing ☐ Extraction (e.g murrum) ☐

Trading/business activities ☐ Others specify .....

Who ensures there is food in the household

Household Head ☐ Daughter ☐

Spouse ☐ Grand child ☐

Son ☐ Others specify .....

How many meals do you have in a day?

One ☐ Three ☐

Two ☐ Others specify .....

Does your household often have food surplus?

Always ☐ Sometimes ☐

Frequently ☐ Once in a while ☐

Never ☐

Does your household ever go hungry at any time of the year?

Always ☐ Sometimes ☐

Frequently ☐ No ☐

Never ☐

If yes, during what season (Specify months)

January ☐ July ☐

February ☐ August ☐

March ☐ September ☐

April ☐ October ☐

May ☐ November ☐

June ☐ December ☐

What are the common food crops grown in the household?

1=Maize 2= Sweet potatoes 3= Cassava 4 = Beans 5= Bananas Others (specify).....

What are the common cash crops grown in the household? 1= Coffee 2= Cotton 3= Tobacco Others (specify).....		
What is the approximate distance to the market from your household?	0-1.5 km 1.5-2.5km 2.5-3.5km 3.5- 5km Over 5km	
Does the household keep any animals? 1. Yes 2. No	Yes	No
If yes, how many of the following animals does the household have?	Cattle	
	Goats	
	Sheep	
	Chicken	
	Ducks	
	Pigs	
	Others (specify)	
How does the household graze their animals?	Free range (common property) Grazing on private/household property, Others (specify)_____	
Where do you obtain water for animals?	River Stream Unprotected well Unprotected Spring Communal borehole Protected well Protected Spring Other (Specify)	

Do you do fishing in the present situation? Yes ☐ No ☐

Are there areas / features of spiritual significance to you or your community on your lan☐? Yes ☐ No

If yes, what is the feature?_____

SECTION B: HOUSEHOLD ASSETS and livelihood Resources

Main source of income of head of household: _____

Main source of income		Subsistence	Commercial
	1. Agriculture, crop		
	2.Agriculture, Livestock		
	3.Fishing/Fish farming		
	4.Salaried Employment 5.Trading (Specify) _____ 7.Casual Wage Labourer 8.Remittance from abroad 9.Pension 10.Others specify		

What is the average household income? (Ushs)		
Do you have any household member having access to regular source of income?	Yes	No
For those household members who are participating in economic activities, what are their various sources of income	Yes	No
How much do you spend on the following per month?		
Transport monthly		
Rent monthly		
Water bills monthly		
School fees monthly		
Clothing monthly		
Food monthly		
Medical bills monthly		
Energy monthly		
Other expenses		

Do you have at least one of the following items in this household (read out)? 1. Yes ☐ 2. No ☐

Radio	Mobile phone
Television	Land
Bicycle	House
Motorcycle	Animals
Car	Hoes
Shop	Solar panel
Ploughs	Others specify .....

If you wanted to borrow 100,000 for one month from a person outside your home, would this be easy?	Yes	No
What is the highest amount of money you would borrow for a month in this area		
Do you have any borrowing institutions or associations in your area?	Yes	No
If yes, Mention any one of them (write the name of the institution)		

Do you have electricity in this area? 1. Yes 2. No

What type of energy is used for the following activities in your household? *(Tick as applicable)*

Activity	Grid Electricity	Kerosene	Firewood	Charcoal	Solar system	Gas	Biogas
Lighting							
Cooking							
Electronic gadgets							

What major problems do you experience in your area?

a) Major problems (circle the code)	b) Specify/What causes the problems
Income related problem?	
Production related problem	
Marketing problem	
Illiteracy and Ignorance	
Access to quality education	
Disease	
Access to quality healthcare	
Transport problems	
Remoteness and isolation	
Environmental problems	
Land wrangles	
Others (Specify)	

FARM PRODUCTION AND FOOD SECURITY

What is the major source of food for this household?

Buy from the market ☐ Grown on this pa☐el Grown ☐ewhere Other *(specify)*.....

Where do you usually sell your produce?

Don't sell at all ☐ Local market ☐ Outside market (far from home) ☐

Outside the district ☐ Co-oper☐ves Other *(specify)*

.....

What problems have you experienced in your production activities? (Multiple response - Probe for: water, soils, land size, capital, attitude etc.)

.....

.....

GENDER ROLES

Among the household members, whose primary responsibility is it to: ***(Tick)***	Activity	Husband	Wife	Adult Male	Adult Female	Young Male	Young Female	All household Members
	1). Cultivation							
	2).Harvesting							
	3).Fire wood collection							
	4).Water collection							
	5).Building house							
	6).Purchase household items							
	7).Paying for health							
	8).Paying for school fees							

SECTION D: ACCESS TO WATER: (Include all the questions given by Engineer)

What is the main source of water for your household?	*Source of water*	*Distance from household (meters)*	
	1. River/Stream	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	2. Household connection	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	3. Rain water/ harvesting Tanks	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km

	4. Unprotected well	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	5. Unprotected Spring	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	6. Protected well	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	7. Yard Taps/ Public stand posts	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	8.Communal borehole/Pump	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	9.Protected Springs	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
	10.Other (specify)	0-1.5 km 1.5-2.5km 2.5-3.5km	3.5- 5km Over 5km
How sufficient is the water?	Throughout the year Insufficient during the dry season	Insufficient throughout the year Other (Specify)	
How much time per day do you spend fetching water on a single trip?	Less than 30 minutes 30 minutes to 1 hour	1_2 hours More than 2 hours	
How many 20Ltr jerricans of water do you use per day?			
Do you pay for the water you consume?	Yes	No	
If yes, how much do you pay per day?			
Are you satisfied with the quality of drinking water? (Taste, colour, odour, hardness)	Fully satisfied ☐ Satisfied ☐ Neutral ☐	Not very satisfied ☐ Not satisfied at all ☐	
What are the reasons for non – satisfaction with the quality?	Taste ☐ Colour ☐ Odour ☐	Hardness ☐ Others specify ☐ ☐	
What problems do you encounter with the water sources?	1. Too steep 2. Too expensive 3. It dries up (Specify).....	6. Swampy 7. Long Queue 8. Others	

	4. Long distance 5 Poor water quality	
Do you boil Water for drinking?	Yes ☐	No ☐
How satisfied are you with the current water supply?	Fully satisfied ☐ Satisfied ☐ Neutral ☐	Not very satisfied ☐ Not satisfied at all ☐
How reliable is the water supply (Specify the number of breakdowns in a month)	1 2 3	Above 3 Not Applicable
How much time is taken to repair breakdowns	Hours Days Weeks	Months N/A
What is your preferred water source?		

SECTION E: WILLINGNESS TO PAY

Would you and your household members be willing to actively participate and contribute towards the project implementation activities	Yes	No
Would you be willing to pay for improved water services	Yes	No
How much would you be willing to pay per 20Ltre jerrycan of water	Shs 500 Shs 400 Shs 300	Shs 200 Shs 100 Other (Specify)
What is the preferred distance of a stand post from your home	500 metres 400 metres 200 metres	100 metres Other (Specify)
What suggestions would you you give for the water tap sustainability		

SECTION F: SANITATION FACILITIES AND PRACTICES (Include all the questions by the water analysist- Engineer)

Does your household have a latrine/other toilet facility?

If yes, Specify the kind of Latrine/ Toilet facility?

Traditional pitlatrine ☐ Ecosan toilet ☐

Ventilated Improved Pitlatrine ☐ Shallow pits

Flush toilet ☐ Others specify.....

If no, how do you dispose human waste in your household

Open bush

Community Latrine

Other (Specify)

Specify the hygienic Status of the toilet/ Latrine	Clean Dirty Not Applicable	
Does the Latrine have a cover?	Yes	No
Does the toilet/Latrine have a cleanable slab	Yes	No
(Through Enumerator observation), Are there any faeces around the compound of the household	Yes	No
Does the household have proper drainage	Yes	No
What is your preferred Toilet/ Latrine technology?		

Do you have a working hand washing facility next to the latrine /toilet? Yes ☐ No ☐

Does your household have a drying rack? Yes ☐ No ☐

What is the **major** method of disposing household waste?

Burn	Dump
Backyard	Dig a hole
Dustbins	Other (Specify)

SECTION E: ACCESS TO HEALTH SERVICES

Has anyone in your household been ill, had an accident in the last two months? Yes ☐ No ☐

What are the most common illnesses, health issues in your household?		Which of these long-term illness (chronic)/conditions do members of your household have	
Malaria	Eye infection	Diabetes	Paralysis
Cough/Flu	Water related disease	Hypertension	Nodding disease
STIs	Respiratory infections	HIV/AIDs	Speech impairment
Burns	Intestinal diseases	TB	Blindness
Ulcers	Others (specify)	Cancer	Hearing Disability
		Epilepsy	Others (specify)
Specify the water related disease; incase of 7			

What kind of health facility does your household use?

Facility	Name	Facility	Name
Government Health Centre I	.....	FBO Hospital	.....
Government Health Centre II	.....	Drug shop	.....
Government Health Centre III	.....	NGO hospital	.....
Community hospital	.....	Herbalist	.....
Private hospital	.....	Do not use any	.....
Private clinic	.....	Other (specify)	.....
Pharmacy	.....		.....
	.....		.....
	...		.....

How far is the nearest health center in kilometers?

0-1.5 km ☐ 1.5-2.5km ☐ 2.5-3.5k ☐ 3.5- 5 ☐ Over 5 ☐

How satisfied are you with the services offered at the health facility?

Very satisfied ☐ Dissatisfied ☐ Indifferent ☐

Satisfied ☐ Very Dissatisfied ☐

If Yes/ No, state the reason.....

Is every child of 5 years and below in your Household fully immunized?

Yes ☐ No ☐

b) If No, what is the reason they are not immunized?

Not interested ☐ Do not know ☐

Afraid of immunizing ☐ Far off the facility ☐ Others, (Specify).....

Do all members of your household have access to mosquito nets?

Yes ☐ No ☐

Are you knowledgeable of HIV/AIDs means of contraction and its effects? Yes ☐ No ☐

Are there any HIV and AIDS services available to the people in this community? Yes ☐ No ☐ Don't know ☐

If yes, what HIV and AIDS services are available to the community?

What challenges do people face in accessing these services?

Do you practice family planning in your household? Yes ☐ No ☐

SECTION H: COMMUNICATION

How does the household/community access/receive information and news? (multiple)	Community meetings Village Public speakers IEC materials, posters Radio TV Extension work by government officials	Newspapers Places of worship Neighbours Internet others (specify.....
What the most prefered source of information?		
Name the radio stations most listened to by the household.		
	☐ ☐	

What is the commonest form of transport in your area?

Boda Boda

Taxi

Private car

Walking

SECTION I: ENVIRONMENTAL ISSUES

What are some of the major	Soil erosion	Loss of soil fertility

environmental problems in your household?	Reduction in Agriculture production. Famine/ Drought	Flooding. Over-use of agro-chemicals Land slides Drainage Others specify.
In your opinion what can be done to mitigate these environmental problems?	Public education Re-afforestation Control of soil erosion terracing	Heavy penalty on polluters God's intervention Others (specify)
What are the **main** sources of information on environmental issues?		

SECTION J: COMMUNITY INVOLVEMENT AND PARTICIPATION IN DEVELOPMENT PROJECTS

What is the major attitude of community members towards participation in development activities? Positive Very positive Negative
What is a major cause of problems/violence in the community?
How would you want to participate in the project development? outline them--ARSDP

Have you or anyone close to you in your household experienced domestic violence?	Yes	No
If yes, briefly explain the cause of the violence		
What kind of violence was it?		
How was the issue addressed and resolved	LCs Police Courts of Law Clan/Elders	Religious Institutions Mutually resolved Other (Specify)

SECTION L: KNOWLEDGE OF THE PROJECT

Is there any Livelihood group in your community? Yes ☐ No ☐

a) Do you belong to any of them? Yes ☐ No ☐

If yes, what is the name of the group? _____

Do you know about the proposed project? Yes ☐ No ☐

If yes, what do you know about it? _____

SECTION M: CHALLENGES AND OPPORTUNITIES:

What positive outcomes do you or your community anticipates benefiting from the implementation of the water supply project Infra-structural development Creation of employment Provision of clean and safe water Easy water access Boosting of businesses Development of other sectors Other (Specify)
What negative outcomes do you and your community expect from the implementation of this proposed project? Displacement of people Theft Noise pollution Air pollution Loss of land Destruction of houses and property Destruction of crops High crime rates Other (Specify)
What are the biggest challenges with which you as a household must cope? High costs of rent Low incomes High taxes High water bills Unemployment High electricity bills Inadequacy of clean water Pollution High crime rates High costs of Education Other (Specify)

THANK YOU

10.2 APPENDIX F: INSTITUTIONAL SURVEY TOOL

INSTITUTIONAL SURVEY TOOL FOR LARGE SOLAR-POWERED WATER SUPPLY AND SANITATION SYSTEMS IN YUMBE DISTRICT

Date: ...../...../2023 Name of Interviewer.....

Name of Respondent: .....Designation of respondent.....

GPS Easting..... GPS Northings.....

Water Supply System and Sanitation Project: Goboro RGC (Kochi Sub County

Location details of public institution/facility

District: 1.	Sub County/Town council/ .....
Parish/ward	Village/cell .....

Basic information about Public Institution or Facility

QES No.	*Question*	*Responses*	
Q1.	Name of institution facility		
Q2.	Type of institution/facility	1. Public tap 2. National water main lines 3. Borehole 4. Protected spring 5. Unprotected spring 6. Public toilet 7. Public bathroom 8. Waste landfill/pit 9. School 10. Health centre 11. Police post 12. Worshiping place 13. Cultural property/place 14. Village meeting place	15. Play ground 16. Market stalls 17. Recreation/entertainment 18. Forest 19. Woodlot 20. Community grazing ground 21. Farming land 22. Community industry 23. Electricity poles 24. Telephone lines 25. Tele company mast 26. Security camera 27. Other.....
Q3	Ownership	1. Private 2. Public/government 3. Community 4. Non-government organization 5. Faith-based organization	
Q4	Component of the project affecting the facility	1. Pipeline 2. Reserve Tank 3. Booster	

		4. Access Road
Q5.	Who manages the institution / facility?	Name ……
	How long has the facility operated in this location?	1= Less than one year 2= 1 to 5 years 3= 6 to 10 years 4= 11 to 15 years 5= 16 to 20 years 6= 21 to 25 years 7= 26 to 30 years 8= 31 to 35 years 9= 36 = 40 yeas 10= 41 to 45 years 11 = 46 to 50 years 12 = Over 50 years
Q6.	Observe whether facility is functional	1. Functional 2. Not functional
Q7.	Does the facility have a management committee?	1. Yes 2. No
Q8.	Is the management committee functional?	3. Functional 4. Not functional
Q9.	How many people does the facility serve?	Per day…… Per week …… Per month ……
Q10.	Observe whether facility is within Right of Way?	1=Within Right of Way 2= Partially in Right of Way 3=At edge of Right of Way
Q11.	Is the facility location dependent?	1= Yes 2 = No
Q12.	If yes, please explain	……

Thank you for your time and information - **END**

APPENDIX G: ATTENDANCE LISTS

INTERFACE

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

STAKEHOLDER CONSULTATIONS

DISTRICT: **YUMBE**
VENUE: **YUMBE DISTRICT HEADQUARTERS**

DATE: 3-07-23
TIME: 10:15 - 10:55

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	RASHEEDAH AGERO	Interface.	Environmentalist	0772017329 agerorash@gmail.com	[signature]
2.	Olivia Ashaba Ahebwa	Interface Consulting	Environmental Eng	0704533280	Olivia.
3.	Martin Kasozi	Interface	Sociologist	0782997284	[signature]
4.	Andama. K. Abdu	YDLG	ADSO-Sm	0782658680	[signature]
5.	Ayiman Abdul	YDLG	DWO	0785568245	[signature]
6.	BINI GADAFFI	YDLG	SCDO	0788127028	[signature]
7.	DAVIS KATO	Interface CE	Environmentalist	0783742262	[signature]
8.	Nuwahereza Albert	Interface Consulting	Landuse expert	0775104708	[signature]
9.	Ofello Wilfred	"	Ecologist / GIS Expert	0782636120	[signature]
10.	DR COX Sempebwa (Hajj)	Yumbe DLG	D/CAO	0772501641	[signature]
11.	EDEMA HABIB 85381	YDLG	DEO	0786560536	[signature]
12.	ASIKU ABDUL MUTALIB	YDLG	LC5	0772826238	[signature]
13.	RAMADAN NOAH	YDLG	DPP	0785719192	[signature]
14.	Oluka Moses	Interface	Interface Team leader	0777205209	[signature]

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH:
VILLAGE:

DATE: 4/7/23
TIME: 10:30 - 13:15
VENUE: KOCHI S/C HQ

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	CHIRIGA RATIBU	L.CII	KELURUNGU	0778861149	
2.	ONZIMA ZUBAIRI	Area councilor Goboro P		0783491892	
3.	TABARI BRAN	LCI C/P	KELURUNGA	0786359527	
4.	EZALE ISMAIL	LCII C/P	MUNDUCHAKU	0764415797	
5.	JURUA CLARA	LCI C/P	ManiGochi	0774316277	
6.	ACHIKULE SWALI	LCI. C. Kochi	~~0773816~~ Local	0773816980	
7.	DAWA ZAINABU	councillor	KOCHI	0786509004	
8.	olekua JOHN RAFAL	Councilor	NUBARA	0779770836	
9.	Denis Kato	Interface Consultant	ESIA practitioner	0713742262	
10.	Olivia Ashaba Ahebwa	Interface	Environment Eng	0701533280	
11.	Nuwaherezа Osbert	Interface	Landuse expert	0775104708	
12.	Oluka Moses	Interface	Team leader	0774205209	

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

STAKEHOLDER CONSULTATIONS

DISTRICT: **YUMBE**
VENUE: **YUMBE DISTRICT HEADQUARTERS**

DATE: 3-07-23
TIME: 10:15 - 10:55

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	RASHEEDAH AGERO	Interface.	Environmentalist	0772017329 agerorash@gmail.com	
2.	Olivia Ashaba Ahebwa	Interface Consulting	Environmental Eng	0704533280	Olivia.
3.	Martin Basozi	Interface	Sociologist	0782997284	
4.	Andama. K. Abdu	YDLG	ADWO-M	0782650630	
5.	Ayiman Abdul	YDLG	DWO	0785568245	
6.	BINI GADAFFI	YDLG	SCDO	0788127028	
7.	DENIS KATO	Interface CE	Environmentalist	0773742262	
8.	Nuwahereza Osbert	Interface Consulting	Landuse expert	0775104708	
9.	OGILLO WILLIE	"	Cartographer / GIS Expert	0782636120	
10.	DR COX Sempebwa (HG)	Yumbe DLG	D/CAO	0772501641	
11.	EDEMA HABIB SSSBI	YDLG	DEO	0786560536	
12.	ASIKU ABDUL MUTALIB	YDLG	LCS	0772826238	
13.	RAMADAN NOAH	YDLG	DPP	0785719192	
14.	Oluka Moses	Interface	Interface Team leader	0772205209	

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

STAKEHOLDER CONSULTATIONS

Meeting with District Water Officials.

DISTRICT: **YUMBE**
VENUE: **YUMBE DISTRICT HEADQUARTERS**

DATE: 3-07-23
TIME: 10:05

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	Andama. K. Abdu	YDLG	ADWO-M	0782650630	
2.	MARARA BERNARD	YDLG	DWO	0776548308	
3.	ANULE TWAHIRI AJAGA	YDLG	For DHO	0782832520	
4.	Ayiman Abdul	YDLG	ADWO - Water ss	0785568245	
5.	Oluka Moses	Interface	Team leader	0772205209	
6.	Olivia Ashaba Ahebwa	Interface	Environmental Eng	0704533280	Olivia.
7.	Nuwahereza Osbert	Interface	Landuse expert	0775104708	
8.	DENIS KATO	Interface	ESIA Practitioner	0773742262	
9.	Rasheedah Agero	Interface	ESIA practitioner	0772017329	
10.	OGILLO WILLIE	"	"	0782636120	
11.					
12.					
13.					

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE CONSULTING LTD

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH:
VILLAGE:

DATE: 4/7/23
TIME: 10:30 – 13:15
VENUE: KOCHI S/C HQ

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.					
2.	AZINYA JAMES NYADRU	SEC FOR PRODUCTION/ NATURAL RESOURCE KOCHI	SEC FOR PRODUCTION NATURAL RESOURCE KOCHI	0788354035	[signature]
3.	SIRAJI JUMA	CHERANGA VILL	LCI C/P	0770605616	[signature]
4.	OLANDO HABIB	UDROBBE VILL	LCI C/P	0772419264	[signature]
5.	TABAN JUSUF	MARU VILLAGE	LCI C/P	0779577761	[signature]
6.	MANISURU HASSEN	KELURUNG VILLAGE	L.CI C/P	0780647921	[signature]
7.	BAKOLE TOAH	KELURUNGA	L.CI	0785232945	[signature]
8.	BRAN SAHABAN	GOBORO	LCII	0783022205	[signature]
9.	IDERE FRANCIS	BULIBULI VILLA	LC1	0785762706	[signature]
10.	AWILO BIRIAN	KELURUNGA	LCI	0778729826	[signature]
11.	SWADICK DAUDI	GOBORO BUSIA VILLAGE	LCI	0779088867	[signature]
12.	TIASURE JOHN EWILAH	BUSIA VILLAGE GOBORO	LCI	0787348127	[signature]

MARUWEST

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE CONSULTING LTD

STAKEHOLDER CONSULTATIONS

Meeting with District Water Officials.

DISTRICT: YUMBE
VENUE: YUMBE DISTRICT HEADQUARTERS

DATE: 3-07-23
TIME: 10:05

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	Andama. K. Abdu	YDLG	ADWO-M	0782650630	[signature]
2.	MARARA BERNARD	YDLG	DWO	0776548388	[signature]
3.	ANULE TWAHIRI AJAGA	YDLG	For DHO	0782832520	[signature]
4.	Ayiman Abdul	YDLG	ADWO – Waters	0785568245	[signature]
5.	Oluka Moses	Interface	Team leader	0774205209	[signature]
6.	Olivia Achaba Ahebwa	Interface	Environmental Eng	0704533280	[signature]
7.	Nuwaheroza Osbert	Interface	Landuse expert	0775104708	[signature]
8.	DENIS ODITO	Interface	ESIA Practitioner	0773742267	[signature]
9.	Rasheedah Ajeno	Interface	ESIA practitioner	0772017229	[signature]
10.	OKELLO KELLIKE	11	11	0782634112	[signature]
11.					
12.					
13.					

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOROKO
VILLAGE: MIRU

DATE: 4/7/23
TIME: 2:20 - 4:00 pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	Olivia Akhaka Ahebwa	Interface	Environmental Eg.	0704533280	Olivia.
2.	OTSARU AYISA	Community			
3.	PALIMRA BUNIA				
4.	ZALDA BRAN				
5.	MADRAA AISHA				
6.	ARIZU JOSEPH				
7.	SAMUSA DAWA.				
8.	NAFUSI RAMULA				
9.	AYISA ALIKI				
10.	AKANDU FARIDA				
11.	ASERUA ZAITUN				
12.	FATUMA OJAKU				

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 - 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	AZABO BASHIR	KAGOMISIC	CAO	0784636709	[signature]
2.	Kwai Morris	YADMC	transit	0787750975	[signature]
3.	SABTI AYUBU	Immam	GOBORO	0770380318	[signature]
4.	APANGA Bashiri	Youth	GOBORO	0782780609	[signature]
5.	Zumura Nafish	Youth	GOBORO	0785228161	[signature]
6.	BAKO Rukia	Youth	Kelemnya	0785553735	[signature]
7.	FARIDA Samimu	Youth	Goboro	0785553735	[signature]
8.	Mandera Kadija	Member	Goboro	〃	[signature]
9.	Jamahi Kassim	G/sec/ Goboro	Goboro	0783022205	[signature]
10.	ADAM TAHA NURU	DINZRNEE	GOBORO	0772066495	[signature]
11.	Oluka Moses	Interface	Team leader	0774253209	[signature]
12.					

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 - 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	ONZIGA SAIT I			0787898563	[signature]
2.	ADAKU OMARI			0760139939	[signature]
3.	AMBOROSIO MADRA			0788685626	[signature]
4.	BRAN SAHABAN	LCII Goboro		0775625805	[signature]
5.	SULIAMAN ALUGBI	Eleder II Goboro		0783478928	[signature]
6.	AJUGA SWAIL KASSIM	CTY SHEKI		0774647190	[signature]
7.	KASSIM AZIZI	SHEIKH	KELURANDRA	0770903702	[signature]
8.	Ezale Ismail	LCII C/MAN	MUNDUCHAKU	0764415797	[signature]
9.	AZINYA JAMES NYADRU	SEC FOR PRODUCTION natural Resource & marketing Kochi	KOCHI	0760791608	[signature]
10.	ABALE Alhi SWAIB	PI Chief	KOCHI	0782832256	[signature]
11.	ASIKU SURABU SUDAIKA	MALIMU	GOBORO	0784650375	[signature]
12.	ABDULU RASHID NASURU	Immam	GOBORO	0770470182	[signature]

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 – 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	JAMILA KASSIM				
2.	ADRIGA MALIKI				
3.	KIDIR SALIM			0780449766	
4.	ONZIMA Abibu			0774186775	
5.	ALICHI ALI			0777193044	
6.	LARUBO MAJID			0762844417	
7.	ADINAN ORIA			0—	
8.	VUGA NOAH			0785603692	
9.	ATIKU TOHA			0782345487	ATIKU
10.	Aluma RATIB	S/C Kochi Youth	GOBORO	0764141414	BENSON
11.	IJOSIGA MAJID			0784473642	
12.	TABAN YUSUF			0779577761	

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: ~~GOBORO~~ KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 – 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	IJOVIGA SWAAIKI	community member			
2.	SIYASA ZULEIKA				
3.	OCHOGORU AJINA				
4.	ANITA SARAYA				
5.	LUKICHO JANET				
6.	MAZARAU KALSUM				
7.	RAMULA RATIBU				
8.	CHANDIRU ZABIBU				ZABIBU
9.	NAIMA MIZAMILI				
10.	JAMAL ALMOJA				
11.	ZABIBU MAJID				
12.	ARIGA KHEMIS				

APPENDIX H: CONSULTATION MINUTES AND ATTENDANCE LISTS

Consultations with District officials

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR LARGE SOLAR-POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN YUMBE DISTRICT. **Minutes of meeting held with the District officials at Yumbe District Headquarters.**	
MEETING DATE:	3rd July 2023
START TIME: **END TIME:**	10:15 am 10:55 am
VENUE:	District Headquarters
MEMBERS PRESENT:	**DISTRICT STAFF** 1. Asiku Abdul Mutalib – LCV 2. Hajji Cox Sempebwa – D/CAO 3. Ayiman Abdul – Ass. DWO 4. Andama K Abdu – Ass. DWO-Mobilization 5. Edema Habib Sebbi – DEO 6. Ramadan Noah – DPP 7. Bint Gadaffi – SCDO **INTERFACE CONSULTING LTD** 1. Moses Oluka 2. Olivia Ashaba Ahebwa 3. Martin Kasoozi 4. Wycliff Ogello 5. Rasheedah Agero 6. Denis Kato 7. Osbert Nuwahereza
AGENDA	– Opening prayer – Introductions – Welcome remarks from the LC V Chairperson – Presentation by the consultant – Concerns raised and recommendations – Closing remarks from the Deputy CAO

	DISCUSSION	**RESPONSE**
M/01	**Opening prayer**	
	Opening prayer was said by Ms. Rasheeda Agero.	
M/02	**Introductions**	

	All members present for the meeting introduced themselves.	
M/03	**Welcome remarks from the LCV Chairperson**	
	1. The Chairperson welcomed the consultants 2. The Chairperson expressed that he was happy that the consultants were finally on the ground because he had expected them one and a half months ago and that he was happy to help where needed. 3. The Chairperson mentioned that Yumbe has a very big challenge with water consumption. He added that Yumbe's safe water coverage is 50% when the national safe water coverage is approaching 70%. This means Yumbe is short by 20%, particularly in villages where they are hosting refugees. The last census conducted in 2014, indicated that the population was at 400,000 and currently the projected population is approximately 750,000 with an approximate population of refugees at 240,000. The average population in other districts is approximately 200,000 and this is an indicator that Yumbe has a very big host community population, and this population influx presents challenges. 4. He mentioned that Yumbe is extremely grateful to the government particularly, MWE because if you look at the district, having 6 water systems is something they appreciate. 5. We are looking at providing safe water for the people. 6. He welcomed the consultants and mentioned that the assistant DWO in charge of mobilization, Andama K Abdul had mobilized communities and was aware of our visit and expectant. 7. He mentioned the concern of the delivery timeframe for the proposed project as the drilling works of the boreholes started in 2018 (5 years ago) and according to him, not much has been done as he would expect to see contractors now on the different sites. 8. He advised the consultant to work closely with the team on the ground for guidance on the geographical establishments of the proposed location of the project components for example reservoir locations because they have a better understanding of the area.	The consultant explained that the process takes time as we have to incorporate the social issues and environmental impacts in the proposed so that the design consultant can come

		up with final designs with the least possible impacts to the project area.
M/04	**Presentation by the consultant**	
	Moses Oluka, the Team Leader of the ESIA assignment gave a brief description of the Environmental and Social Impact Assessment (ESIA) Resettlement Action Plan (RAP) And Source Protection Plans (SPP) for Large Solar Powered Piped Water Supply Systems and Sanitation Facilities in Yumbe District project. He explained that: 1. The project is proposed to take place in 6 RGCs of Goboro, Lomunga, Nyori, Lobe, Awoba and Rodo in 5 sub-counties of Kochi, Bijo, Lodonga, Lobe Town Council and Kei respectively where Piped water systems will be put in place. 2. The objective of the consultant's visit is to carry out the Environmental Social Impact Assessment (ESIA) and produce a draft ESIA for the 6 RGCs by the end of July. 3. The prepared draft ESIA will be submitted to NEMA and will also be incorporated in the draft design drawings to aid inform the final design drawings, which shall be submitted and thereafter the contractor shall be procured to start on the construction works.	
M/05	**Concerns raised and recommendations**	
	1. The is a need for the teams to work closely with local officials as they have a better understanding of the project area.	Noted.
	2. The is a need to move with the district representative to the proposed project areas so that communities can relate readily to the project.	Noted
M/06	**Closing remarks from the Deputy CAO**	
	1. The concern for Nyori RGC in Lodonga S/C, the proposed design needs to be harmonized. He recommended the consultant review the proposed project components to make sure it's within the scope of works of the project. Nyori's concern is still pending.	Noted
	2. Mobilization of community sensitization meetings should be done through the Community	Noted

	Development Officers (CDOs) at the different sub-counties.	

Attendance List

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

STAKEHOLDER CONSULTATIONS

DISTRICT: **YUMBE**
VENUE: **YUMBE DISTRICT HEADQUARTERS**

DATE: 3-07-23
TIME: 10:15 - 10:55

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	RASHEEDAH AGERO	Interface.	Environmentalist	0772017329 agerorash@gmail.com	[signature]
2.	Olivia Ashaba Ahebwa	Interface Consulting	Environmental Eng	0704533280	Olivia.
3.	Martin Kasozi	Interface	Sociologist	0782997284	[signature]
4.	Andama. K. Abdu	YDLG	ADSO-SM	0782650630	[signature]
5.	Ayiman Abdul	YDLG	DWO	0785568245	[signature]
6.	BINI GADAFFI	YDLG	SCDO	0788127028	[signature]
7.	DAVIS KATO	Interface CE	Environmentalist	0773742262	[signature]
8.	Nuwahereza Albert	Interface Consulting	Landuse expert	0775104708	[signature]
9.	OFUNO VINCENT	〃	Ecologist / GIS Expert	0782636120	[signature]
10.	DR COX Sempebwa (Hajj)	Yumbe DLG	D/CAO	0772501641	[signature]
11.	EDEMA HABIB SSEBBI	YDLG	DEO	0786560536	[signature]
12.	ASIKU ABDUL MUTALIB	YDLG	LC5	0772826235	[signature]
13.	RAMADAN NOAH	YDLG	DPP	0785719192	[signature]
14.	Oluka Moses	Interface	Interface Team Leader	0777205209	[signature]

District Water Office Consultations

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR LARGE SOLAR-POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN YUMBE DISTRICT. **Minutes of meeting held with the District Water Officials at Yumbe District Headquarters.**		
MEETING DATE:	3rd July 2023	
START TIME: **END TIME:**	11:05 am 12:10 pm	
VENUE:	District Headquarters (Water offices)	
MEMBERS PRESENT:	**DISTRICT STAFF** 8. Magara Bernald – DWO 9. Ayiman Abdul – Ass. DWO 10. Andama K Abdu – Ass. DWO-Mobilization 11. Anule Twahiri Ajaga – DHO	
	INTERFACE CONSULTING LTD 8. Moses Oluka 9. Olivia Ashaba Ahebwa 10. Wycliff Ogello 11. Rasheedah Agero 12. Denis Kato 13. Osbert Nuwahereza	
AGENDA	– Introductions – Welcome remarks from the DWO – Presentation by the consultant – Concerns and recommendations raised	
	DISCUSSION	**RESPONSE**
M/01	**Introductions**	
	All members present for the meeting introduced themselves.	
M/02	**Welcome remarks from the DWO**	
	9. The DWO welcomed the consultants 10. The DWO expressed that he was happy that the consultants were on the ground to continue with the	

	processes for the construction of the solar piped water supply systems.	
M/03	**Presentation by the consultant**	
	Moses Oluka, the Team Leader of the ESIA assignment gave a brief description of the Environmental and Social Impact Assessment (ESIA), Resettlement Action Plan (RAP) and Source Protection Plans (SPP) for Large Solar Powered Piped Water Supply Systems and Sanitation Facilities in Yumbe District project. He explained that: 4. The project is proposed to take place in 6 RGCs of Goboro, Lomunga, Nyori, Lobe, Awoba and Rodo in 5 sub-counties of Kochi, Bijo, Lodonga, Lobe Town Council and Kei respectively where Piped water systems will be put in place. 5. The objective of the consultant's visit is to carry out the Environmental Social Impact Assessment (ESIA) and produce a draft ESIA for the 6 RGCs by the end of July. 6. The prepared draft ESIA will be submitted to NEMA and will also be incorporated in the draft design drawings to aid inform the final design drawings, which shall be submitted and thereafter the contractor shall be procured to start on the construction works. 7. The consultant discussed the different schematic drawings for each RGC with the DWO. The DWO pointed out the different challenges in the 6 RGCs and offered some recommendations.	
M/04	**Concerns raised and recommendations**	
	3. He suggested the different villages in the RGCs where community meetings could be held.	Noted.
	4. The need to move with the district representative to the proposed project areas as for the communities to relate readily with the project.	Noted

Attendance List

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

Meeting with District Water Officials.

STAKEHOLDER CONSULTATIONS

DISTRICT: **YUMBE**
VENUE: **YUMBE DISTRICT HEADQUARTERS**

DATE: 3-07-23
TIME: 10:05

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	Andama. K. Abdu	YDLG	ADWO-M	0782650630	[signature]
2.	MARARA BERNARD	YDLG	DWO	0776548358	[signature]
3.	ANULE TWAHIRI AJAGA	YDLG	For DHO	0782832520	[signature]
4.	Ayiman Abdul	YDLG	ADWO-Water SS	0785568245	[signature]
5.	Olwka Moses	Interface	Team leader	0774205209	[signature]
6.	Olivia Achaba Ahebwa	Interface	Environmental Eng	0704533280	Olivia.
7.	Nuwaherera Osbert	Interface	Landuse expert	0775104708	[signature]
8.	DENNIS [illegible]	Interface	ESIA Practitioner	0773742262	[signature]
9.	Rasheedah Ayero	Interface	ESIA practitioner	0772017329	[signature]
10.	Ogello [illegible]	"	"	0182634[illegible]	[signature]
11.					
12.					
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Consultations with the Office of the Prime Minister (OPM)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR LARGE SOLAR-POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN YUMBE DISTRICT. **Minutes of meeting held with the OPM in BidiBidi.**		
MEETING DATE:	th July 2023	
START TIME: **END TIME:**	5:00 pm 6:00 pm	
VENUE:	OPM Offices	
MEMBERS PRESENT:	**OFFICE OF THE PRIME MINISTER** 12. Wilson – Deputy Commandant 13.	
	INTERFACE CONSULTING LTD 14. Olivia Ashaba Ahebwa 15. Denis Kato	
	DISCUSSION	**RESPONSE**
M/01	**Presentation by the consultant**	
	The consultant gave a brief description of the Environmental and Social Impact Assessment (ESIA) Resettlement Action Plan (RAP) and Source Protection Plans (SPP) for Large Solar Powered Piped Water Supply Systems and Sanitation Facilities in Yumbe District project. He explained that: 8. The project is proposed to take place in 6 RGCs of Goboro, Lomunga, Nyori, Lobe, Awoba and Rodo in 5 sub-counties of Kochi, Bijo, Lodonga, Lobe Town Council and Kei respectively where Piped water systems will be put in place. 9. The objective of the consultant's visit is to carry out the Environmental Social Impact Assessment (ESIA) and produce a draft ESIA for the RGCs by the end of July. 10. The prepared draft ESIA will be submitted to NEMA and will also be incorporated in the draft design drawings to aid inform the final design drawings, which shall be submitted and thereafter the contractor shall be procured to start on the construction works.	
M/02	**Concerns raised and recommendations**	

	5. He recommended that all unskilled labour jobs be for the communities (don't expect labour imports) unless for technical works where the skills are lacking in the communities. This will aid in building a good relationship with the host communities and also feel a sense of ownership of the project.	Noted.
	6. The consultant should have a better understanding of the landowners because the land here is generally community owned. He advised the consultant to work closely with the respective LCs who know the landlords of the area and also suggested that they be witnesses in the memorandums of understanding.	Noted.
	7. People have been used to using boreholes without paying for the water, and only contribute to water in case of mechanical problems and the water user committees aren't active.	Noted.
	8. Water Mission used to provide water for free. Transitioning from free water to paying for water will be an enormous challenge.	Noted.
	9. The communities have the willingness to pay for the water however, they don't have money because of the low levels of income.	Noted.
	10. He mentioned that maintenance is done by the water mission. Also, they have trained some people on the hand pump in the settlements to undertake some maintenance activities for efficiency. Furthermore, each area is allocated to certain clusters that respond to specified areas assigned to that particular cluster in case of any issues.	Noted.
	11. Sometimes the generator gets mechanical problems creating long queues.	Noted.
	12. Some water-stressed areas like Arewa, and Obekyi couldn't get feasible water sources within the area and this has made people fetch water from long distances and others opt for open unprotected wells.	Noted.
	13. Population influx due to the refugees and nationals resulting in deforestation because they have ended up cutting down trees for charcoal and firewood.	
	14. Reluctancy of individuals to plant trees because they take a long time to grow especially the refugees. Also, the prolonged dry spell affects the anticipated	

	growth rate of the planted trees. More sensitization about tree planting is to be undertaken.	

Consultations with Kochi Subcounty officials

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR LARGE SOLAR-POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN YUMBE DISTRICT. **Minutes of meeting held with the Kochi Sub-County Officials at the Headquarters.**		
MEETING DATE:	4th July 2023	
START TIME: **END TIME:**	10:00 am 1:00 pm	
VENUE:	Kochi Sub-county Headquarters	
MEMBERS PRESENT:	**SUB-COUNTY OFFICIALS**	
	14.	
	INTERFACE CONSULTING LTD	
	16. Moses Oluka 17. Olivia Ashaba Ahebwa 18. Martin Kasoozi 19. Wycliff Ogello 20. Rasheedah Agero 21. Denis Kato 22. Osbert Nuwahereza	
AGENDA	– Opening prayer – Introductions – Welcome remarks from the CDO – Remarks from CAO's representative – Presentation by the consultant – Concerns and recommendations raised	
	DISCUSSION	**RESPONSE**
M/01	**Opening prayer**	
	An opening prayer was said by the CDO.	
M/02	**Introductions**	
	All members present for the meeting introduced themselves.	
M/03	**Welcome remarks from the CDO**	
	11. The CDO welcomed the consultants	

	12. The CDO mentioned that he has mobilized Local Councillors to mobilize for the community meetings so that there is a sense of ownership of the project by the communities. 13. The communities are expectant and yearning for the project. He further appealed to the consultant and MWE to do the necessary work for the successful execution of the solar piped water system in the shortest time possible.	
M/04	**Remarks from the CAO's representative**	
	1. He mentioned that waterborne diseases were rampant and the government intervened by proposing the solar water piped project. 2. Boreholes have already been drilled, now the next phase is the implementation which can be achieved through the completion of ESIA studies in collaboration with design reports. 3. Expected job opportunities through the provision of labour especially unskilled labour. 4. He mentioned that no additional money will be incurred to extend/transport water from the proposed transmission lines from the reservoir. 5. He also proposed the communities work hand in hand with the consultant to propose the best recommendations for communities regarding the proposed project.	
M/05	**Presentation by the consultant**	
	The consultant gave a brief description of the Environmental and Social Impact Assessment (ESIA) Resettlement Action Plan (RAP) And Source Protection Plans (SPP) for Large Solar Powered Piped Water Supply Systems and Sanitation Facilities in Yumbe District project. He explained that: 11. The project is proposed to take place in 6 RGCs of Goboro, Lomunga, Nyori, Lobe, Awoba and Rodo in 5 sub-counties of Kochi, Bijo, Lodonga, Lobe Town Council and Kei respectively where Piped water systems will be put in place. 12. The consultant presented the schematic drawing of Goboro RGC showing the proposed transmission and distribution lines and reservoir location. 13. The objective of the consultant's visit is to carry out the Environmental Social Impact Assessment (ESIA) and produce a draft	

	ESIA for the Goboro RGC by the end of July. 14. The prepared draft ESIA will be submitted to NEMA and will also be incorporated in the draft design drawings to aid inform the final design drawings, which shall be submitted and thereafter the contractor shall be procured to start on the construction works.	
M/06	**Concerns raised and recommendations**	
	15. We appreciate the proposed SPP as the people in Bulili village (drilled borehole for UNHCR) were drinking the same water that cattle were drinking. He further encouraged everyone to plant more trees around the wetlands and discourage deforestation.	Noted.
	16. Contractors normally come for construction works during the dry seasons, we suggest that they come during the rainy seasons so that the digging of trenches where the distribution and transmission lines will pass is easier for the workers.	Noted.
	17. Eleven (11) villages were included in the catchment area however, some villages without safe water weren't included, we request that those villages also be considered and included in the catchment area.	The design for water supply system was designed with a radius of at least 2km network (or as the pressure may permit) capable of meeting the daily drinking water needs of people therefore not all villages can be included in the catchment area.
	18. The communities have faced some challenges with contractors in the past on previous projects i.e. a. There was a shortage of tools during the drilling of the boreholes. b. Delay of payments by the contractors and in some cases, workers end up being paid less. There was an incident in the past where the community ended up destroying the distribution pipes due to delayed payments.	Noted.

	19. The proposed reservoir location is on the church land, propose to discuss the ease of the availability of that land.	To discuss with the representative of the church land the availability of the land.
	20. Due to the shortage of water, there is the occurrence of fights at the boreholes over water shortage.	Noted.
	21. Is it possible for the water supply to be extended to a household at the request of the community member?	Yes, an extension of water supply to the requested household shall be possible, however, at a small connection fee that shall be determined then.
	22. In case a person's land, house and crops are affected, will that person be compensated?	Yes, for cases where people's crops and trees will be affected, valuation of such crops shall be undertaken and the respective people compensated. For the cases of affecting houses, that will be unlikely as the proposed distribution and transmission lines shall be constructed in the road reserves.
	23. In case a person refuses the distribution and transmission lines to pass through their property, will there be a diversion?	This is a government project and it is intended to benefit everyone in the community therefore we don't expect a person to reject something beneficial to them and the community at large.
	24. We are used to boreholes where we use manual labour by hand pumping, how will the solar system function during the rainy seasons and won't this lead to a shortage of water supply? In case of a mechanical fault, how will that be addressed without interfering with the water supply?	The system has been designed with the addition of standby generators for such cases.
	25. Fear of men for the contractor to get into relationships with their children and wives.	The community recommended for the contractors and community to be briefed not to get into any relationships, if not abided there should be penalties.
	26. There is a concern about the rates that shall be used by the contractor for the employed workers, they recommended that the contractor use uniform rates during employment. The contractor should also provide food to the workers.	Noted.
	27. They suggested that the office of the CAO monitor the implementation of the project	Noted.

	and take kin attention to the project as it progresses.	
	28. There should be provision of security for the solar panels and equipment.	Security will be provided.
	29. When the taps get spoiled, who will be responsible for their operation and maintenance?	There will be a small fee that will be charged by the umbrella/water user committees for the proper operation and maintenance of the system.
	30. Will the communities be charged for the water?	The community suggested a fee of 6000 Uganda shillings to be charged per month for the proper operation and maintenance of the system.
	31. For how many years will the volume of the proposed water supply system be sustainable?	The design is proposed for 10 years.
	32. These are some of the benefits that are expected by the community from the proposed project: a. Job creation for the community. b. Good water for the community. c. Time management as the community will be fetching water in time and getting time to do other chores. d. Reduced waterborne diseases in the community. e. Water for domestic use and irrigation of green vegetables. f. Source of income therefore better economy. g. Reduced distance to fetch water. h. Reduced fights arising from the shortage of water supply. i. Relationship/marriage stability as men will get to spend more time with their wives.	Noted.
	33. The LC III appealed to the consultant for more opportunities to invest in water as the area is water stressed. Lori village is located far from the proposed transmission line, requested the consultant to look into it.	Noted.

Attendance List

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH:
VILLAGE:

DATE: 4/7/23
TIME: 10:30 - 13:15
VENUE: KOCHI S/C HQ

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	CHIRIGA RATIBU	L.C II	KELURUNGA	0778861149	
2.	ONZIMA ZUBAIRI	Area councilor GOBORO P.		0783491892	
3.	TABARI BRAN	LC I C/P	KELURUNGA	0786359527	
4.	EZALE ISMAIL	LC II C/P	MUNDUCHARU	0764415797	
5.	JURUA CLARA	LC I C/P	MANIGOCHI	0774316277	
6.	ACHIKULE SWALI	LC I. C/KOCHI	~~0773816~~ KOCHI	0773816980	
7.	DAWA ZAINABU	councillor	KOCHI	0786509004	
8.	OLEKUA JOHN RAFAL	Councillor	NYABARA	0779770836	
9.	DENNIS KATO	Interface Consultant	ESIA practitioner	0713742262	
10.	Olivia Ashaba Ahebwa	Interface	Environment Eng	0701533280	Olivia.
11.	Nuwaherezа Osbert	Interface	Landuse expert	0777104708	
12.	Oluka Moses	Interface	Team leader	0774205209	

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH:
VILLAGE:

DATE: 4/7/23
TIME: 10:30 - 13:15
VENUE: KOCHI S/C HQ

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.					
2.	AZINYA JAMES NYADRU	SEC FOR PRODUCTION NATURAL RESOURCE KOCHI	SEC FOR PRODUCTION NATURAL RESOURCE KOCHI	0788334035	
3.	SIRAJI JUMA	CHHRANGA VILL	LCI C/P	0770605616	
4.	OKANDO HABIB	UDRORIBE VILL	LCI C/P	0772449264	
5.	TABAN YUSUF	MARU VILLAGE	LCI C/P	0779577761	
6.	MANISURU HASSEN	KELURUNGA VILLAGE	L.C.I C/P	0780647921	
7.	BAKOLE TOAH	KELURUNGA	L.C.I	0785232945	
8.	BRAN SAHABAN	GOBORO	LCII	0783022205	
9.	IDERE FRANCIS	BULIBULI VILLA	LC1	0755762706	
10.	AWILO BRIAN	IGCLURUNGA	LC I	0778729826	
11.	SWADICK SAUDI	GOBORO BUSIA VILL	LCI	0779088867	
12.	TIAGURE JOHN EWILLI	BUSIA VILLAGE GOBORO	LCI	0773481127	

MARU WEST

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: **YUMBE**
SUB-COUNTY: KOCHI
PARISH:
VILLAGE:

DATE: 4/7/23
TIME: 10:30 - 13:15
VENUE: KOCHI S/C HQ

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	Mafin Kasozi	Interface	Social Expert	0782997284	
2.	RASHEEDAH AGERO	Interface	Environmentalist	0772017329	
3.	GLIMA A. RAHIMALI	LCIII V/C/Rep	Kochi S/C	0788513072	
4.	ADAM TOHA NURU	INTERNEE		0770664495	
5.	MATU TOAH	L.C III Chairman	KOCHI S/C	0785727474	
6.					
7.					
8.					
9.					
10.					
11.					
12.					

Consultations with Goboro Local Community

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR LARGE SOLAR-POWERED PIPED WATER SUPPLY SYSTEMS AND SANITATION FACILITIES IN YUMBE DISTRICT. **Minutes of Lobe Community Meeting at Goboro trading centre Mosque premises.**		
MEETING DATE:	4th July 2023	
START TIME: **END TIME:**	10:00 am 1:00 pm	
VEUNE:	Goboro trading center, Mosque premises	
MEMBERS PRESENT:	**SUB-COUNTY OFFICIALS & COMMUNITY MEMBERS**	
	15.	
	INTERFACE CONSULTING LTD	
	23. Moses Oluka 24. Olivia Ashaba Ahebwa 25. Martin Kasoozi 26. Wycliff Ogillo 27. Rasheedah Agero 28. Denis Kato 29. Osbert Nuwahereza	
AGENDA	– Opening prayer – Introductions – Welcome remarks from the sub-county representative – Remarks from CAO's representative – Presentation by the consultant – Concerns and recommendations raised	
	DISCUSSION	**RESPONSE**
M/01	**Opening prayer**	
	An opening prayer was said by the LCII Chairperson.	
M/02	**Introductions**	
	All members present for the meeting introduced themselves.	
M/03	**Welcome remarks from the sub-county representative**	

	14. The sub-county representative welcome the consultant and mentioned that they mobilized for the community meeting and encouraged the community members to actively participate in the meeting and speak up on any concerns, fears and recommendations that they might have with respect to the proposed project.	
M/04	**Remarks from the CAO's representative**	
	6. He mentioned that waterborne diseases were rampant and the government intervened by proposing the solar water piped project. 7. Boreholes have already been drilled, now the next phase is the implementation which can be achieved through the completion of ESIA studies in collaboration with design reports. 8. He also proposed the communities work hand in hand with the consultant to propose the best recommendations for communities regarding the proposed project.	
M/05	**Presentation by the consultant**	
	The consultant gave a brief description of the Environmental and Social Impact Assessment (ESIA) Resettlement Action Plan (RAP) And Source Protection Plans (SPP) for Large Solar Powered Piped Water Supply Systems and Sanitation Facilities in Yumbe District project. He explained that: 15. The project is proposed to take place in 6 RGCs of Goboro, Lomunga, Nyori, Lobe, Awoba and Rodo in 5 sub-counties of Kochi, Bijo, Lodonga, Lobe Town Council and Kei respectively where Piped water systems will be put in place. 16. The consultant presented the schematic drawing of Goboro RGC showing the proposed transmission and distribution lines and reservoir location. 17. The objective of the consultant's visit is to carry out the Environmental Social Impact Assessment (ESIA) and produce a draft ESIA for the Goboro RGC by the end of July. 18. The prepared draft ESIA will be submitted to NEMA and will also be incorporated in the draft design drawings to aid inform the final design drawings,	

	which shall be submitted and thereafter the contractor shall be procured to start on the construction works.	
M/06	**Concerns raised and recommendations**	
	34. Will the communities pay for the water?	There will be a small fee that will be charged by the umbrella/water user committees for the proper operation and maintenance of the system.
	35. There is an availability of a place where the sanitation facility can be constructed.	Noted.
	36. How many tap points are to be initiated in a given village?	The number of stand post points will be determined during construction.
	37. What will happen to the neighbouring villages not part of the catchment area?	Community members from villages not part of the catchment area will have to fetch water from the nearest water supply source in the village within the catchment area.
	38. Is it possible for the water supply to be extended to a household at the request of the community member? Will there be a need for payment?	Yes, the extension of water supply to the requested household shall be possible however, a small connection fee shall be determined then.
	39. In case a person's land, house and crops are affected, will that person be compensated?	Yes, for cases where people's crops and trees will be affected, valuation of such crops shall be undertaken and the respective people compensated. For the cases of affecting houses, that will be unlikely as the proposed distribution and transmission lines shall be constructed in the road reserves.
	40. Will the workers be paid or they will volunteer during the project implementation?	Yes, the workers shall be paid by the contractor during the project implementation.
	41. In some previous projects in the area, workers within the community weren't considered first in some cases for unskilled labour. In some cases, the workers weren't paid for the work done or sometimes they receive less money than what they agreed with the contractor.	Noted. The community recommended for the contractor use uniform rates for employment.
	42. Some projects have been successfully implemented however, they last for 2-3	The Umbrella/water user committees will be in charge of the operation and

	months after construction, who will be responsible for the operation and maintenance of the water supply system?	maintenance of constructed water supply system.
	43. For how many years will the volume of the proposed water supply system be sustainable? According to the capacity for water production, how many distribution points will be installed?	The design is proposed for 10 years. The distribution shall be determined during the construction of the water supply system.

Attendance List

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 – 4:00 pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	Olivia Akhaba Abelwa	Interface	Environmental Eg.	0704533280	Olivia.
2.	OTSARU AYISA	Community			
3.	PALIMRA BUNIA				
4.	ZALDA BRAN				
5.	MADRAA AISHA				
6.	ARIZU JOSEPH				
7.	SAMUSA DAWA.				
8.	NAFUSI RAMULA				
9.	AYISA ALIKI				
10.	AKANDU FARIDA				
11.	ASERUA FATUN				
12.	FATUMA OSAKU				

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 - 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	AZABO BASHIR	KADDHSIC	CAO	0784636709	[signature]
2.	KULAI MORRIS	YODMC	Transit	0787750975	[signature]
3.	SABIT AYUBU	Immam	GOBORO	0770380318	[signature]
4.	APANGA Bashiri	Youth	GOBORO	0782780609	[signature]
5.	Zumura Nafish	Youth	GOBORO	0785228169	[signature]
6.	BAKO RUKIA	Youth	Kelemnya	0785553735	[signature]
7.	FARIDA SAMIM	Youth	Goboro	0785553735	[signature]
8.	Mandera Kadija	Member	Goboro	"	[signature]
9.	Jamali Kassim	G/sec Goboro	Goboro	0783022205	[signature]
10.	ADAM TOHA Nuhu	DINTERNEE	GOBORO	0772066495	[signature]
11.	Oluka Moses	Interface	Team leader	0774253209	[signature]
12.					

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 - 4:00 pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	ONZIGA SAFI			0787898563	[signature]
2.	ADAKU OMARI			0760139939	[signature]
3.	AMBROSIO MADRA			0788685626	[signature]
4.	BRAN SAHABAN	LCII Goboro		0775625805	[signature]
5.	SULIAMAN ALUGBI	Eleder II Goboro		0783478928	[signature]
6.	ASUGA SWAIL KASSIM	CTY SHEKI		0774647190	[signature]
7.	KASSIM AZIZI	SHEIKH	KELURINGA	0770503702	[signature]
8.	Ezale Ismail	LCII C/MAN	MUNDUCHAKU	0764415797	[signature]
9.	AZINYA JAMES NYADRU	SEC FOR PRODUCTION natural Resources & marketing Kochi	KOCHI	0760791608	[signature]
10.	ABALE Ali SWAIB	PT Chief	KOCHI	0782832256	[signature]
11.	ASIKU SURABU SADARA	MALIMU	GOBORO	0784650375	[signature]
12.	ABDULU RASHID NASURU	Immam	GOBORO	0770470182	[signature]

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: YUMBE
SUB-COUNTY: KOCHI
PARISH: GOBORO
VILLAGE: MERU

DATE: 4/7/23
TIME: 2:20 – 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	JAMILA KASSIM				[signature]
2.	ADRIGA MALIKI				[signature]
3.	KIDIR SALIM			0780449766	[signature]
4.	ONZIMA Abibu			0774186775	[signature]
5.	ALICHI ALI			0777193044	[signature]
6.	LARUBO MAJID			0762844117	[signature]
7.	ADINAN ORIA			0—	[signature]
8.	VIGA NOAH			0785603697	[signature]
9.	ATIKU TOHA			0782345487	ATIKU
10.	Aluma RATIB	S/C Kochi Youth	GOBORO	0764141414	BENSON
11.	IJOSIGA MAJID			0784473642	[signature]
12.	TABAN YUSUF			0779577761	[signature]

Ministry of Water and Environment (MWE)
Large solar-powered piped water supply & Sanitation
Environmental and Social Impact Assessment (ESIA)

INTERFACE

COMMUNITY SENSITIZATION MEETINGS

DISTRICT: **YUMBE**
SUB-COUNTY: ~~GOBORO~~ KOCH
PARISH: GOBORO
VILLAGE: MELU

DATE: 4/7/23
TIME: 2:20 – 4:00pm
VENUE: MOSQUE PREMISES

No.	Name	Organization	Designation	Telephone contact/Email	Signature
1.	IGOVIGA SWAAIKI	community members			
2.	SIYASA ZULEIKA				
3.	OCHOGORU ASINA				
4.	ANITA SABAYA				
5.	LUKICHO JANET				
6.	MATARAU KALUMA				
7.	RAMULA RATIBU				
8.	CHANDIRU ZABIBU				ZABIBU
9.	NAIMA MIRAMULI				
10.	JAMAL ALMOSA				
11.	ZABIBU MATA				
12.	ARIGA FHEMIS				

10.3 APPENDIX I: PROJECT BILL OF QUANTITIES

GOBORO WATER SUPPLY & SANITATION SYSTEM

ENGINEER'S ESTIMATE

GRAND SUMMARY

BILL NO.	DESCRIPTION	AMOUNT (Ushs)	AMOUNT (USD)
			1USD = UGX 3,750
1.0	PRELIMINARIES AND GENERAL ITEMS	387,250,000	103,267
	WORKS ITEMS		
	MALANGA WATER SOURCE		
2.0	MALANGA BOREHOLE SITE	564,787,507	150,610
3.0	MALANGA SOLAR	271,700,500	72,453
4.0	TRANSMISSION MAINS 1 - MALANGA TO STORAGE RESERVOIR	504,877,216	134,634
			-
	MARU WATER SOURCE		
5.0	MARU BOREHOLE SITE	452,491,607	120,664
6.0	MARU SOLAR	222,850,000	59,427
7.0	TRANSMISSION MAINS 2 - MARU TO JUNCTION	270,969,760	72,259
			-
8.0	WATER TREATMENT WORKS AND STORAGE RESERVOIR	1,056,682,895	281,782
			-
9.0	DISTRIBUTION SYSTEM	232,768,450	62,072
10.0	OFFICE BLOCK	296,320,831	79,019
11.0	TOILET BLOCKS	217,178,321	57,914
12.0	COMPENSATION	110,780,000	29,541
	SUB TOTAL 1	**4,588,657,086**	**1,223,642**
	Add 10% Contingencies	458,865,709	122,364
	SUB TOTAL 2	**5,047,522,795**	**1,346,006**
	Add 18% VAT	908,554,103	242,281
	GRAND TOTAL	**5,956,076,898**	**1,588,287**