REPUBLIC OF UGANDA

MINISTRY OF WATER AND ENVIRONMENT

INTEGRATED WATER MANAGEMENT AND DEVELOPMENT PROJECT (IWMDP)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE PIPED WATER SUPPLY AND SANITATION SYSTEM FOR KIKOORA RURAL GROWTH CENTRE IN KAKINDO SUB-COUNTY, KAKUMIRO DISTRICT, UGANDA

Prepared for:

Ministry of Water and Environment,
Directorate of Water Development,
Rural Water Supply and Sanitation Department,
Headquarters, Plot 3-7, Kabalega Crescent, Luzira,
P. O. BOX 20026, Kampala, Uganda

Prepared by

Bright Technical Services Ltd
Plot 149, Kiira Road, Kamwokya
P.O Box 37629, Kampala, Uganda
http://www.brightechnical.com/

NOVEMBER 2022

TABLE OF CONTENTS

LIST OF TABLES

LIST OF PLATES

LIST OF FIGURES

ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
BOD	Biochemical Oxygen Demand
CAO	Chief Administrative Officer
CBOs	Community Based Organizations
CDO	Community Development Officer
CFP	Chance Find Procedure
CGV	Chief Government Valuer
CO	Carbon Monoxide
dBA	Decibels
DEO	District Environment Office
DLG	District Local Government
DMM	Directorate of Museums and Monuments
DNRO	District Natural Resources Office
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
EHS	Environment, Health and Safety
EHSGs	Environment, Health and Safety Guidelines
EIA	Environment Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESIS	Environmental and Social Impact Statement
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESSs	Environmental and Social Standards
E&S	Environmental and Social
FGDs	Focus Group Discussions
FIs	Financial Intermediaries
GBV	Gender Based Violence
GC	Grievance Committee
GFS	Gravity Flow Scheme
GIIP	Good International Industry Practice
GIS	Geographical Information System
GoU	Government of Uganda
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HIV	Human Immuno deficiency Virus
HWFs	Hand Washing Facilities
IEC	Information Education and Communication
IFC	International Finance Corporation
ILO	International Labour Organization
IPF	Investment Project Financing
ISRs	Implementation Status Reports
IUCN	International Union for Conservation of Nature
IWMDP	Integrated Water Management and Development Project
IWRM	Integrated Water Resources Management
KDLG	Kakumiro District Local Government

KII	Key Informant Interview
Km	Kilometre
LAeq	Average Noise Level
LA_{MIN}	Lowest Noise Level
LA_{MAX}	Highest Noise Level
LC	Local Council
MoGLSD	Ministry of Gender, Labour and Social Development
MoLHUD	Ministry of Lands, Housing and Urban Development
MWE	Ministry of Water and Environment
NDP III	Third National Development Plan
NEA	National Environment Act
NEMA	National Environment Management Authority
NGOs	Non-Government Organizations
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPHC	National Population and Housing Census National Social Security Fund
NSSF	National Water and Sewerage Corporation
NWSC	Operational Policies
OPs	Occupational Safety and Health
OSH	Operation and Maintenance
O&M	Project Affected Households
PAHs	Project Affected Persons
PAPs	Pay As You Earn
PAYE	Public Consultation and Disclosure Plan
PCDP	Physical Cultural Resources
PCRs	Project Management Team
PMT	Personal Protective Equipment
PPE	Person With Disabilities
PWDs	Resettlement Action Plan
RAP	Resettlement Framework Policy
RFP	Rural Growth Centre
RGC	Rural Water and Sanitation Regional Centres
RWSRCs	Sustainable Development Goals
SDGs	Sexually Transmitted Diseases
STDs	Sexually Transmitted Infections
STIs	Sub-County
S/C	Sulfur Oxides
SOx	Terms of Reference
ToR	Umbrella Authorities
UAs	Uganda Bureau of Statistics
UBOS	Uganda Shillings
UGX	Uganda National Bureau of Standards
UNBS	Urban Water and Sewerage Department
UWSD	Universal Transverse Mercator
UTM	Visual Encounter Survey
VES	Ventilated Improved Pit latrines
VIP	World Bank
WB	World Health Organization

WHO	Wetland Management Department
WMD	Water Management Zone
WMZ	Water Supply System
WSS	

ESIA TEAM COMPOSITION

Table 1 presents the composition of the Environmental and Social Impact Assessment (ESIA) team that undertook the ESIA for the proposed Kikoora RGC piped Water Supply in accordance with the provisions of the *National Environmental Act No. 5 of 2019* of the Laws of Uganda, the *Environmental and Social Impact Assessment Regulations (2020)* and the *National Environment (Conduct and Certification of Environmental Practitioners) Regulations (2003).*

Table 1: ESIA Team Composition

Name of Key Specialists	Assigned Position	Signature
Mr. Pius Kahangirwe, MSc. *NEMA Certified Environmental Practitioner* ***(CC/EIA/159/22) – Team Leader***	Team Leader / Environmental and Natural Resources Management Specialist	
Dr. Denis Byamukama, PhD. *NEMA Certified Environmental Practitioner* ***(CC/EIA/073/22) – Team Leader/Member***	Water Quality and Waste Management Specialist	
Mr. Andrew Nkambo, BSc. *NEMA Certified Environmental Practitioner* ***(CC/EIA/273/22) – Team Member***	Plant Ecologist	
Contributing Specialists		
Dr. Eng. Alex Katukiza	Overall, Team Leader for Project Coordination	
Eng. Kenneth Musabe	Water and Wastewater Expert	
Ms. Esther Nassonko	Sociologist	
Dr. Philip Nyenje	Hydrologist	
Mr. Samuel Kasozi	Hydro geologist	
Ms. Sheila Akatukunda	Faunal Studies	
Ms. Hamidah Namatovu	Occupational Health and Safety	
Mr. Kibirango Moses	GIS Expert	
Ms. Natasha Atukunda	Environmentalist	

Client's Reviewers

Name	Title
Cate Namyalo	Senior Environmental Health Officer
Maurice Madra Edema	Environmental Safeguards Specialist IWMDP
Jonan Kayima	Social Safeguards Specialist IWMDP

EXECUTIVE SUMMARY

Kikoora RGC Cluster Piped Water System is being proposed by the Ministry of Water and Environment (MWE)/Directorate of Water Development (DWD) in Kakindo (currently Kikoora) Sub County, Kakumiro District. Kikoora RGC is located in Kakindo Sub County a distance by road of 68km from the district headquarters at Kakumiro at UTM coordinates 36N 298625 East, 126679 North in Mid-Western Uganda. Adequate safe water is a pre-requisite for a healthy society, which in turn, among other factors, makes it feasible for the majority of the population to engage in meaningful socio-economic activities that would increase household income and thereby reduce poverty. The investment cost for the Water Supply and Sanitation System is approximated at **UGX 2,998,028,000 (Two Billion, Nine Hundred Ninety-Eight Million, Twenty-Eight Thousand Shillings Only)**. In Uganda, most of the rural growth areas and upcoming small towns access water from point water sources like boreholes, protected springs and shallow wells. These point water sources are in many cases characterized by low level of service, poor functionality and poor water quality in addition to diminishing water resources.

Kakumiro district is bordered by districts of Hoima to the north, Kyegegwa to the north-east, Kiboga to the east, Mubende to the south-east, Kyegegwa to the south and Kibaale to the west. Kakumiro District has an average annual rainfall in two rainfall seasons, March to May and August to November. The average temperatures are high of 22.9° C in February and low of 20.9°C in July. Kikoora is served by motorable murram roads, mains electricity supply and mobile phone networks. Based on the 2014 National Population and Housing Census, Kikoora parish had a population of 12,202 in 2,711 households. Sample size adopted was 110 households distributed in the contributing villages as provided in the Detailed Engineering Design Report (March 2022).

Kikoora RGC is one of the potable waters stressed rural growth centres in Kakumiro district. Currently, the water service level for Kikoora RGC is low and mostly from boreholes within the rural area. These boreholes are prone to contamination due to the urbanization and related pit latrine sinking. The situation is expected to become worse if no intervention is made.

This report presents the findings of an Environmental and Social Impact Assessment (ESIA) that has been undertaken at the proposed project sites and surrounding areas of Kikoora RGC Piped Water sources and other water infrastructures. One (1) borehole (DWD 53725) was sited 1.5km from the Centre with an estimated yield that has a test yield of 24m^3/h. Pumping is to be powered by 20kW solar PV system. Grid power is required to extend the borehole output to meet the Ultimate water demands
The proposed project infrastructure and facilities include the following components:

- 1no production borehole with submersible pump powered by solar system and grid power
- 1.5 km pumping main in OD110 uPVC PN16
- Pressed steel storage tank of 87m^3 capacity
- 4.3km primary distribution system in OD110 uPVC and OD90 - OD50 HDPE
- Electric submersible pump set; 24m^3/hr at 94m head
- OD80 PVC Super Heavy Duty borehole riser pipe
- 20kWp Solar Power System
- Site works, Attendants Quarters + Guardhouse

In compliance with the National Environment Act 2019, the Environment and Social Monitoring Framework (ESMF) and the National Environment (Environmental and Social Assessment) Regulations 2020, MWE undertook an Environmental and Social Impact Assessment (ESIA) and this report presents the

findings The ESIA study was conducted in consideration of the policies, legal and institutional frameworks relevant to this proposed project. Various policies and laws were reviewed in relation to the proposed project activities e.g., construction and operational requirements, environmental quality, land use, public health, occupational safety, labour standards and other legal obligations. World Bank Safeguard Policies have also been reviewed during this detailed ESIA study to ensure that the proposed development meets E&S requirements and some of the clauses that are likely to be triggered were identified and the corresponding mitigation and enhancement measures proposed in this ESIA report.

The main economic activities in the district include; Agriculture where the majority of the population is engaged. Some of the crops grown in the district include sweet potatoes, cereals, beans, coffee and matooke/bananas. Thirty-Nine Thousand Five Hundred and Eighty-Two (39,582) Households were reported to be engaged in livestock farming. According to the Uganda Bureau of Statistics, the district population is projected at 513,200 of which 261,200 are males and 252,000 females.

The key policies and legislations applicable to the project included among others:

i. The National Environmental Management Policy, 1994.
ii. National Policy on HIV/AIDS and the World of Work, 2007.
iii. Gender Policy, 2007.
iv. The Uganda National Land Policy, 2013.
v. National Policy on Elimination of Gender Based Violence, 2016.
vi. The Uganda Forestry Policy, 2001.
vii. The Constitution of the Republic of Uganda, 1995.
viii. Uganda Vision 2040.
ix. The National Environment Act, 2019.
x. The Occupational Safety and Health Act, 2006.
xi. The Land Act, Cap 227, of 1998.
xii. The Local Governments Act, 1997.
xiii. Public Health Act, Cap 281.
xiv. The Water Act Cap, 152 1997.
xv. The Employment Act, 2006.
xvi. The Workers' Compensation Act, Cap. 225.
xvii. The Road Act, Cap 358.
xviii. The National Forestry and Tree Planting Act, 2003.
xix. The Uganda Wildlife Act, Cap 200, 2000.
xx. Labour Disputes (Arbitration and settlement) Act, 2006.
xxi. Children Act Cap 59.
xxii. The Environmental Impact Assessment Regulations, 1998.
xxiii. The National Environment (Wetlands, Riverbanks and Lakeshores Management) Regulations 2000.
xxiv. The National Environment (Waste Management) Regulations, 1999.
xxv. National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999.
xxvi. The National Environment (Noise Standards and Control) Regulations, 2003.

During IWMDP Project Preparation, an ESMF and RPF were prepared that are guiding the preparation of this ESIA., The IWMDP project was prepared and approved under the World Bank Safeguards Operational Policies (OP) and its implementation is guided by the following policies: OP/BP 4.01: Environmental

Assessment, 4.04: Natural Habitats, 4.11: Physical Cultural Resources and 4.12: Involuntary Resettlement and World Bank Policy on Access to Information (2015) are triggered.

World Bank Environmental and Social safeguard policies, namely; EHS Guidelines - Water and Sanitation, EHS Guidelines - Air Emissions and ambient air quality, EHS Guidelines - Waste Management, EHS Guidelines - Hazardous Materials Management, and EHS Guidelines - Construction and decommissioning.

The relevant institutions include the Ministry of Water and Environment, Ministry of Gender, Labour and Social Development, Uganda Police Force, National Environmental Management Authority (NEMA) and the District Local Administration Structures.

In preparation of this ESIA, the following methodology was applied;

a. Review of existing secondary information relevant to the project and this included national policies, laws, regulations as well as the World Bank Safeguard Policies to key out requirements for project implementation. The review process also established the institutional framework under which the project would be implemented.

b. Field visits within the different project components' sites were undertaken to document existing baseline environmental and socio-economic aspects; and

Socio-economic survey was conducted through a combination of approaches, and these included: review of literature, use of household survey questionnaires, stakeholder consultations, Focus Group Discussions and Key Informant Interviews. The socio-economic assessment covered household and individual characteristics, livelihood activities, socio-gender risks, and administrative set-ups near the different project sites. The views of several officials/persons that might be affected directly or indirectly by the proposed project were captured using a stakeholder consultation tool.

A comprehensive stakeholder engagement was carried out during ESIA specifically with Kakumiro District Local Government Officials, Sub-County Officials and Local Community Representatives and Community members among others as detailed in Chapter

Kikoora RGC Piped Water System is envisaged to bring an end to water stress and overreliance on a few low yielding boreholes within Kakindo Sub County and neighbouring community. Further still, the project will also address the focal area of access to clean water as stipulated under the Uganda Vision 2040 and the National Development Plan III. The project also contributes towards achieving SDG *(specifically SDG 6 on clean water and sanitation)*. Several beneficial impacts envisaged will include: Improved quality of water supplied to communities; Improved quality of water supplied to communities; Provision of employment opportunities during construction and operation phases; Improved health and sanitation due to improved water quality and quantity; Improved local economies and induced development especially sourcing of raw materials for construction activities; An increase in revenue for the sub county from water project collections. The project will further, initiate the move away from the status quo of rural women and children's perpetual carrying of water on their heads from unprotected and distant point water source and allow them to engage in income generating activities and to improve the image of the women and children.

However, the ESIA findings indicate that anticipated negative impacts will be mitigated and will be limited to the project sites where construction works will be undertaken. A summary is given below of the negative impacts and are discussed in detail under Section 8.4 of this ESIA report.

Table 2: Summary of impacts of the proposed project

Environmental and Social Component	Potential Negative Impacts	Potential Mitigation Measures
Design Phase		
Groundwater Resources	Local lowering of water table levels, due to abstraction of groundwater for the water supply system.	▪ Undertake a hydrological study of boreholes to determine water table depths, borehole yields and local use of groundwater.
Groundwater Quality	The groundwater could become polluted as a result of pit latrines and indiscriminate waste disposal practices.	▪ Avoid prospecting in areas that are prone to flooding, waste disposal sites and pit latrines.
Soils	Soil erosion/damage due to survey activities and vehicle tracks. Soil contamination from oil and diesel spills.	▪ Minimize number of tracks. ▪ Use right angle intersections & use bonding. ▪ Avoid seasonally marshy areas & floodplains.
Flora	Disturbance or loss of endangered plant species or communities (terrestrial, wetland, aquatic) due to survey activities.	▪ Discourage any wanton destruction of vegetation and habitats beyond the designed project works.
Fauna	Disturbance or loss of protected/endangered animal species/communities and their habitat.	▪ Minimize vegetation clearance. ▪ Protect water & soils from pollution.
Noise	Noise generated by survey activities, especially vehicles, pump testing activities	▪ Working hours should be restricted from 7am – 6pm.
Air quality	Dust from vehicle movements.	▪ Avoid excessive vehicle movements. ▪ Limit vehicle speeds on unsurfaced tracks to 20kph.
Health and safety	Risk of accidents and ill health as a result of the project.	▪ Hold safety talks with workers before work.
Public nuisance	General nuisance such as noise, waste and dust.	▪ Minimize number of workers at site.
Construction Phase		
Land acquisition for infrastructure	The land-take would be permanent where all the project components would be constructed and temporary along the pipeline network. However, both the transmission and distribution lines would be confined to the road reserves where possible	▪ The district and local authorities in Sub County have already been engaged together with the local land lords and they agreed with communities whose land will be used for the proposed project construction. No grievances were reported and are envisaged. ▪ Compensation (where possible) to

		land owners as project affected persons.
Loss of vegetation cover and top soil	The existing vegetation and top soil will be cleared to give way to the construction process on all sites. This is likely to cause loss of habitat and disturbance to faunal communities in the affected sites but at an insignificant level.	▪ After construction, there should be landscaping and re-vegetation. The premises will be planted with vegetation/grass and ornamental trees. ▪ The water source should be fenced off to reduce on going agricultural activities around the borehole to avoid pollution entering it especially when it rains heavily. ▪ Minimize vegetation clearance by clearly demarcating work areas. ▪ Provide environmental awareness training to all employees. ▪ Rehabilitate all disturbed areas.
Increase susceptibility to Soil Erosion	Increased soil erosion is likely to occur in the vicinity of project sites during the construction of the water source points, pump stations, installation of the water pipe reticulation and other related construction works. The site earthworks will reduce soil stability and hence make the soils aggregated and more susceptible to erosion especially during the rainy season.	▪ The sites will be hoarded off to intercept any eroded material and any soil material will remain within the site. ▪ The project proponent will also ensure that proper landscaping and vegetation restoration is carried out to further reduce the possibility of soil erosion. ▪ Use proper techniques for trenching and shoring
Increased siltation of the aquatic habitats	Some of the excavated sediments from the project site and the construction spoils emanating from the excess excavated material and construction debris are likely to increase siltation especially in the nearby seasonal swamp to the motorized borehole and therefore affecting the associated aquatic habitat.	▪ Ensure that the site is at all times drained adequately and surface run off is directed appropriately to avoid water logging of adjacent area and the undulating drainage channel
Effects of Poor Solid Waste Management	Waste will be generated during the construction of the WSS. The waste stream from the construction will include cement bags, timber and pipe cuttings, empty water bottles, food remains from workers onsite and other forms of waste. If not well managed, the area could be prone to nuisance from foul smell, breeding of vermin and vectors, and lead to outbreak of diseases.	▪ Waste collection bins will be provided at strategic positions at the sites for temporary waste storage. ▪ The waste collection bins should be provided with covers to avoid spillage by scavengers and clearly coded for sorting purposes. ▪ The proponent will hire a certified waste collection company to transport the waste for final disposal to designated waste

		dumping sites by NEMA/Kakumiro DLG/ Sub County. ▪ Burning of waste on-site shall not be allowed.
Increased incidences of diseases.	The increase of people involved in the project activities is likely to increase the incidences of diseases in the area. Consequently, there will be potential risk of contracting sexually transmitted diseases (STDs) especially the Human Immuno-Deficiency Virus/Acquired Immuno-Deficiency Syndrome (HIV/AIDS) among the program workers and the local communities. This will be increased due to influx of people seeking for employment.	▪ The contractor should liaise with the District and Sub County CDO to mobilise communities during the recruitment process to reduce on influx of people who are unskilled. ▪ The contractor should emphasise equal opportunities for both men and women. ▪ The Contractor should, in conjunction with local health authorities, undertake to educate and sensitise the workforce on communicable diseases such as cholera, STDs and HIV/AIDS. ▪ Condoms must be made available to the workforce
Visual intrusion	This will mainly arise from the erection of service reservoir tanks on the high altitude (hills). In addition, visual intrusion will occur where project activities are likely to create disfigured landscapes in the project area especially where the construction activities will result in deposition of large spoils and digging of the trenches.	▪ The contractor should maintain as much as possible the existing landscapes and plant trees and vegetation to enhance the visual aspect. ▪ Rehabilitate all areas disturbed by construction and landscape with trees, grass and shrubs.
Increased accidents and occupational hazards	Implementation of the project will definitely increase volume of human and motor traffic in the project area. The increase in human and motor traffic will be aggravated by the transportation of construction materials, water pipes and other equipment required in constructing the water supply facilities. This is likely to result in a higher risk of accidents and occupational hazards occurring in the area of operation.	▪ The contractor should ensure that workers are provided with adequate personal protective wear to mitigate injuries such as gloves, helmets, overalls and gumboots. ▪ Traffic guides and signs should be utilized to avoid accidents on busy roads and junctions especially with vehicles transporting materials ▪ Fence all construction sites. ▪ Place warning signs. ▪ Enforce maximum traffic speeds to 20kph
Sourcing of Construction Materials	Sourcing of materials such as sand, gravel bricks/blocks and timber if not well regulated and controlled can have a significant impact in the points of sourcing.	▪ The Contractor should liaise with local authorities to ensure that materials such as sand and gravel are only taken from quarries and borrow pits with the necessary environmental permits.

Occupational Health and Safety Risks for the Workforce	Construction traffic, excavation machinery, blasting of rocks and trenches may pose accident risk to workers either when equipment is operated by inexperienced workers or when in a poor mechanical condition or falls into the trenches.	▪ All construction workers will be oriented on safe work practices and guidelines and ensure that they adhere to them. ▪ Training will be conducted on how to prevent and manage incidences. This should involve proper handling of electricity, water etc. and sensitization on various modes of escape, conduct and responsibility during such incidences. All must fully be aware and mentally prepared for potential emergency. ▪ Regular drills will constantly follow on various possible incidences. This will test the response of the involved stakeholders. Such drills will keep them alert and they will become more responsive in the case of incidences. ▪ Signage will be used to warn staff and/ or visitors that are not involved in construction activities of dangerous places.
Social Misdemeanour by Construction Workers	▪ While most workers may originate from the local community where they have families, there might be others from distant places and working away from their families. With some disposable income to spend, this might induce illicit sexual relationships, with attendant risk for spread of HIV/AIDS. ▪ Labour influx in the project community such as increase in irresponsible activities that may increase HIV/AIDS due sexual relations between project workers and the local community; workers taking advantage of young girls in the community due to high poverty levels and vulnerability, teenage pregnancies and dropping out of school etc. ▪ Violence Against Children such as potential use of child labour; sexual relationship with underage children, teenage pregnancies, school drop outs etc.	▪ Framework (responsible staff, action plan, etc.) to implement during project execution. ▪ A sensitisation programme for the would-be affected local communities will be conducted prior to commencement of and during the project implementation. ▪ A code of conduct (appropriate to behaviours in workplace and with respect to relations with local community) will be developed and approved by MWE which will be signed by all workers on the project. ▪ Local workers will preferentially be employed, paid directly through their banks and access to bars by workers from outside the project area in the local communities controlled. ▪ All construction workers shall be

	▪ Conflict in the community/families (social cohesion and disruption) due to project workers engaging in sexual relationships with married women in the community etc.	orientated and sensitized about responsible sexual behaviour, GBV, Violence Against Children, HIV/AIDS etc. in project communities. ▪ Contractor(s) will maintain a complaints redress mechanism for all complaints that will arise from the interaction between construction workers and the communities within the project sites/areas including a record of how these complaints have been addressed.
Archaeological / Historical Sites	Throughout the consultations with the locals and local leaders, no known archaeological or historical sites exist on the proposed project routes, and proposed construction sites. Therefore, no impacts on any features of importance to national heritage are expected.	▪ The Contractor shall ensure that key members of his staff are briefed. Any such features that may be found that were not apparent on surface investigation will be reported by the project management and appropriate procedures followed to hand them over to the authority responsible for national heritage and antiquities.
Groundwater Quality	The groundwater could become polluted as a result of construction activities, pit latrines and indiscriminate waste disposal practices.	▪ The borehole should be covered and sealed so that dirt, water, sand and other debris cannot fall in. ▪ The boreholes should have concrete aprons around their base to prevent dirty water seeping back into the hole. ▪ Do not develop pit latrines close to boreholes. ▪ Dispose of all wastes in an approved disposal site.
Fauna	Disturbance or loss of protected/endangered animal species/communities and their habitat due to construction activities (noise, dust, fumes, pollution, vehicles)	▪ Minimize vegetation clearance. ▪ Protect water resources from pollution. ▪ Protect soils from contamination. ▪ Rehabilitate all disturbed areas.
Operation Phase		
Water quality and pollution	The quality of water recommended is that which is physically, chemically and bacteriologically safe for human consumption. When not thoroughly treated, water could be a source of water	▪ The borehole should be covered and sealed so that dirt, flooded water, sand and other debris cannot fall in. Transmission and distribution pipes should also be

	related diseases which could affect the project communities, thereby causing an epidemic in the area. Transmission of water can also result into pollution and pollution entering the boreholes	covered underground to reduce exposure. ▪ The boreholes should have raised concrete aprons around their bases to prevent dirty water seeping back into the holes. ▪ The drilled borehole areas should be raised well-head by building earthworks to prevent the flooded water, dirt and other debris to accumulate around it
Water quantity and yield	This could be due to declining groundwater recharge and over pumping. The project sites are prone to suffering from rapid land use change (deforestation, soil erosion, etc.) thus the recharge of the ground water supplying the borehole may be affected in the long run.	▪ Get involved with Water source catchment protection and management planning that could improve land management and restore groundwater recharge. ▪ Encourage contour ploughing, mulching and other agricultural practices that increases soil water retention and percolation into the underlying aquifer. ▪ Reduce the amount of water being taken – if demand in the area is growing then look at developing new water sources. ▪ Keeping records of how much is being pumped (either volumes or number of hours for which the pump is being used per day). Find out if sudden drops in level correspond to pumping activity.
Water Supply System failure	Insufficient cost/funding for operation and maintenance would lead to poor maintenance of the system which eventually could lead to frequent breakdowns of the water supply system and consequent shut down, which further could require major and costly rehabilitation. Other sources of failure in the water system could be due to sabotage (possibly by the water vendors who envisage loss of livelihoods), illegal connections which could result in decreased water pressure, and vandalism (theft of water system parts)	▪ Payment for water supply services is the only way to keep the service running continuously and therefore tariffs would be designed to ensure financial viability. Cost recovery would be achieved through service fee payments. ▪ Put in place a water user committee to oversee the operations of the water system. ▪ Fence off the areas like water abstraction points, pump houses, water storage reservoir tanks and other water supply structures like the community taps like kiosks to mitigate trespass and sabotage

Water pollution due to cutting of the pipes	Digging and construction of water facilities within close vicinity/on the water transmission network could result in pollution and loss of water	▪ The developer should hire services of security guards to monitor and guard the water supply system facilities. ▪ Sensitization and awareness about the dangers of vandalizing the water supply system facilities should be done especially by the local leaders. ▪ Legal and applicable punitive measures like arrests and prosecution should be taken to those caught vandalizing the water system facilities in order to curtail and to serve as an example to those who would want to engage themselves in such acts.
Noise levels from Generators	Using of generators to boost the pumping of the water at the pumping stations may lead to moderate noise levels around the project area	▪ Installation of solar system instead of generator ▪ Service the generators regularly to minimize on the noise. ▪ Switch on generators only for few hours to boost on the pumping hours but always use the solar systems
Decommissioning Phase		
Surface Water Quality	Pollution of water bodies from erosion of unconsolidated materials, contaminated soil, wastes (solid and liquid), etc. As a result of demolition activities.	• Rehabilitate all areas e.g. grass/tree planting. • Take samples of the runoff water into the receiving water body nearby and ensure free pollution. • Remove all contaminated soil identified and dispose of it in an approved site. • Close any waste disposal facility on site and make provision for drainage in such a way as to prevent future pollution.
Flora	Disturbance or loss of plant species or communities (terrestrial, aquatic) due to dust fall-out onto leaves and soil, dump erosion.	• Rehabilitate or stabilize all cleared areas using indigenous vegetation until handover of the site.
Fauna	Disturbance or loss of animal species/communities and their habitat due to the lack of rehabilitation etc.	• Rehabilitate or stabilize all cleared areas using indigenous vegetation where possible.
Soils	Re-use of soils in rehabilitation and re-instatement of pre-project capability.	• Replace subsoil and overburden first and then cover with saved

		topsoil. Do not use heavy equipment to replace topsoil because this can cause compaction.
	Soil erosion from denuded areas and demolition activities.	• Maintain erosion protection works. • Rehabilitate or stabilize all disturbed areas.
Topography	Reinstate the topographic profile.	• Backfill, contour and landscape.
Air quality	Dust from un-rehabilitated sites and demolition activities.	• Avoid dusty activities e.g. loading and dumping on windy days & monitor dust emissions.
	Odors from waste dump.	• Avoid activities that can lead to pilling of wastes in the project area. • Dispose of all the wastes in gazetted sites
Noise and vibration	Noise generated by demolition equipment and earth moving equipment	• Prescribe noise reduction measures if appropriate e.g. restricted working and transport hours and noise buffering.
Health and safety	Risk of accidents and ill health as a result of the project	• Fence all unsafe and dangerous areas & monitor environmental health (air quality, water quality).
Aesthetic and amenity values	Improvement of the visual impact of the site on scenic views.	• Rehabilitate with trees, grass and shrubs where possible. • Consult with the local community and tourist industry.

No physical relocation issues are anticipated, however, a RAP has been prepared to address all compensation issues that are anticipated and an Environment and Social Management Plan (ESMP) has also been presented in this ESIA report to ensure positive impacts are enhanced while negative impacts are avoided and or mitigated.

This ESIA report provides NEMA with the necessary information required for approval of the E&S aspects of the project, as well as providing guidance to MWE to improve the project design and implementation, in compliance with the proposed project ESMP. Therefore, the proposed project is environmentally and socially feasible for implementation provided the recommended mitigation and monitoring measures are implemented, and the proposed implementation arrangements are upheld.

1 INTRODUCTION

1.1 Background

The Government of Uganda (GoU) received credit from the World Bank (WB) towards implementation of the Integrated Water Management and Development Project (IWMDP) under the Ministry of Water and Environment. 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 project will also contribute to the achievement of National Development Plan III (NDP III) objectives, Project Development Objectives (PDO), Vision 2040 and Sustainable Development Goals. Under the IWMDP, funds have been provided for ESIA, RAP and SPPs.

The Project will support WSS infrastructure investments in small towns located primarily in Uganda's Northern and Eastern regions and in RGCs in the country's Central and Midwestern regions. The water resources activities are designed to consolidate IWRM in overall water sector planning and infrastructure development. Specific water resources measures will be conducted in the Upper Nile and Kyoga WMZs where Catchment Management Plans (CMPs) have been prepared for sub-catchments and where most of the WSS infrastructure investments proposed under this Project are located. The Project will integrate infrastructure investment, water source and catchment protection measures, and comprehensive sanitation planning to ensure sustainability and increased resilience to climate change and variability. The Project will provide Technical Assistance (TA) aimed at consolidating water sector reforms to support efficient and effective service delivery models for small towns and RGCs.

Component 1 will support Water Supply and Sanitation in Small Towns and Rural Growth Centres and Support to Districts Hosting Refugees. Sub- Component 1.1 Support to Small Towns and Rural Growth ~~Centres (RGCs) will support activ~~ities designed to improve the sustainable provision of water supply and sanitation services in small towns and RGCs in the Recipient's territory. The sub-component targets the districts of Buyende, Kaliro, Namayingo, Mayuge, Jinja, Namutumba and Kamuli in Eastern Uganda; Mityana, Mubende, Kassanda, Kyankwanzi, Nakasongola, Rakai, Lyandonde, Sembabule, and Mukono in Central Uganda; and Kagadi, Kakumiro, Kiruhura, Kazo, Kisoro, Kyegegwa, Kyenjonjo in Western Uganda.

In order to address the water supply and sanitation gap in the above districts, the then 32 solar powered piped water supply systems now revised to 26no. 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 selected RGCs. The main components of the large solar piped water systems will include; a production well as a water source, a raw water pumping main to a reservoir, an elevated storage reservoir on a steel tower, Solar Pumps, Solar Panels, chlorine dosing unit, pump motor, pump house, distribution network, and service connections. The project will also support water sources protection activities in all the project areas.

The Directorate of Water Development under the Ministry of Water and Environment as an implementing agency of the Client, applied a portion of the proceeds of this credit for the Consultancy Services for feasibility studies, detailed designs and environmental impact assessments for the Kikoora RGC Water Supply and Sanitation System with geographic UTM coordinates 36N 298625 East, 126679 North in Mid-Western Uganda.

MWE specifically the Rural Water and Sanitation Department (RWSD) under the Directorate of Water Development (DWD) therefore has carried out an ESIA of the proposed construction of the piped water supply and sanitation system for Kikoora Rural Growth Centre in Kakindo Sub-County, Kakumiro District in accordance with the requirements of the National Environment Management Authority (NEMA) for approval before implementation.

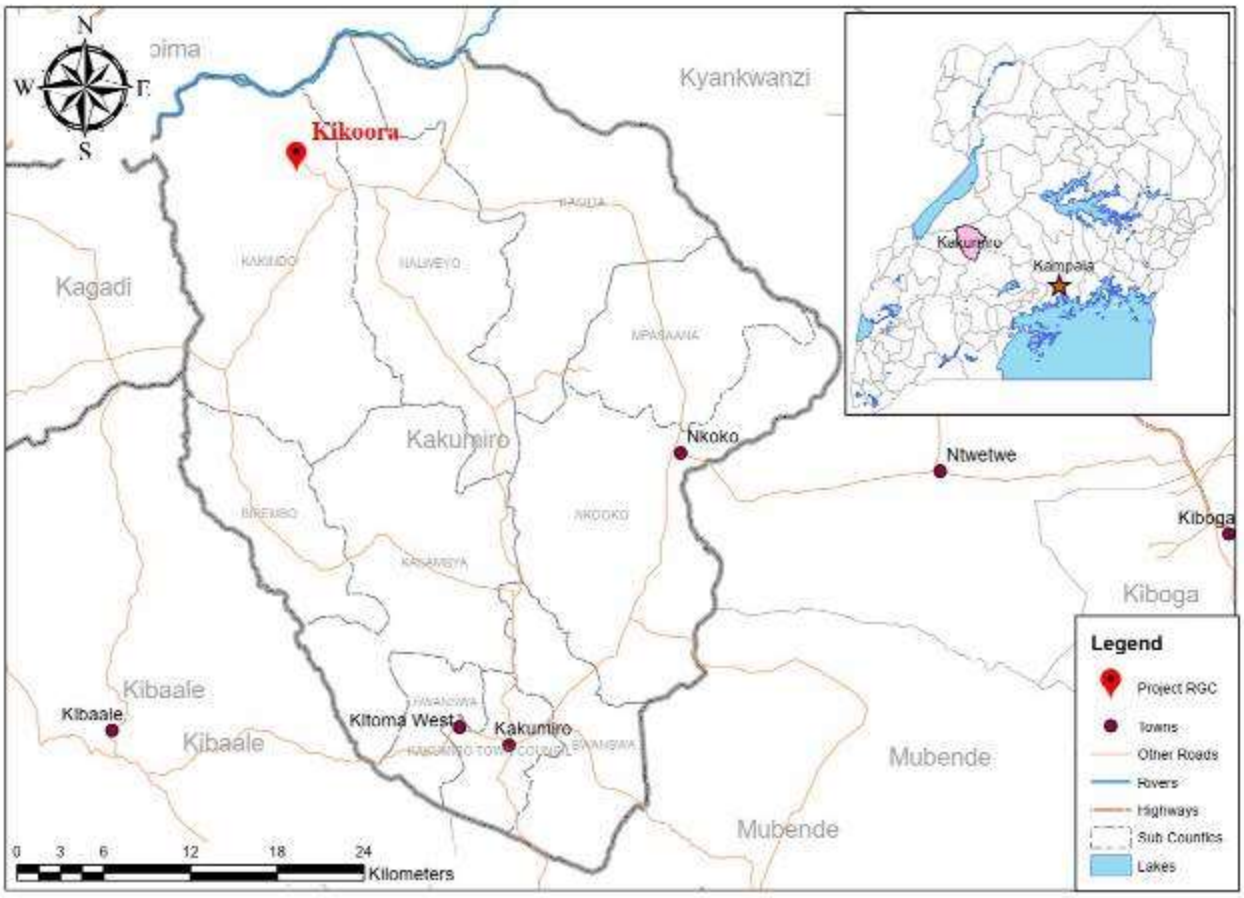


Figure 1: Location of Kikoora RGC WSS in Kakumiro District

1.2 Justification of the Project

According to the Socio-Economic Survey (SES) conducted in the project area as part of the ESIA study, the average size of households in Kikoora RGC stood at 3.2 (ESIA SES study, 2022). The majority of the respondents were male (89.1%) and female (10.9%. Boreholes constitute 74.5% as the main water source for the surveyed population followed by piped water at 15.5% and 10% from ponds/dams. The nearest source of water being in a close range of less than a kilometer while the furthest being between 2-3km and much as water is very close to people, 99% of the respondents indicated that they buy water and, on many occasions, its unavailable. The overwhelming majority (99%) of the respondents had a pit latrine whereas the 1% used the one communal pit latrine or resorted to nearby bushes or used neighbours' pit latrines. There was no water borne and flush toilets within the project area. The households without any form of sanitation and use neighbors or communal pit latrines is mainly due to the expenses and difficulty involved in the construction of sanitation facilities. Some of the soils in the project area are loose and often collapse making the difficult and more expensive. This 1% poses a risk to contamination of ground water due practicing open defecation.

Implementation of this project, therefore, will relieve women and children who are mainly involved in collection of water from being exposed to hazards related to walking long distances to fetch water from ponds/dams, provide safe and clean water thus reducing occurrences of water borne disease and increase productivity of the people of Kikoora RGC hence improving the quality of life among the population.

The increasing population in the proposed project area has resulted in the need to increase on the accessibility and provision safe water and sanitation services for the local communities. In the view of the above, MWE, RWSSD under DWD, is implementing a project whose overall objective is to sustainably increase access to safe water supply and improve on sanitation to the communities of Kikoora RGC in Kakumiro district thereby contributing to Sustainable Development Goals (SDGs) 6 and 12, the PDO, NDPIII and Vision 2040.

1.3 Project area

Kikoora Rural Growth Centre (RGC) is located in Kakindo Sub County, a distance by road of 68km from the district headquarters at Kakumiro at UTM coordinates 36N 298625 East, 126679 North in Mid-Western Uganda as shown in figure 1, 2 and 3. Kakumiro is 180km by road from Kampala. Kakumiro district is bordered by districts of Hoima to the north, Kyegegwa to the north- east, Kiboga to the east, Mubende to the south-east, Kyegegwa to the south and Kibaale to the west. Kakumiro District has an average annual rainfall in two rainfall seasons, March to May and August to November. The average temperatures are high of 22.9° C in February and low of 20.9°C in July. Kikoora is served by motorable murram roads, mains electricity supply and mobile phone networks. There are electricity mains in Kakindo and plans are underway to extend a power line under the Rural Electrification programme.

The proposed supply area comprises three (3) parishes namely Kikoora, Nyamaligita and Kigoma and six (6) villages of Kikoora A, Kikoora B, Rutooma, Nyamaligita, Businge and Betania. The water source to be developed is based on borehole DWD 53725 that has a test yield of 24m^3/h. Pumping is to be powered by 20kW solar PV system and grid power is required to extend the borehole output to meet the ultimate water demands.

1.4 ESIA Requirements

The proposed construction of a water piped system in Kikoora RGC falls under Schedule 5 of the National Environment Act No.5 of 2019, which requires mandatory ESIAs specifically under Utilization of water resources and water supply (No. 4) and abstraction or utilization of ground water (b) and support facilities (k) (i.e., ground water resources including water abstraction). The proposed intervention is in the category of projects requiring mandatory ESIA to be submitted to National Environment Management Authority (NEMA) for review and clearance before construction. It is in this regard that in accordance with the National Environment Act (NEA), the Scoping/Terms of Reference (ToR) were prepared and submitted to NEMA for consideration, which paved way for undertaking a full ESIA for the project. A copy of the approval letter from NEMA has been attached in Annex 1.

In preparing this report, particular attention was paid to the issues specified in the EIA Regulations of 2020. This ESIA presents information required for the protection of the environment and affected communities during the design, construction and operation stages of the proposed project. This will enable NEMA and other lead agencies take a decision on whether to approve the progress of the project in light of the identified E&S impacts or not. Specific attention was also paid to the Environmental Impact Assessment Guidelines and the specific EIA guidelines for water sector for Uganda.

In compliance with World-Bank Operational Safeguards Operational Policies (OPs), The ESMF was prepared to provide guidance to the implementing agency (MWE) on the E&S screening and subsequent assessment of subprojects required during implementation such as the preparation of this ESIA, including the relevant subproject specific ESMP that must be developed in compliance with Bank safeguards policies. The RPF was prepared because the exact subproject sites were unknown at the time and

provided a guiding framework to help MWE in identifying and managing potential project impacts and risks on project affected persons/communities associated with loss of land/livelihoods (physical or economic displacement/resettlement), property, cultural resources and/or restrictions on land use (RAP preparation) during project implementation. Overall, the project is likely to trigger five (5) World Bank Operational Policies which included Environmental Assessment (OP/BP/GP 4.01), Natural Habitat (OP 4.04), Physical Cultural Resources (OP 4.11), Involuntary Resettlement (OP/BP 4.12), and Forests (OP 4.36).Safety of Dam (OP 4.37) and International Water Ways (OP 7.50) will not be triggered by the project. In addition, safeguards implementation should comply with the requirements of Investment Project Financing (IPF) and the World Bank Group Environmental, Health, and Safety (EHS) Guidelines for general Construction and Decommissioning as well as the EHS guideline for Water and Sanitation.

1.5 Objectives of the ESIA

This ESIA report has been prepared following Uganda's and the World Bank's Environmental and Social requirements, sets out to identify potential environmental and social impacts of the proposed Kikoora RGC Water Supply and Sanitation Project, with a view of informing the final engineering design and recommending mitigation measures to be implemented during construction and operational phases of the project. The main objective was to carry out an ESIA for the proposed construction of Kikoora RGC piped water supply system in Kikoora Rural Growth Centre in Kakindo Sub-County, Kakumiro district. Specific objectives include the following:

- To study the baseline environmental conditions of the project areas and their surrounding and to assess how these conditions will be affected by the proposed development.
- To identify and assess the likely impacts (positive and negative) of the proposed project and to recommend feasible measures to avoid, minimize or mitigate the negative impacts.
- To develop an environmental and Social Management Plan/Mitigation plan for the identified negative impacts and an environmental monitoring plan for project implementation.
- To compile an Environmental and Social Impact Statement for submission to NEMA for consideration and approval.

This ESIA focused on the following scope for the proposed project components:

- Pump stations
- Storage reservoir
- Guard house
- Water office
- Sump and Booster station
- Pipeline network

Section 3.2 on project description and design elaborates the details of each of the above-mentioned project components assessed under the scope of this ESIA. The proposed public waterborne toilets will not require an elaboration of the ESIA in reference to the thresholds provided under Schedule 5 of the National Environment Act No.5 of 2019 for sanitation facilities.

1.6 Details of Developer and Investment Cost

The project is to be implemented by MWE. The investment cost of the project is approximately Uganda Shillings Two Billion, Nine Hundred Ninety-Eight Million, Twenty-Eight Thousand only **(UGX 2,998,028,000).** The address/contact person of the Developer is presented below:

Permanent Secretary
Ministry of Water and Environment,
Headquarters, Plot 3-7, Kabalega Crescent, Luzira,
P. O. BOX 20026, Kampala, Uganda

1.7 Response to the NEMA approval Comments on the ToR

SN.	REQUIREMENTS	COMMENTS
1.	Carry out comprehensive consultations with all the relevant key stakeholders including, the Kakumiro District Local Government, the Occupational Safety and Health Department (OSHD) in the Ministry of Gender, Labour and Social Development and the Local communities in the neighbourhood. The views of the stakeholders consulted should be well documented and appended to the ESIS.	Consultations were made as evidenced under Chapter 7 and Annex II
2.	Provide detailed environmental baseline information and data on the project area that may be impacted upon by the project activities; as well as, coloured photographs depicting the current status of the project area.	Addressed under Chapter 5 of the Environment and Socio-economic baselines
3.	Design/Develop robust practical strategies to protect the integrity of the existing water bodies within the neighbourhood of the proposed project location. This should be clearly documented in the ESIA report.	Addressed under Chapter 8 of the Impact Analysis and Mitigation measures proposed
4.	Provide clear authentic copies of land ownership/ lease agreement documents.	Attached as Annex III
5.	Include in the ESIA report, comprehensive analysis of alternatives/options to the selected project design, technology, location, among other aspects.	Addressed under Chapter 6 of this Report
6.	Indicate the actual (investment) cost; including a copy of a certificate of valuation issued by a qualified and certified valuer/quantity surveyor, in accordance with regulation 18(1) and Schedule 5(3f) of the National Environment (Environmental and Social Assessment) Regulations, 2020.	Addressed under Chapter 1 section 1.8 of this report.
7.	Consider any other critical environmental concerns that were not initially foreseen during the preparation of the Scoping Report and TOR, and include an evaluation of such concerns, in the ESIA report.	Addressed as required

1.8 Structure of the report

This ESIA report is concise and limited to the significant environmental issues. It focuses on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting the data. The report contains, but not limited to the following major contents:

1) Cover Page (Title of the proposed project, Location, Name, Address and information of the developer)
2) Table of content

3) Declaration by ESIA team and their details
4) List of acronyms
5) Executive Summary
6) Introduction
7) Policy, Legal and Administrative/Institutional Framework.
8) Description of the Proposed Project.
9) Description of methodology and techniques used in the assessment and analyses of project impacts,
10) Baseline conditions of the physical, biological and socio-economic environment of the project area, including results of relevant studies and other geophysical and geotechnical studies.
11) Description/Assessment of the potential Environmental and social impacts of project activities.
12) Analysis of Alternatives.
13) Potential Environmental and Social Impacts and Mitigation Measures.
14) Environmental and Social Management Plan (ESMP) matrices detailing measures for addressing potential negative environmental and social impacts of the project. In addition, the ESMP should clearly identify institutional arrangement, roles, responsibilities, implementation schedules and costs in addressing the mitigation measures proposed in this ESIA, including capacity building requirements; and
15) Propose an E&S Monitoring Plan with clear monitoring indicators and institutional roles to be used in tracking the implementation and compliance of the proposed mitigation measures;
16) List of References.
17) Appendices:
    - Approved Scoping Report/Terms of Reference
    - Land ownership documents
    - Records of Stakeholder meetings
    - Data and Unpublished Reference Documents.
    - Map, drawing and pictorial complement, especially to convey information on the project affected area and proposed project activities
    - Chance Finds Procedure
    - Grievance Redress Mechanism.

2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

Key legislation governing an ESIA study in Uganda includes the National Environmental Act (NO. 5 of 2019) of the laws of Uganda and the Environmental and Social Assessment Regulations, S.I. No. 143 of 2020. The National Environmental Act established NEMA and entrusts it with the responsibility to ensure compliance with ESIA process and procedures in planning and execution of development projects. The procedures require that a project proponent prepares an ESIA report with a clear assessment of relevant potential impacts, based on Terms of Reference (ToRs) developed from a scoping exercise. This requires that the ESIA addresses potential direct and indirect socio-environmental impacts during the pre-construction, construction, operation and decommissioning phases and an environmental and social management plan (ESMP) has also to be prepared.

Policies, legal and institutional framework considered relevant to this proposed project are discussed in this section. Various laws here reviewed relate to minimum acceptable construction, operational requirements, environmental quality, land use, public health, occupational safety, labour standards and international legal obligations.

2.2 Policies relevant to the Proposed Project

Table 3 below presents the Policy framework related to the project

Table 3: Policy framework related to the Project

Policy	Goal	Relevancy
National Environment Management Policy, 2014	The overall policy goal is sustainable development which maintains and promotes environmental quality and resource productivity for socio-economic transformation. The Policy provides a system of Environmental Impact Assessment (EIA) and environmental monitoring so that adverse environmental impacts can be foreseen, eliminated or mitigated.	Environment and development are interrelated, and this policy requires that environmental aspects are considered in all development projects such as the construction activities. Therefore, this ESIA study has been conducted to take into consideration any adverse social and environmental impacts of the construction activities of the proposed Kikoora RGC piped Water Supply System.
The National Water Policy, 1999	To manage and develop the water resources of Uganda in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders.	Water abstraction permits should be obtained from DWRM before operation phase. Water source protection measures have been proposed under the ESMP and full WSPP will also be prepared as part of the assignment and should be implemented to ensure safe water quality and quantity.
The National Gender	Provides a framework and mandate for all stakeholders to address	This policy would especially apply in the recruitment

Policy, 2007	and implement the gender imbalances within their respective sectors.	process of labour, both during construction and operation phase. Men and women should have equal opportunities for available jobs. This policy also requires provision of a work environment that is safe and conducive to women, as it is for men, considering gender-disaggregated differences and vulnerabilities.
The Occupational Health and Safety (OHS) Policy, 2006	This policy seeks to: Provide and maintain a healthy working environment; Institutionalize OHS in the power-sector policies, programs and plans; and contribute towards safeguarding the physical environment. The OHS Policy also takes into consideration the Health Sector Strategic Plan, all of which aim to improve the quality of life for all Ugandans in their living and working environment.	This policy will be especially relevant for OHS of construction crews and subsequently, operation and maintenance personnel. The policy will also have relevance in mitigation measures that protect the public from health and safety impacts as a result of project construction and subsequent operation and maintenance activities.
The Environmental Health Policy 2005	The policy provides a framework for the development of services and programs at National and Local Government levels that establish the environmental Health priorities.	Analysis of water quality was done at the design stage and during the pump testing where the water quality analysis report was prepared. The results of the analysis have been used and are presented under the Section on Water Quality as part of the baseline information.
The National Land Policy, 2013	The goal of this Policy 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". One of its objectives is to ensure sustainable utilization, protection and management of environmental, natural and cultural resources on land for national socio-economic development.	By undertaking an ESIA for the proposed project, the developer is ensuring planned and environmentally friendly infrastructure development. Enhancement and mitigation measures should be implemented by the developer and the contractor(s) to ensure that all land use practices conform to land use plans and the principles of sound environmental management such as biodiversity preservation, soil and water protection, conservation and sustainable land management.
The National Health Policy, 2010	To reduce mortality, morbidity and fertility, and the disparities therein.	Contribute to the reduction of water borne diseases thereby improving on the health of communities, especially the girl child and mothers who are mainly involved in collection of water.
Uganda National Climate Change Policy, 2015	The overarching objective of the policy is to ensure that all stakeholders address climate change impacts and their causes through appropriate measures, while promoting sustainable	ESIA promotes the wise use of water resources to minimize harmful effects to the environment and water resource monitoring. It promotes and strengthen the

	development and a green economy including integration of climate change issues into planning, decision making and investments in all sectors.	conservation and protection against degradation of watersheds, water catchment areas, river banks and water sources in order to increase their resilience to climate change impacts.
National Policy on HIV/AIDS and the World of Work, 2007	To ensure HIV/AIDS is addressed in the workplace, the policy encourages employee awareness and education on HIV/AIDS. To protect the infected and affected persons from discrimination, employers are required to keep personal medical records confidential. Employees living with, or affected by, HIV and AIDS, and those who have any related concerns, are encouraged to contact any confidant within the organization to discuss their concerns and obtain information.	This policy is relevant to the project if implementation of proposed construction activities leads to influx into the project area by people seeking construction jobs and indulging in prostitution or irresponsible sexual fraternization associated with HIV/AIDS risk. The provisions of this policy are expected to be fulfilled by the construction contractors or their subcontractors, especially in regard to having an in-house HIV Policy, worker sensitization and provision of free condoms.
National Orphans and other vulnerable children's Policy, 2004	The goal of the Policy is full development and realization of rights of orphans and other vulnerable children. The policy provides support to vulnerable children and families such that their capacity to sustain themselves is strengthened; and provides residential care for orphans and other vulnerable children as a last resort	The project Developer (MWE/DWD) and the contractor(s) including their sub-contractor(s) will ensure that the project activities do not compromise or in any way affect the lives and livelihood of all the vulnerable groups like the orphans and children in general during the project implementation
National Equal Opportunities Policy, 2006	The National Equal Opportunities Policy provides a framework for re-dressing imbalances, which exist against marginalized groups while promoting equality and fairness for all. With a goal of: providing avenues where individuals and groups' potentials are put to maximum use by availing equal opportunities and affirmative action.	The Water supply projects come along with a lot of opportunities including service delivery, trainings and employment. The project will avail equal opportunities and affirmative action such as employing both men and women including marginalised groups like disabled people who are local residents during construction and operation phases, sourcing of construction materials locally etc.
The National Child Labour Policy 2006	The policy provides an enabling environment for the prevention, protection and elimination of child labour. It is intended to establish guiding principles in Uganda's effort to eliminate child labour and priorities for government and stakeholder action. This policy is based on recognition that all human beings, adults and children, have rights. Children by virtue of their age and needs are entitled to specific rights, including education, health, survival	The project management including all the contractors will ensure that all employees are above 18years and not school going students or pupils.

	development, protection and participation	
The National Policy for Older Persons 2009	The policy seeks to achieve equal treatment, social inclusion and empowerment of older persons. The values of the policy are: i. Equity; Fairness, fair play, impartiality and justice in the distribution of benefits and responsibilities in society. ii. Respect; Views, opinions and rights of older persons will be upheld while they are also expected to exhibit high sense of self- respect. Commitment; The willingness to work hard and give all the energy and time to meet the vision. iii. Accountability; All stakeholders are expected to fulfil their obligations towards one another iv. Equality; All older persons will be accorded same opportunity and rights as other individuals.	Persons above 65 years old are categorized as old. These should be incorporated in the compensation process where necessary and will be treated with Equity and respect; all their views will be considered regarding the execution of the project.
The National Policy for the Conservation and Management of Wetland Resources, 1995.	The goal of this Policy is to curtail the rampant loss of wetland resources and ensure that benefits from wetlands are sustainable and equitably distributed. Wetlands acting as sources of wastewater treatment should be fully protected. This policy outlines guidelines for wetland resource developers.	The proposed project is aimed at Conservation and Management of Wetland Resources within the catchment area. The designs will adhere to the principles of sustainability such that areas within wetlands are left intact, as much as possible.
The National Policy on the Elimination of Gender Based Violence in Uganda, 2019	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. The common forms of Sexual Gender Based Violence (SGBV) include; sexual advances, assault, rape, fraud and verbal abuses.	The Contractor should have a sexual harassment policy that is communicated to all workers as well as continuous sensitization on GBV, risk and prevention mechanism.
Uganda Vision 2040	Water Development is stated as one of the opportunities that can foster the socio-economic transformation of Uganda from a peasant to a modern and prosperous country.	The project will increase access to safe potable water thus contribute to improved health, sanitation and hygiene.
National Development Plan III	The plan focuses on increasing access to safe water, sanitation and hygiene levels, functionality of water supply systems and promoting catchment based integrated water resources management during the planning process in order to achieve	The project focuses on providing access to safe and clean water, increasing the functionality of the water supply systems within the Rural Growth Centre and the Sub-County.

	the middle income status by 2025.	
Sustainable Development Goals (SDG)	The 2030 agenda for Sustainable Development envisions a world where we reaffirm commitments regarding the human right to safe drinking water and sanitation and where there is improved hygiene.	The project will specifically support SDG 6 on ensuring clean water and sanitation is attained. This focuses on ensuring availability and sustainable management of water and sanitation for all.

2.3 Laws relevant to the Proposed Project

Table 4 below presents the Legal framework related to the project

Table 4: Legal framework related to the project

Legal Framework	Relevancy	Requirement
The Constitution of the Republic of Uganda; 1995; amended as at 15th February 2006, Government of Uganda.	The State shall promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations. The Constitution is the cardinal law in Uganda upon which all environmental laws and regulations are founded. The constitution provides some relevant social dimensions such as advancement of women (Article 33: rights of women); protection of children (Article 34 on the rights of children); persons with disabilities (Article 35: protection of People with Disabilities - PWDs); and access to information (Article 41: right of access to information).	All environmental impact actions of the project are therefore meant to conform to the broader objectives of the Constitution which requires a healthy environment for all citizenries. ESIA report has been prepared for NEMA's consideration before implementation of the project. Therefore, this Project will be implemented in a manner that will incorporate the appropriate safeguards for environmental and social issues, especially land take. Any land required for the implementation of the construction activities will be obtained within the confines of the law, after a Resettlement Action Plan (RAP) will be conducted where possible.
The National Environment Act No. 5 of 2019	This act provides for various strategies and tools for environment management, which also includes the ESIA for projects likely to have significant environmental impacts. The Third Schedule of the National Environment Act, No. 5 of 2019 lists projects to be considered for environmental impact assessment. Under that categorization, most water resources related projects fall under two ground and surface water resources.	The Act governs and guides environmental management in Uganda. This ESIA is prepared to conform to the Act's requirement that projects likely to have significant environmental impact undertake an ESIA before they are implemented. ESIA report has been prepared for NEMA's consideration before implementation of the project.
The Water Act, Cap 152 and The Water Resources	Management of water resources Regulation and issuing of water use, abstraction and wastewater discharge permits; Prevention of water pollution. Managing and monitoring and	Water abstraction permit should be obtained from DWRM before operation phase. Water analysis was done during the design stage and pump testing where a water quality

Regulations, 1998	regulation of water resources	analysis report was prepared. Water analysis was done under ESIA and results (see Annex VII) compared to those obtained at design stage and national standards for portable water. The quality of treated water will be regularly monitored to ensure it meets portable water standards and these results have been used during this ESIA and results compared to those of national standards for portable water.
The Land Act, Cap 227	Section 74 (i) states that where it is necessary to execute public works on any land, an authorized undertaker shall enter into mutual agreement with occupier or owner of the land in accordance with Act.	These Land tenure systems will be important during resettlement planning. The extent of works designed to ensure the construction of the Kikoora RGC WSS will necessitate land take in the Project Area. Any land required for the implementation of this Project will be acquired in accordance with the provisions of this Act and Bank Safeguards Policies.
The Land Acquisition Act, 1965	This law elaborates on land acquisition procedures for early entry into the delineated land as compensation matters are finalized with the objective of timely Project delivery. Reference to this Act has been made while proposing strategies for addressing unreasonable speculative persons who may jeopardize Project delivery by demanding exorbitant compensation.	MWE will issue Notices of Entry at the start of RAP disclosures.
The Occupational Safety and Health Act, 2006	Provision of Occupation Health and Safety of workers and Inspection of places of works. This Act requires that employers provide and maintain safe working conditions and take measures to protect workers and the public from risks and dangers of their works, at his or her own cost (Section 13). Employers with more than 20 workers should prepare and often revise a written policy with respect to safety and health of workers (Section 14). The contractor therefore is obliged to provide employers with washing facilities, First Aid, facilities for meals and safe access to workplaces	An ESMP has been prepared and the Contractor will ensure the workplace is registered under the Ministry of Gender, Labour and Social Development (MoGLSD) under the Department of OHS. The construction activities will require workers during the construction, and operation and maintenance phases. Therefore, the Act requires that MWE and all contractors must ensure that workers have a safe working environment at all times and that their health is not at risk as a result of the working environment.
The Workers' Compensation Act,	This requires compensation to be paid to a worker injured or acquired an occupational disease or has been harmed in any	This Project will require workers during construction, operation and maintenance phases. Any injury or illness resulting from Project related activities will be subject to conditions of the Workers' Compensation Act. Kakumiro

2000	way in the course of his/her work.	District Labour officers will also be involved in ensuring compliance of the Contractor's' with labour laws. The developer shall ensure that all contractors and sub-contractors provide personal protective equipment (PPE) to employees to minimize accidents and injuries and ensure workers safety onsite.
The Physical Planning Act, 2010 The Physical Planning (Amendment) Act 2020	Section 37 requires an EIA permit for developments before they are implemented. It states: "Where a development application related to matters that require an environmental impact assessment, the approving authority may grant preliminary approval subject to the applicant obtaining an EIA certificate in accordance with the National Environment Act". Section 2A of the Amendment provides a right to clean and health environment. And every Ugandan has a duty to create, maintain and enhance a well-planned environment. Any result of act or omission by any person likely to breach a physical development plan or physical planning standard report to relevant authorities or file a civil suit against any person whose act or omission has breached or likely to breach a physical development plan or physical planning standard.	MWE shall use established guidelines to acquire land and compensate where possible for acquired lands, as well as safeguarding the natural environment, in line with the provisions of this Act. Where necessary RAP will be prepared for the Water transmission lines in fulfilment of the above provisions before construction activities are implemented.
The Public Health Act, Cap 281	The Public Health Act aims at avoiding pollution of environmental resources that support health and livelihoods of communities. It gives local authorities powers (Section 103) to prevent pollution of watercourses.	The disposal of waste from the proposed project will have to be appropriately managed so as to prevent risk to public health, in line with the provisions of this Act.
The Local Governments Act, Cap 243	Provides for the system of local governments based on the decentralization of district for the enforcement of environmental law.	The developer will work closely with the District Water Officer (DWO), District Natural Resources Officer (DNRO) and Sub-County Community Development Officer in carrying out monitoring activities to ensure no damage onto the environment and social amenities.
Investment Code Act, Cap 92	Section 18(2) (d) of the Act requires an investor to take necessary steps to ensure that development and operation of an investment project do not cause adverse ecological and	MWE is the implementing agency for the project that received funding from the World Bank. This ESIA is in partial fulfilment of the requirements of this Act, since adverse

	socio-economic impacts.	ecological and socio-economic impacts as a result of the project implementation have been identified and mitigation measures developed.
Employment Act, 2006	This Act is the principal legislation that seeks to harmonize relationships between employees and employers, protect worker's interests and welfare and safeguard their occupational health and safety through: i) Prohibiting forced labour, discrimination and sexual harassment at workplaces (Part II; Part IV). ii) Providing for labour inspection by the relevant ministry (Part III). iii) Stipulating rights and duties in employment (weekly rest, working hours, annual leave, maternity and paternity leaves, sick pay, etc. (Part VI). iv) Continuity of employment (continuous service, seasonal employment, etc. (Part VIII). This Act is relevant to both construction & operation phases.	The Act will govern labour arrangements and conditions under which persons hired by the project work. It prohibits Child labour (a condition the contractor must comply with) as well as providing guidance on work rights during the post-construction phase.
The Mining Act, Cap. 148	Stone quarry sites and gravel borrow pits will be necessary for materials needed to construct the concrete works of the project components. Therefore, applicable licenses shall be obtained from the Commissioner of the Geological Survey and Mines. The Mining Act of 2003 regulates mining developments including set up of new quarries and/or sandpits.	This Act will apply to the project's contractor(s) who will be required to obtain license for extraction of stone/ aggregate and murram materials required for construction. The extraction of stone/aggregate and murram materials will be undertaken in line with the provisions of this Act. Issues of restoration of the sites after extraction of murram will be of key importance after construction of the proposed project.
The Children's Act, Cap 59	This is an Act to reform and consolidate the law relating to children; to provide for the care, protection and maintenance of children; to make provision for children charged with offences and for other connected purposes. Part II of the second schedule of this Act defines a child as a person below the age of eighteen (18) years. In the same schedule under Section 8 of this Act provides that no child shall be employed or engaged in any activity that may be harmful to his or her health, education or mental, physical or moral development.	This Project will require workers during construction, operation and maintenance phases. No child should be employed under project work force requirement however, any employment or engagement of children will be done in line with the restrictions of this Act and the Employment Act to ensure that risks to children are either eliminated, or reduced to as low as reasonably practicable. In addition, the contractor will confirm age of potential labourers prior to hiring through National Identity card, birth certificate or confirming with LC and community elders. Kakumiro District Probation Officers will provide guidance to Contractors and their employees' areas of compliance.

The Historical Monuments Act, 1967	Sub-section 12(1) requires that any portable object discovered in the course of an excavation shall be surrendered to the Minister who shall deposit it in the Museum. The Act adds that, notwithstanding provisions of the subsection, where any object is discovered in a protected site, place, or monument, the owner of the protected site, place, or monument shall be entitled to reasonable compensation.	This Act requires that any chance finds encountered during project construction shall be preserved by the Department of Museum and Monuments in the Ministry of Tourism, Wildlife and Heritage. Any chance find objects, material or infrastructure that may be identified as falling under the category of 'archaeological pale-ontological ethnographical and traditional interests' during the Project implementation will therefore, be reported to the Department of Museums and Monuments.
The Equal Opportunities Commission Act, 2007	An Act to make provision in relation to the Equal Opportunities Commission pursuant to articles 32 (3) and 32 (4) and other relevant provisions of the Constitution; to provide for the composition and functions of the Commission; to give effect to the State's constitutional mandate to eliminate discrimination and inequalities against any individual or group of persons on the ground 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 marginalised on the basis of gender, age, disability or any other reason created by history, tradition or custom for the purpose of redressing imbalances which exist against them; and to provide for other related matters.	MWE, the contractor and the operator will work hand in hand with ensure that that there is no discrimination and inequalities against any individual or group of persons on the ground of sex, age, race, colour etc. Local recruitment of workers among others will be prioritised for men, youth and women. A complaints mechanism will be put in place to ensure there is redress of registered grievances.
The National Council for Disability Act, 2003	The Act provides for the establishment of a National Council for Disability, its composition, functions and administration for the promotion of the rights of persons with disabilities set out in international conventions and legal instruments, the Constitution and other laws, and for other connected matters. Part IV provides for the establishment of lower councils for disability.	MWE, the contractor and the operator will work hand in hand with the already formulated District and Sub County Council for Disability in ensuring that the needs of the persons with disabilities are observed.
The National Environment (Environmental and Social Assessment)	According to sections 15 of the Regulations, the developer of any project that has or is likely to have a significant impact on the environment is required to undertake an ESIA process after approval of the ToRs.	ESIA report has been prepared for NEMA's consideration after the approval of the Terms of References before implementation of the proposed project.

Regulations, 2020		
The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000	In Regulation 17 (1), every landowner, occupier or user who is adjacent or contiguous with a wetland shall have a duty to prevent the degradation or destruction of the wetland and shall maintain the ecological and other functions of the wetland. The tool used under these Regulations to ensure compliance is the permit.	Prior to any works at the discharge of effluent back into the environment or any wetland, MWE will seek permission from NEMA, as provided for in these Regulations. Water source protection measures and an independent WSPP have been prepared to protect any wetland resources within the catchment area from being polluted.
The National Environment (Waste Management) Regulations, 2020	Regulation 5 (1) stipulates that a person who generates waste, a waste handler or product steward has a duty of care and shall take measures to ensure that waste is managed in a manner that does not cause harm to human health or the environment among other provisions.	These regulations apply to both construction and operation-phase waste which should be managed in a way such as to avoid environmental and public health impact. Therefore, all the generated various types and volume of waste should be managed and conform to these regulations.
The National Environment (Noise Standards and Control) Regulations, 2000.	Part III Section 8 (1) requires facility operators, to use the best practicable means to ensure that the emission of noise does not exceed the permissible noise levels. The regulations require that persons to be exposed to occupational noise exceeding 85 dBA for eight hours in a day should be provided with requisite hearing protection.	All construction activities should be carried out between 7am – 6pm by the Contractor as working hours. No construction activities to be carried out at Night. Noise levels should also be monitored and not to exceed 85dB as per Regulation.
The Water Resources Regulations, 1998	With regard to water abstraction, Part II: Section 3 Sub-section (1) of these regulations requires application for Water Permits by anyone who: (a) Occupies or intends to occupy any land; (b) Wishes to construct, own, occupy or control any works on or adjacent to the land referred to in regulation 10; may apply to the Director for a water permit.	Water abstraction permit will be obtained by the developer from the Directorate of Water Resources Management (DWRM) before operation phase.
The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 2020	Section 5 details that a person shall not discharge effluent into water or land except in accordance with the Act, the Water Act, the National Environment (Waste Management) Regulations, 2020, the Petroleum (Waste Management) Regulations, 2019, the Water (Waste Discharge) Regulations, these Regulations and environmental standards. For this project, this standard is applicable to liquid waste/ sewage treatment plant and public toilets.	Effluent/liquid waste (such as human waste, food scraps, oils, soaps and chemicals) should not be discharged into any wetland or in the River water resources and should be managed in a manner that does not cause harm to human health or the environment.
Draft National Air Quality Standards,	The draft national air quality standards provide Uganda's	These standards will apply particularly during construction of the pump station and reservoirs.

<table>
<tr><td>2006</td><td>regulatory air quality standards.
<table><tr><th>Pollutant</th><th>Averaging time for ambient air</th><th>Standard for ambient air</th></tr><tr><td>Carbon dioxide (CO_2)</td><td>8 hour</td><td>9.0 ppm</td></tr><tr><td>Carbon monoxide (CO)</td><td>8 hour</td><td>9.0 ppm</td></tr><tr><td>Hydrocarbons</td><td>24 hour</td><td>5 mg m^{-3}</td></tr><tr><td>Nitrogen oxides (NO_x)</td><td>24 hour
1 year arithmetic mean</td><td>0.10 ppm</td></tr><tr><td>Smoke</td><td>Not to exceed 5 minutes in any one hour</td><td>Ringlemann scale No.2 or 40% observed at 6m or more</td></tr><tr><td>Soot</td><td>24 hour</td><td>500 µg Nm^{-3}</td></tr><tr><td>Sulphur dioxide (SO_2)</td><td>24 hour</td><td>0.15 ppm</td></tr><tr><td>Sulphur trioxide (SO_3)</td><td>24 hour</td><td>200 µg Nm^{-3}</td></tr></table>Note: ppm = parts per million; 'N' in µg/Nm-3 connotes normal atmospheric conditions of pressure and temperature (25oC and 1 atmosphere).</td><td></td></tr>
<tr><td>The National Environment (Audit) Regulations, 2020</td><td>Part III on Environmental Compliance Audit, Section 12, Sub-section (1) requires the developer of a project or activity listed in Schedule 3 to these Regulations to carry out an environmental compliance audit.</td><td>The project will involve construction and operation of water supply and sanitation facilities that have a potential to impact negatively of the environment. Therefore, MWE should conduct Environmental Audits to assess if there are impacts, to what extent and mitigate them.</td></tr>
</table>

2.4 World Bank Safeguard Policies and Requirements

The IWMDP is assigned an EA Category B given that significant adverse environmental and social impacts are not expected due to the nature of the proposed activities. Following the environmental and social screening of the proposed project activities, the anticipated negative impacts will be localized, site-specific and small to moderate in scale. The project is not anticipated to generate any potential large scale, significant and/or irreversible impacts. None of the project activities will be located in environmentally sensitive areas, and all the associated impacts can be mitigated with relatively standard mitigation measures.

Overall, by their nature, location, scale & scope, including the E&S context where the Kikoora RGC Cluster Water Supply System (WSS) project will be situated, will have minimal adverse environmental and social impacts. Therefore, negative impacts are expected to be mitigated with known technology, good practices and management solutions, resulting in residual impact of minor significance. This therefore qualifies the project to be EA Category B.

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment during the development process. These policies provide guidelines for Bank and borrower staff in the identification, preparation, and implementation of programs and projects. Safeguard policies provide a platform for the participation of stakeholders (World Bank, 2006). The triggered safeguard policies are presented in the Table 5 below:

Table 5: World Bank Operational Policies to be triggered by the project

Yes √ or No X	If applicable, how might it apply?
√	Environmental Assessment (OP/BP/GP 4.01) The Environmental Assessment (EA) Safeguard is to ensure that projects are environmentally and socially sustainable, and provide a basis for improved decision making. OP 4.01 evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The proposed project will largely generate positive impacts contributing to public health, economic growth, and environmental sustainability. OP 4.01 is triggered as the project may have potential negative environmental and social impacts through the construction and operational phases. Possible impacts during construction include; impacts on water bodies associated due to earthworks and wastewater generated from construction activities; emissions of particulate matter by earthworks and removal of vegetation cover; Occupational, Health, and Safety (OHS) risks; and social misdemeanour by workers. The impacts during construction phase will be temporary while works are carried out. During the operation phase, the potential risks include unpleasant odours and noise from the operation of sanitation facilities; inadequate sludge management and wastewater effluent discharges; possible impacts on surface and/or ground water due to leakages from and intrusion of storm water to the facilities (sewers, manholes, ponds, septic tanks). The anticipated negative impacts will be localized, site-specific and small to moderate in scale. All project adverse impacts are expected to be mitigated with known technology, good

	practices and management solutions, resulting in residual impact of minor significance. With respect to AC, the environmental management plan will include management measures for the removal, packaging, transportation and disposal of existing asbestos waste. Works and equipment will be designed based on technical studies to ensure safe yield from groundwater and surface water resources. The water and sanitation facilities are relatively small. The Project is classified as Category B because it will not generate any potential large scale, significant and/or irreversible impacts, it is not located in environmentally sensitive areas, and impacts can be mitigated with relatively standard mitigation measures. Safeguards instruments: Compliance will be ensured through diligent application of Environmental and Social Management Framework (ESMF) and site specific Environmental and Social Impact Assessments (ESIAs)/Environmental and Social Management Plans (ESMPs) during implementation. The Project will follow the WB- EHS Guidelines for Water and Sanitation.
√	Natural Habitats (OP/BP 4.04) While no significant negative impacts on natural habitats are anticipated by project works, the policy is triggered because most of the sanitation facilities may discharge their effluent into wetlands. In addition, the project will also involve catchment management and some of the investments may involve afforestation, reforestation and improvement of watersheds. Depending on the subprojects and potential negative impacts to the natural habitats (forests, wetlands, lakeshores, and riverbanks), these subprojects will include/encompass natural habitats assessment and mitigation under the given sub-project ESIA/ESMP to protect or preserve any flora & fauna species identified at risk of being affected. If a subproject can cause irreversible damages, it will be excluded.
√	Forests (OP/BP 4.36) OP 4.36 is triggered due to potential project impacts on health and quality of forests, especially in the catchment areas where the project will support afforestation, reforestation and improvement of watersheds. Compliance will be ensured through the site specific ESIAs/ESMPs that shall ensure inclusion of forests assessment and mitigation.
X	Pest Management (OP 4.09) The project will not involve or support the purchase, manufacture or use of pesticides. The Project will not lead to increased/changed use of pesticides.
√	Physical Cultural Resources (OP 4.11) The policy is triggered due to the possibility of chance finding of physical cultural resources during construction. Any potential physical cultural resources will be addressed by incorporating reporting and handling procedures as part of site specific ESIA and dealt with in the context of the ESMF. The ESMF has provided a generic Chance Finds Procedure that will guide handling accidental encounter of archaeological resources.
√	Involuntary Resettlement (OP/BP 4.12) The purpose of this policy is to avoid or minimize involuntary resettlement and, where this is not feasible, assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher. The key objectives of this

	operational policy are to: a. Avoid or minimize involuntary resettlement scenarios, where possible and examine all viable alternative project designs; b. Support affected persons in restoring/improving their former living standards, income generation and production capacities, or at least in restoring them; c. Encourage community involvement in planning and implementing resettlement actions, and provide assistance to affected people regardless of the legality of land tenure. The policy does not only cover physical displacement, but also any loss of land or other assets associated to the proposed actions resulting in: a. relocation or loss of shelter; b. loss of assets or access to assets; and loss of income sources or means of livelihood, whether or not the affected person is to reallocate to a new area. The policy is therefore triggered because of the potential negative social impacts that might result from the need for land acquisition and/or the loss of access to economic assets and livelihoods due to Integrated Water Resources Management (IWRM) and WSS activities. The RAP for the proposed project was prepared as guided by the RFP which was prepared by MWE and disclosed in 2018. A RAP executive summary has been to this ESIA report (Annex VIII). Both instruments will be disclosed by MWE on its website and on that of the World Bank. For sub-projects covered under the RPF, these shall be subjected to social screening and where necessary their RAP shall be prepared and implemented before commencement of implementation of any such activities.
X	Indigenous Peoples (OP 4.10) There are no areas occupied by indigenous people in the project area
X	Safety of Dams (OP/BP 4.37) OP 4.37 is not triggered as the project will not finance rehabilitation and construction of small dams (i.e., dams smaller than 15m, as per OP 4.37). The Project does not support the construction or rehabilitation of large dams and subprojects do not include structures that will rely on the performance of an existing dam or dam under construction (DUC).
X	Projects in Disputed Areas (OP/BP/GP 7.60) OP 7.60 is not triggered as there are no known disputed areas in the project districts. If any, the project will not support any activities in disputed areas.
X	Projects on International Waterways (OP/BP/GP 7.50) This policy is not triggered since the water source is not an International Waterway.

2.5 World Bank Policy on Disclosure of Information

The World Bank, through its Disclosure Policy BP 17.50, requires that all safeguard documents be disclosed in the respective countries as well as at the Bank's Info shop or Website prior to appraisal or for Fast Tracking Initiative prior to Signing of the Grant Agreement. The Bank recognizes the right to information, and has information disclosure policies which generally contain the following elements: principles of disclosure; exceptions to disclosure; routine disclosure; and request driven disclosure. Disclosure of documents (including a summary of the project, and a summary of Environmental Assessment) should be in the local language, at a public place accessible to project-affected groups, local non-governmental organizations and other interested persons. In-country disclosure of information is the responsibility of the borrower, in this case of the project proponent through the steering committee or

the individual institutions that will be implementing a project, in this case the MWE. Disclosure at the Bank's website I is the responsibility of the World Bank. Documents that need to be disclosed include:

- Integrated Safeguards Data Sheet;
- All Safeguard mitigation plans: (i). ESIA, and/or ESMP; and (ii). RAP.

All documents should be made available to stakeholders well in advance of consultations and all public consultations should be completed and draft or final documents should be disclosed prior to the project appraisal. In addition, all final documents, including the results of the consultations should be disclosed for the record. For the present ESMF document, information disclosure was initiated with the stakeholder consultations and public meetings held in selected project sites and Ministries or Agencies. The meetings provided an opportunity for stakeholders to provide comments and useful inputs to be taken into consideration when planning and eventual implementation of the proposed project.

Since the ESMF was completed, it is proposed that the disclosure process be through continued interaction with stakeholders using contacts gathered during public meetings. A pubic advert shall be sent to most widely distribute and read newspapers in the country, to inform stakeholders of the availability of the ESMF document for review and comments. The MWE shall ensure the availability of the full ESMF in their Public Library and Website, including websites and offices of MWE, and participating Districts and sub counties, where the public can have access and provide any comments.

2.6 World Bank Project Classification

The proposed project is classified as Category B as per WB project classification. The proposed construction and operation of Kikoora RGC piped water supply facilities will be restricted within the user-communities. The project will not directly affect ecosystems such wetlands, forests, grasslands and other natural resources. World Bank classifies a proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental and impacts as presented below in Table 6.

Table 6: World Bank Project Classification

Category A	A project is classified as Environmental Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. The project impacts may affect an area broader than the sites or facilities subject to physical works. Environmental assessment for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives including the "without project" situation, and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.
Category B	A project is classified as Environmental Category B if its potential adverse environmental impacts on human populations or environmentally important areas, including wetlands, forests, grasslands, and other natural habitats, are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. Here the project is required to develop an ESMP that outlines potential negative and positive environmental impacts and measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.
Category C	A project is classified as Environmental Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further environmental assessment is required for a Category C project.

Category FI	A project is classified as Environmental Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

2.7 Environmental Health and Safety Guidelines Specific to Water Supply and Sanitation Projects

The World Bank Group (WBG) Environmental Health and Safety (EHS) General Guidelines are recommended to be used by the project. This section provides an overview on how the general approach to be taken with regards to the management of EHS issues at the sub-project or project level. The WBG EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). They shall be referred to and used to guide EHS issues in specific industry sectors, and they should be used together with the safeguard policies. These shall govern both workers' (occupational) safety and public safety. However, the application of the EHS Guidelines to existing facilities that will be rehabilitated/expanded may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines shall be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site-specific factors are taken into account. Effective management of environmental, health, and safety (EHS) issues entails the inclusion of EHS considerations into corporate- and facility-level business processes through the following steps:

- Identifying project hazards and associated risks as early as possible;
- 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;
- Understand the likelihood and magnitude of the risks;
- Prioritizing risk management strategies with the objective of achieving an overall reduction of risk to human health and the environment;
- Favouring strategies that eliminate the cause of the hazard at its source;
- Incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences;
- Preparing workers and nearby communities to respond to accidents;
- Improving EHS performance through a combination of ongoing monitoring of facility performance and effective accountability.

The following were considered when assessing the potential risks related to health, safety and security: Infrastructure and Equipment Safety; Hazardous Materials Safety; Environmental and Natural Resource Issues (such as floods/ landslides etc.); Community safety and exposure to project related risks; Emergency Preparedness and Response. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. This document should be used together with the relevant Industry Sector Guideline(s). The General EHS Guidelines (2007) relevant to this Project are summarized in Table 7:

Table 7: World Bank General EHS Guidelines relevant to this Project

Aspect	**Relevancy to the proposed project**
Environmental	
Air Emissions and Ambient Air Quality This guideline applies to facilities or projects that	This guideline is relevant because fugitive emissions are expected during the construction phase of this Project.

generate emissions to air at any stage of the project life-cycle. This guideline provides an approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts.	These guidelines will be referenced for acceptable air quality levels during Project implementation, particularly for fugitive sources.
Wastewater and Ambient Water Quality This guideline applies to projects that have either direct or indirect discharge of process wastewater, wastewater from utility operations or storm water to the environment. These guidelines are also applicable to industrial discharges to sanitary sewers that discharge to the environment without any treatment. Projects with the potential to generate process wastewater, sanitary (domestic) sewage, or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety, or the environment.	This Project is primarily about water abstraction, treatment, supply and management. As the guidelines state, any wastewater discharge, even of uncontaminated will be managed properly before discharge. These guidelines will be referenced for principles of HSE regarding wastewater management, to improve efficiency and sustainability of the Project.
Waste Management These guidelines apply to projects that generate, store, or handle any quantity of waste across a range of industry sectors. Solid (non-hazardous) wastes generally include any garbage, refuse. Examples of such waste include domestic trash and garbage; inert construction / demolition materials; refuse, such as metal scrap and empty containers (except those previously used to contain hazardous materials which should, in principle, be managed as a hazardous waste); and residual waste from industrial operations, such as boiler slag, clinker, and fly ash. Hazardous waste shares the properties of a hazardous material (e.g., ignitability, corrosivity, reactivity, or toxicity), or other physical, chemical, or biological characteristics that may pose a potential risk to human health or the environment if improperly managed.	This Project will produce waste during the construction period. The operation and maintenance phase also have an insignificant element of waste management since the operation will only involve the water abstraction, treatment and supply. These guidelines will be referenced for principles of HSE regarding waste management during the life of this Project.
Noise This guideline addresses impacts of noise beyond the property boundary of the facilities. Noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the	The pump station is far away from residential areas and houses and it is not close to schools and health care institutions which are considered to be very sensitive receptors. Noise emissions shall be monitored against the WB's guidelines during construction, operation and

applicable noise level guideline at the most sensitive point of reception	maintenance:
Contaminated Land This guideline provides a summary of management approaches for land contamination due to anthropogenic releases of hazardous materials, wastes, or oil, including naturally occurring substances. Releases of these materials may be the result of historic or current site activities, including, but not limited to, accidents during their handling and storage, or due to their poor management or disposal. Contaminated lands may involve surficial soils or subsurface soils that, through leaching and transport, may affect groundwater, surface water, and adjacent sites. When contamination of land is suspected or confirmed during any project phase, the cause of the uncontrolled release should be identified and corrected to avoid further releases and associated adverse impacts	The Contractor(s) will ensure that hazardous materials, wastes, or oil will not be discharged or released onto soils and land. All servicing and maintenance of construction vehicles such as trucks and equipment shall not be done on site.
Occupational Health and Safety	
Communication and Training This includes guidelines for OHS Training, Visitor Orientation, New task employee and contractor training, Area signage, labelling of equipment, communicate hazard codes, among others. Provisions should be made to provide OHS orientation training to all new employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees.	Supervising Consultants and Contractors for the Project will have to ensure that OHS requirements for the Project are met in line with these guidelines
Physical Hazards Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity. Single exposure to physical hazards may result in a wide range of injuries, from minor and medical aid only, to disabling, catastrophic, and/or fatal. Multiple exposures over prolonged periods can result in disabling injuries of comparable significance and consequence. Sources of potential for such injury include rotating	During the construction of the Kikoora RGC WSS such as dredging, equipment and machinery which generate noise and vibrations will be used. These operations will be guided by these guidelines.

and moving equipment, noise, vibration, eye hazards, industrial vehicle driving and site traffic, ergonomics, repetitive motion, manual handling, among others.	
Personal Protective Equipment (PPE) Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection.	Supervising Consultants and Contractors for the Project will have to ensure that PPE requirements for the Project are met in line with these guidelines. PPE will be provided (as required) for eye and face protection, head protection, hearing protection, foot protection, hand protection, respiratory protection, body/leg protection
Monitoring Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies	Stringent monitoring of HSE aspects will be crucial for the successful implementation of the Project, to have risks reduced to levels that are as low as reasonably practicable.
Community Health and Safety	
Water Quality and Availability Groundwater and surface water represent essential sources of drinking and irrigation water in developing countries, particularly in rural areas where piped water supply may be limited or unavailable and where available resources are collected by the consumer with little or no treatment. Project activities involving wastewater discharges, water extraction, diversion or impoundment should prevent adverse impacts to the quality and availability of groundwater and surface water resources. Project activities should not compromise the availability of water for personal hygiene needs and should take account of potential future increases in demand	In the project area, there's no potential for the Project to impact on water quality and availability. There are no other water pipes crossing or traversing near the proposed project area which could cause disruption during Project implementation to guarantee measures in line with these guidelines to be put in place.
Structural Safety of Project Infrastructure Hazards posed to the public while accessing project facilities may include: Physical trauma associated with failure of building structures; Burns and smoke inhalation from fires; Injuries suffered as a	This guideline will be referenced in line with the integrity of the structures and any hoarding installed. PPE will be provided to persons accessing the project facilities. For all public roads and access roads used by the construction activities, dust suppression using water will be carried out by the Contractor(s). All visitors will be

consequence of falls or contact with heavy equipment; Respiratory distress from dust, fumes, or noxious odours; Exposure to hazardous materials; Reduction of potential hazards is best accomplished during the design phase when the structural design, layout and site modifications can be adapted more easily.	inducted in EHS requirements before accessing any construction site/area. Safety signs and safe systems of work will be developed for each workstation.
Traffic Safety Traffic safety should be promoted by all project personnel during displacement to and from the workplace, and during operation of project equipment on public roads. Prevention and control of traffic related injuries and fatalities should include the adoption of safety measures that are protective of project workers and of road users, including those who are most vulnerable to road traffic accidents. Road safety initiatives proportional to the scope and nature of project activities.	Accessibility to the Kikoora RGC WSS is along the Kakumiro community roads and work at the proposed site will disrupt traffic. Delivery of materials and movement of equipment for the Project will also impact traffic. This guideline will be referenced in line with traffic safety during Project implementation
Disease Prevention Communicable diseases pose a significant public health threat worldwide. Health hazards typically associated with large development projects are those relating to poor sanitation and living conditions, sexual transmission and vector-borne infections. Communicable diseases of most concern during the construction phase due to labour mobility are sexually transmitted diseases (STDs), such as HIV/AIDS. Recognizing that no single measure is likely to be effective in the long term, successful initiatives typically involve a combination of behavioural and environmental modifications. Reducing the impact of vector-borne disease on the long-term health of workers is best accomplished through implementation of diverse interventions aimed at eliminating the factors that lead to disease.	The risk of spread of communicable and vector-borne diseases exists, particularly due to potential influx of Project workers and water impoundment in some cases, as required during construction. This guideline will be referenced in line with disease prevention in the Project communities.
Emergency Preparedness and Response All projects should have an Emergency Preparedness and Response Plan that is commensurate with the risks of the facility and that includes the following basic elements: Administration (policy, purpose, distribution, definitions, etc.); Organization of emergency areas	On any construction site, there is a potential that risks will occur. It is important to have measures in place to readily contain and respond to any risks when they occur. This guideline will be referenced in line with emergency preparedness and response.

(command centres, medical stations, etc.); Roles and responsibilities; Communication systems; Emergency response procedures; Emergency resources; Training and updating; Checklists (role and action list and equipment checklist); Business Continuity and Contingency.	
Construction and Decommissioning	
Environment Guidelines on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to expansion or modification of existing project facilities include: Noise and vibration, soil erosion, sediment mobilization and d transport, air quality, solid waste, hazardous materials, wastewater discharges, and contaminated land.	These impacts are applicable to this Project, and will be addressed in line with these specific guidelines
Occupational Health and Safety Guidelines are provided on aspects of OHS including over-exertion, slips and falls, work in heights, struck by objects, moving machinery, dust, confined spaces and excavations, and other site hazards.	These impacts are applicable to this Project, and will be addressed in line with these specific guidelines
Community Health and Safety Projects should implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction and decommissioning. Risks may arise from inadvertent or intentional trespassing, including potential contact with hazardous materials, contaminated soils and other environmental media, buildings that are vacant or under construction, or excavations and structures which may pose falling and entrapment hazards	These impacts are applicable to this Project, and will be addressed in line with these specific guidelines.

2.8 Institutional Framework

Table 8 below presents the institutional framework.

Table 8: Institutional framework related to the project

Institution	Mandate
Ministry of Water and Environment (MWE)	MWE is responsible for policy formulation, setting standards, strategic planning, coordination, quality assurance, provision of technical assistance, and

	capacity building. The ministry under its Water Development directorate – DWD, is carrying out the ESIA for the proposed Kikoora RGC Piped Water Supply system. The ministry also monitors and evaluates sector development programmes to keep track of their performance, efficiency and effectiveness in service delivery. The ministry has three directorates: Directorate of Water Resources Management (DWRM), Directorate of Water Development (DWD) and the Directorate of Environmental Affairs (DEA). MWE is the lead agency for water Development and construction of the Water Supply System.
Ministry of Lands, Housing and Urban Development (MLHUD)	Through the Chief Government Valuer (CGV) in the Valuation Department, MLHUD is responsible for reviewing and approving the Valuation Report developed as part of the RAP. The valuation report is critical in ensuring timely payment of fair and adequate compensation as well as ensure that the Project Construction and next steps commence in time.
Ministry of Tourism, Wildlife and Antiquities (MTWA)	In-charge of protecting and preserving the sites with remain of cultural or archaeological importance when identified during construction activities for conservation, preservation, restoration and salvage.
National Environmental Management Authority (NEMA)	The National Environmental Act, NO.5 of 2019 establishes NEMA as the principal agency responsible for coordination, monitoring and supervision of environmental conservation activities. NEMA is under MWE but has a cross-sectoral mandate to oversee the conduct of ESIAs through issuance of guidelines, regulations and registration of practitioners. It reviews and approves environmental impact statements in consultation with any relevant lead agencies. NEMA works with District Environment Officers and local environment committees at local government levels who also undertake inspection, monitoring and enforce compliance on its behalf. NEMA will therefore review and approve the ESIA report and through the District Environment Officer, undertake environmental monitoring during project implementation.
Directorate of Water Resources Management (DWRM)	DWRM is responsible for issuing of water abstraction and wastewater discharge permits. The primary goal of the directorate is to promote sustainable development of Uganda's water sector. The directorate is into design and implementation of water quality assessments, monitoring ground and surface water resources, laboratory and field works and ultimately water pollution control.
National Water and Sewerage Corporation (NWSC)	The National Water and Sewerage Corporation Statute establishes the NWSC with a mandate to operate and provide water and sewerage services in areas entrusted to it on a sound commercial and viable basis. NWSC operates in cities and larger towns as well as decentralization and private sector participation in small towns.
Directorate of Water Development (DWD)	Lead agency responsible for policy guidance, coordination and regulation of all water sector activities including provision of oversight and support services to the local governments and other water supply service providers. DWD has the mandate to promote the provision of clean and safe water to all persons, investigate, control, protect and manage water in Uganda for any use in accordance with the provisions of the Water Statue, 1995
Directorate of Environmental Affairs	The Wetlands Management Department (WMD) within DEA is mandated to manage wetland resources and its goal is to sustain the biophysical and socio

(DEA)	economic values of wetlands in Uganda for present and future generations. Wetlands are under a lot of pressure from conversion for industrial development, agriculture, wastewater treatment facilities. WMD has an inventory of the major wetlands in country in the National Wetlands Information System (NWIS). The inventory provides an overview of wetland resource, their values, threats and possible management options.
Ministry of Gender, Labour & Social Development (MoGLSD)	MoGLSD sets policy direction and monitoring functions related to labour, gender, social inclusion and general social development. Its OHS Department in the ministry is responsible for inspection and mentoring of occupational safety in workplaces and this could be during project construction and operation of the laboratory facilities. The OHS Department in this Ministry is responsible for undertaking inspections of construction sites to ensure safe working conditions.
District Local Administration Structures	The proposed project is within the jurisdiction of Kakumiro District Local Government (KDLG), headed by a Local Council V (LC V) Chairman and Chief Administration Officer (CAO) who are the political and technical heads 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, District Engineer District Probation Offices, Sub County Chiefs. Equally important are 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 given that the water supply project will serve communities. Local government structures are important for mobilizing support for the project as well as monitoring its social-environmental impacts both during construction and operation phases.

3 PROJECT DESCRIPTION

3.1 Location of the Proposed Project

Kikoora Rural Growth Centre (RGC) is located in Kakindo Sub County, a distance by road of 68km from the district headquarters at Kakumiro at UTM coordinates 36N 298625 East, 126679 North in Mid-Western Uganda as shown in figure 1 and 2. Kakumiro is 180km by road from Kampala. Kakumiro district is bordered by districts of Hoima to the north, Kyegegwa to the north- east, Kiboga to the east, Mubende to the south-east, Kyegegwa to the south and Kibaale to the west. The proposed supply area comprises three (3) parishes namely Kikoora, Nyamaligita and Kigoma and six (6) villages of Kikoora A, Kikoora B, Rutooma, Nyamaligita, Businge and Betania.

Kakumiro District was curved out of Kibaale district in July 2012. Kakumiro District has an average annual rainfall in two rainfall seasons, March to May and August to November. The average temperatures are high of 22.9°C in February and low of 20.9oC in July. The District has a land area of 1,668 square kilometres and population of 473,400 with 232,900 females and 240,500 Males with the average house hold size of 5.4, with a total of 15,353 households. The literacy levels are at 49.2% females and 50.8% male according to a projection by UBOS statistics. The district found in a hilly environment with farming as the main activity undertaken by the residents is comprised of 8 sub counties and one town council.

Kakumiro District has an average annual rainfall in two rainfall seasons, March to May and August to November. The average temperatures are high of 22.9° C in February and low of 20.9°C in July. Kikoora is served by motorable murram roads, mains electricity supply and mobile phone networks. There are electricity mains in Kakindo and plans are underway to extend a power line under the Rural Electrification programme.

Table 9: List of Villages for Kikoora WSS

Subcounty	Parish	Village
Kakindo/Kikoora	Kikoora	Kikoora A
		Kikoora B
		Rutooma
		Businge
	Nyamaligita	Nyamaligita
	Kigoma	Betania

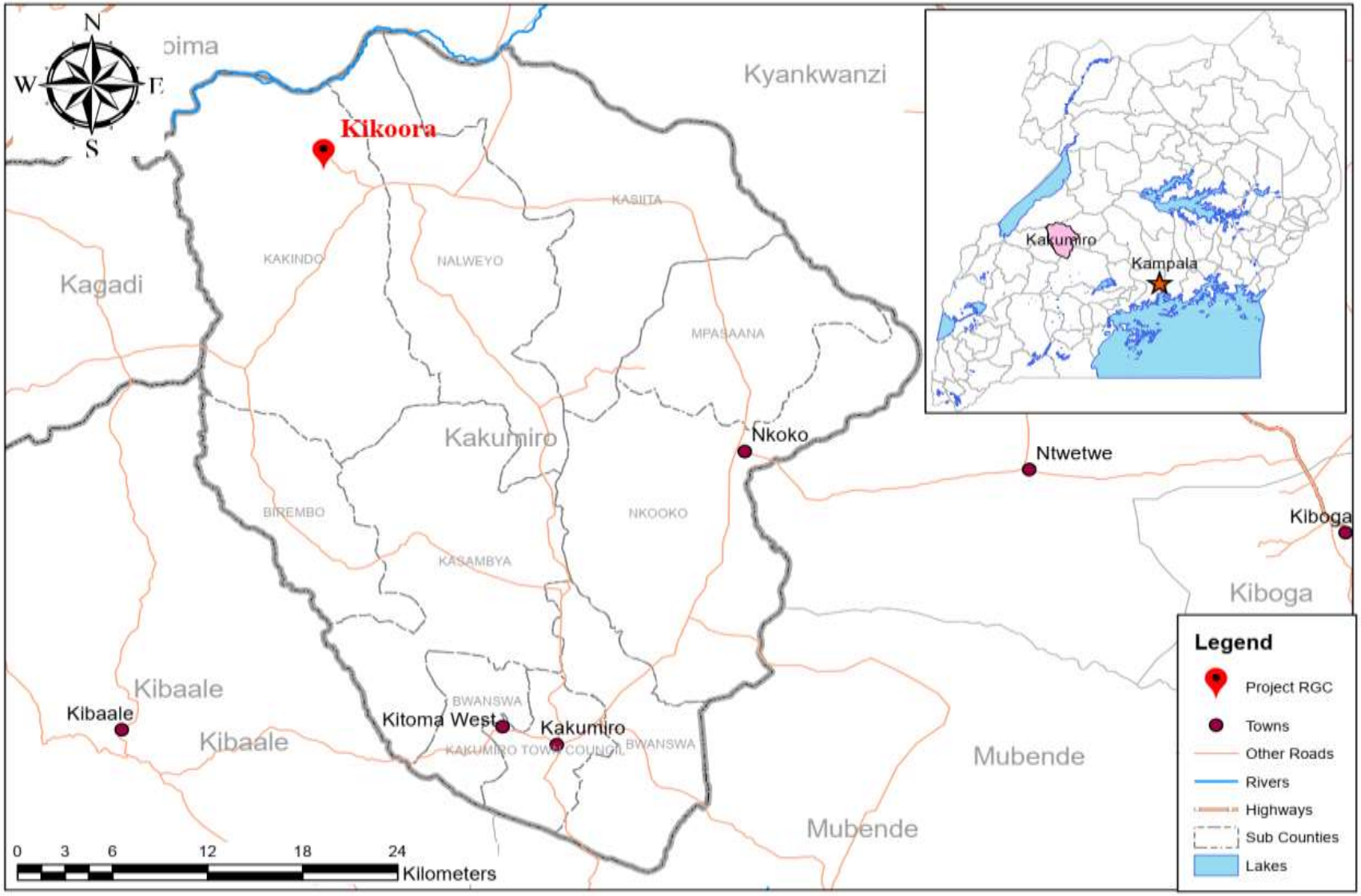


Figure 2: Map showing location of the Kikoora RGC Project area.

Figure 3: Kikoora RGC Supply Area, Kakumiro District

3.2 Project Description and Design

3.2.1 Water System Design Criteria

The design criteria adopted for the water supply system are reproduced in Table below.

Table 10: System Design Criteria

Parameter	Value/ Standard
Design horizon	25 yr
Water Demand	
Unaccounted for water	20% average day demand
Maximum day demand factor	1.3
Borehole capacity	18 hours per day
Water Treatment Plant	
Water Quality Standards	US – 201: 1994
Water Retaining Structures	BS 8110 and BS 8007
Pipelines	
Pipe flow equation	Darcy-Weibach
Friction factors	0.03 mm plastic
	0.15 mm steel
EPANET	Hazen Williams
Roughness Coefficients	140 plastic
	130 lined steel
Storage capacity	Minimum 8 hours
Distribution system	
Peak hour factor	2.0
Maximum residual pressure	80 m
Minimum residual pressure	7 m
Pipe materials	
< 100 mm	HDPE
> 100 mm	uPVC
Exposed pipe	steel

Project Estimates

3.2.2 Hydraulic Design

Hydraulic design of the pipelines was undertaken using the Darcy-Weisbach pipe flow equation:

$$h_L = f \frac{L}{D} \frac{v^2}{2g}$$

where h_L = head loss due to friction in section (m)

L = section length (m)

D = pipe diameter (m)

v = velocity in the section (m/s)

g = acceleration due to gravity (m/s^2)

The Darcy friction factor, f, is given by the Swamee-Jain approximation of the Colebrook-White solution for the factor as follows:

$$f = \frac{1.325}{\left[ln\left(\frac{\varepsilon}{3.7D} + \frac{5.74}{Re^{0.9}}\right)\right]^2}$$

where f is a function of:

ε = roughness height (mm)

D = pipe diameter (mm)

Re = Reynolds number (unitless)

3.2.3 Water Hammer

Water hammer (surge pressure) is based on the *Joukowsky* equation.

$$h = \frac{vc_p}{g}$$

where v = change in velocity

g = acceleration due to gravity, m^2/s

cp = celerity of pressure wave in pipe, m/s

and celerity, cp is given by

$$c_p = \frac{2c_w}{1 + \left(\frac{E_w}{E_p} x \frac{d}{t}\right)}$$

where cw = celerity of pressure wave in water, 1425 m/s

Ew = Bulk modulus of water

Ep = Modulus of elasticity of pipe

d = internal diameter of pipe

t = pipe wall thickness

3.2.4 System Layout and Design

Kikoora water supply is based on the one available high yield production borehole pumping to central storage and supply by gravity to the town core area and along the four access roads in each direction. A total of 0.22 acres of permanent land acquisition is required for the borehole. The main system comprises:

- 1no production borehole with submersible pump powered by solar system and grid power
- 1.5 km pumping main in OD110 uPVC PN16
- Elevated pressed steel storage tank of $87m^3$ capacity
- 4.3km primary distribution system in OD90 - OD50 HDPE

3.2.5 Treatment of Borehole Water

The borehole water meets the national standard US 201:1994 for drinking water. However, the water supply requires disinfection in the distribution system to handle incidental contamination.

3.2.6 Civil Works at Borehole Site

Plate 1 below shows the drilled borehole.

Plate 1: The drilled borehole as the potential water source

The production borehole exists and civil works to be undertaken at the site include:

- 72-h test pumping before placing of orders
- Pump house comprising control room
- Attendants Quarters,
- Guardhouse and toilet facility
- Fencing
- Access road and hard standing
- Solar panel area

The layout and details of the structures are presented in Annex IV.

3.2.7 Pumping Main

a) Borehole Installation and Pipeline

The borehole and pipeline installation are presented graphically in Figure below. Galvanized iron has traditionally been used for the borehole riser but the material is prone to rusting. The alternatives are stainless steel and super heavy-duty PVC. It is proposed the riser is installed in super heavy-duty PVC.

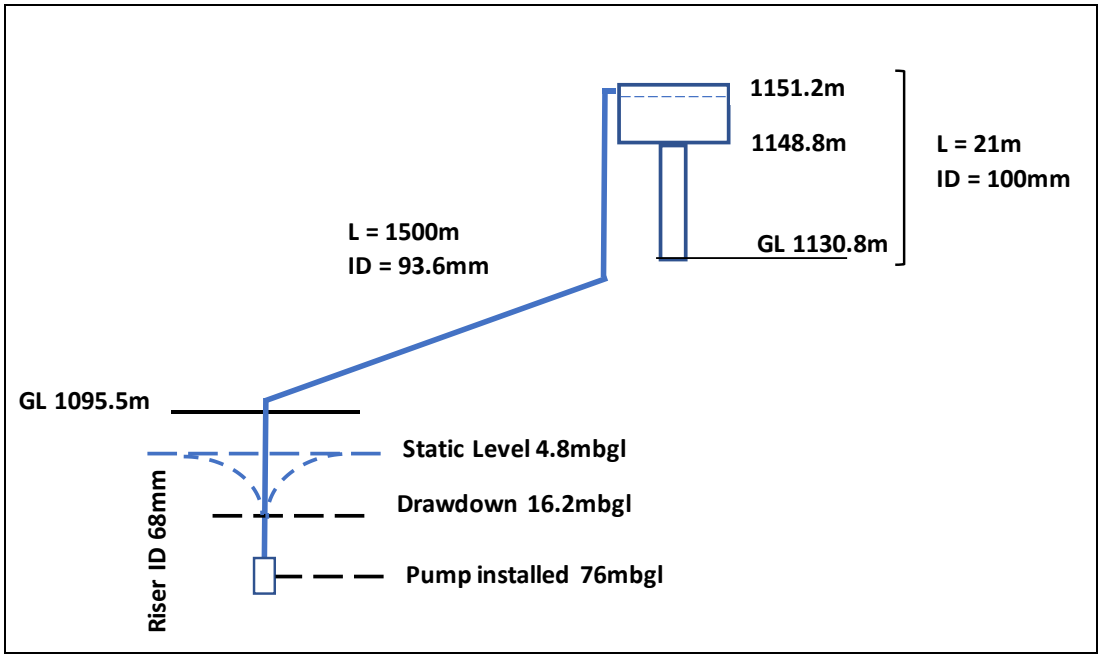


Figure 4: Borehole and Pumping Main Installation

3.2.8 Hydraulic Design

The hydraulic design of the pumping main is summarized in Table below. The total dynamic head (TD) = Drawdown (mbgl) + Static Lift (GL to tank inlet) + Friction losses.

Table 11: Pumping mains hydraulic design

Elevations (m)		Pipe Length (m)	Flow (m^3/hr)	Pipe details	Velocity (m/s)	Friction H-loss (m)	Minor Losses (m)	Static head (m)	Total pumping head (m)	Pump Rating (kW)
From	To									
1019.5	1095.5	76	24	OD80 PVC	1.84	3.84	1.9	72.5	94	10.3
1095.5	1130.8	1480		OD110 PN10	0.86	15.4				
1130.8	1151.8	21		DN100 ST	0.85	0.2				
Project estimates										

3.2.9 Pipeline Water Hammer Analysis

The water hammer analysis indicates the PN16 pipe pressure rating meets pumping and water hammer requirements.

Table 12: Pumping Main Water Hammer Analysis

	Unit	Value
Data		
Flow rate	m^3/h	24
Static Head on above ground pipeline	m	72.5
Pipeline length	m	1501.0
Pipe Internal diameter (OD110 PN16)	mm	94
Pipe wall thickness	mm	8.2
Pipe Material		uPVC
Elasticity Modulus uPVC	N/mm^2	3×10^3
Elasticity Modulus water	N/mm^2	207×10^3
Computations		
Water velocity	m/s	0.97
Celerity	m/s	512
Pressure change, Δ P	m	51
Maximum pressure on pipeline = static + surge	m	124

Project estimates

3.2.10 Borehole Pump

A suitable borehole pump is the *Grundfos ® model 13CV1911 SP 30-11* whose performance curve is shown against the system curve in Figure below. The pump output is about $25m^3/h$ which is acceptable based on the borehole summary data.

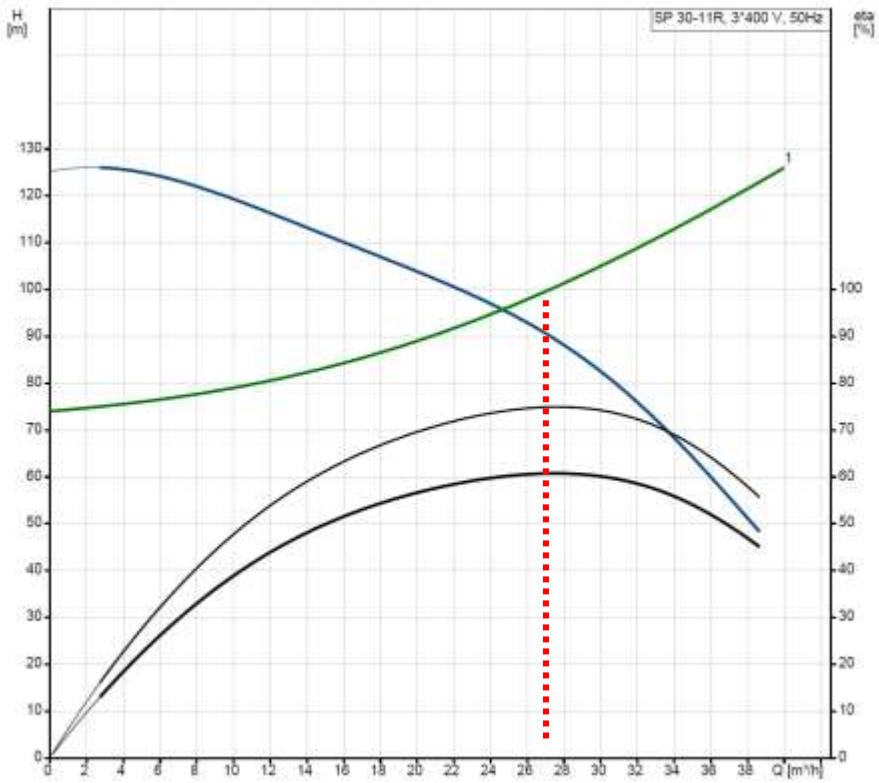


Figure 5: Grundfos SP 30-11 pump curve and pipeline system curve

a) Solar PV System

Table below shows the average daily sum of the global radiation at the BH 53725 site.

Table 13: Monthly in-plane Solar Insolation at BH 53725, Kikoora

Location:	Lat:	1.146										
	Long	31.202										
Module:	Slope	15°										
	Azimuth	0°										
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. daily ($kWh/m^2/d$)	6.55	6.35	5.61	5.17	4.73	4.53	**4.48**	4.76	5.25	5.42	5.72	6.34

Source: ***PVGIS-SARAH***[1]

The minimum solar radiation value of 4.48$kWh/m^2/d$ was used in the *GRUNDFOS® Sizing Tool* [2] which then gave an average annual water production of 69,300 m^3 using a Grundfos SP30-11 pump. The results are summarized in Figure below.

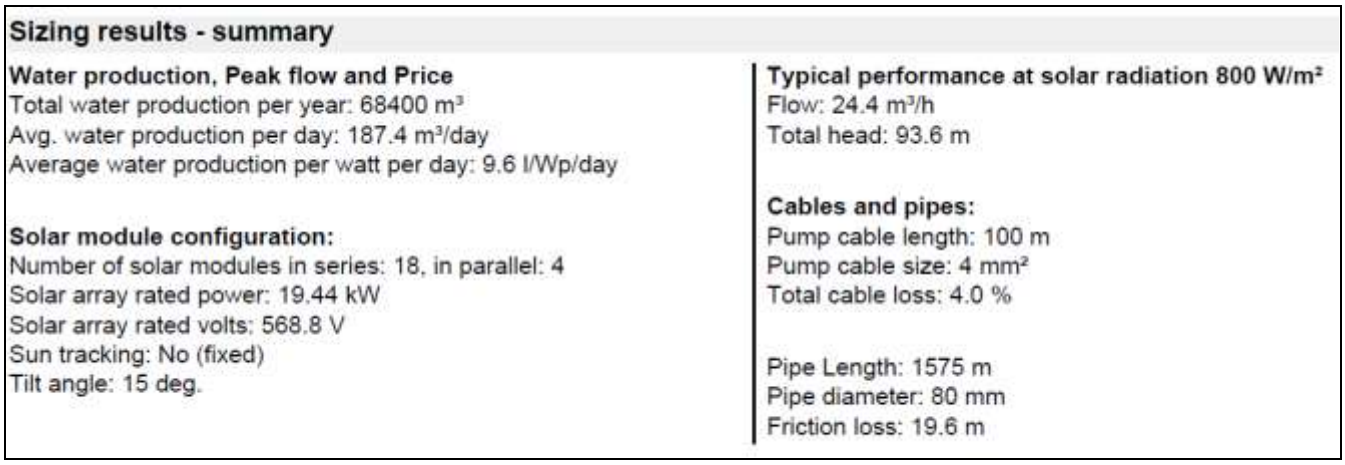


Figure 6: BH 53725 Solar Pumping Sizing by Grundfos Product Centre

A manual check design of the solar system is presented in Table below.

[1] European Commission Photovoltaic Geographical Information System pro

[2] Grundfos Product Centre,

Table 14: DWD 537245 Solar System Design

Parameters	Unit	Values
Data		
Flow	m^3/h	24
Total Dynamic Head-	m	98
Solar insolation	$kWh/m^2/d$	4.47
Solar Panel rating	Wp	270
Solar system nominal voltage	V	415
Calculation		
Hydraulic Power for 168 m3/d	kWh	42.8
Electrical Power (pump+motor η = 52%)	kWh	74
Required Array size = Electrical Power/ Insolation	kWp	18
No panels = Array size/ Panel rating	nr	65
Project estimates		

b) Grid Power

Extension of mains electricity to the borehole site will be required to cater for:

- Days of low insolation
- Capacity requirements when demands exceed the 7-hour solar pumping

The costs of 1.5km x 3-phase power line and 55 kVA transformer are included in the construction estimates.

c) Low Insolation

Solar insolation suffers from days of low solar insolation (called NO-SUN days). Table below shows that annually there are a total of 39 NO-SUN days over a consecutive month period.

Table 15: Equivalent Number of No-Sun Days in Kikoora

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual avg
2.11	5.54	3.65	2.2	2.32	3.73	2.78	2.74	2.29	3.53	4.58	3.53	**39**

Source: ***NASA Prediction of Worldwide Energy Resources***

d) Capacity Requirements

Table below shows the annual water deficit in meeting maximum water demands assuming solar pumping available for 6.5 hours per day.

Table 16: Annual Water Deficit on Solar Pumping

	2023	2028	2033	2038	2043
Annual Max. Water Demand m^3/a	71,525	100,813	139,556	195,276	268,767
Annual solar output deficit m^3/a	**14,892**	**43,800**	**82,344**	**138,408**	**211,992**
Project estimates					

e) Total Pumping Hours

Table shows the annual pumping hours required to meet maximum water demands using grid power at Kikoora. Borehole capacity limited to 18 hours per day from Year 2035 requires additional borehole resources before then.

Table 17: Annual Grid Power Total Pumping Hours

Parameters	**2023**	**2028**	**2033**	**2035 - 2043**
Daily pumping hours to meet max. demand	8.2	11.5	15.9	18*****
Annual pumping hours for no-sun days	320	449	620	702
Annual pumping hours to meet demand deficit	621	1,825	3,431	4,198******
Total Pumping hours using Grid Power	**941**	**2,274**	**4,051**	**5,068**
*** - Pumping hours at BH maximum output but not meeting water demands*				
Project estimates				

3.2.11 Comparison of Power Sources

Comparisons were made, of the two power sources (Solar and Grid power) basing on the present value costs of installation and operating costs over the design horizon of 20years, as presented in Table below. The cost of land required for the solar PV panels is not included in the comparison.

Table 18: Power supply option comparison

Present Value over 20-year project design horizon	**Grid Power**		**Solar Power**		**Hybrid**	
	Investment costs (Ush 10^6)	**Tariff costs (Ush 10^6)**	**Investment costs (Ush 10^6)**	**O&M @ 0.5%pa (Ush 10^6)**	**Investment costs (Ush 10^6)**	**O&M + tariff costs (Ush 10^6)**
	125	347.48	194.55	8.28	319.55	155.54
Total Costs	**472.48**		**206.69**		**475.09**	

From the computations presented in Table below, solar power presents as the most economical energy solution. However, solar power alone is insufficient to meet the project demands. A hybrid system (solar and grid power) presents total costs that are higher than costs for all the other options due to the high investment costs. However, given the insufficiency of solar power alone to meet the project demands, the hybrid system will be the next best option because of its low operation and maintenance costs compared to grid power.

3.2.12 Storage Tank and Site Facilities

a) Storage Tank

The storage tank is sized at 30% Ultimate maximum day demand as per *Water Design Manual* equivalent to 112m^3. However, analysis of balancing storage based the demand pattern for township taps (*Water Design Manual Figure 2-2)* at 16 hours pumping is presented in in the Detailed Engineering Design Report (March 2022). The storage tank will require 30 metres X 30 metres of permanently acquired land. An access road of 3-metre-wide and approximately 0.22 acres of land will be permanently acquired for easement.

Storage will be a pressed steel tank of 104m^3 capacity (6x5x2 plates) installed on an 18 m structural steel tower. The tank site location coordinates are 36N 298759E 127309N. Geotechnical investigations

for the tank site were carried out and the allowable bearing capacity was observed are presented in Table below.

Table 19: Allowable Bearing Capacity Summary for Kikoora Site Tank

Location	DPL Point	Depth (m)	N10	N-SPT	Ultimate Bearing Pressure, qa (kPa)	Allowable Bearing Pressure, qa (kPa)
Kikoora	T-01	0.10	6	4.2	111.7	37.2
		0.50	24	16.8	446.9	149.0
		1.00	15	10.5	279.3	93.1
		1.50	24	16.8	446.9	149.0
		2.00	20	14	372.4	124.1
		2.50	14	9.8	260.7	86.9
		3.00	14	9.8	260.7	86.9
	T-02	0.10	3	2.1	55.9	18.6
		0.50	14	9.8	260.7	86.9
		1.00	10	7	186.2	62.1
		1.50	9	6.3	167.6	55.9
		2.00	6	4.2	111.7	37.2
		2.50	4	2.8	74.5	24.8
		3.00	4	2.8	74.5	24.8

The tank foundations were therefore designed as presented in the Book of Drawings basing on these bearing capacities. A detailed Geotechnical Report is bound separately and presented together with the Detailed Engineering Design Report (March 2022). Site development will include access road, Attendant housing and fencing.

b) Chlorination Building

Chlorination in the water distribution systems is required to cater for incidental contamination. The chlorination building is sited at the storage tank for ease accessibility rather than borehole site. The building is a blockwork structure with clay roofing tiles on timber structure. The chlorine solution is injected into the delivery main using a continuous proportional dosing pump as *Dosatron D20S* which uses the flow of water as source of power. The chlorine solution dosage and chemical usage are presented in Table below.

Table 20: Chlorination Requirements

Parameter	Values	Units
Data		
Ct value required *(WHO recommended)*	15	mg-min/L
Chlorine solution strength	1%	
Tank volume	104	m^3
Minimum tank volume	32.5	m^3
Tank baffling factor	0.1	
Water inflow rate	24	m^3/h
Maximum outflow rate (peak hour at Future Year)	0.34	m^3/min

Parameter	Values	Units
Calculations		
Residual chlorine dosage		
Detention time = minimum volume/ max outflow rate x baffling factor	9.6	min
Required residual chlorine dosage	**1.6**	**mg/L**
Chemical dosing		
Chlorine solution rate = inflow rate x Cl_2 dosage/ Cl_2 sol strength	**3.84**	**L/h**
Chemical usage		
HTH powder active Cl_2	65%	
Chemical consumption	**59.1**	**g/h**
Project estimates		

3.2.13 Distribution System

a) Primary Distribution

A total of 33.074km with a 3 meters' easement corridor. Permanent Land Restriction will be required for easement and the pipe will be laid within the road reserve or on the sides of the access road. The layout of the primary distribution is presented in Figure below.

Figure 7: Kikoora Primary Water System (overlay Google Earth image)

The primary distribution system was modelled using *EPANET®* and *Hazen-Williams* pipe flow formula. The layout is presented in Figure below.

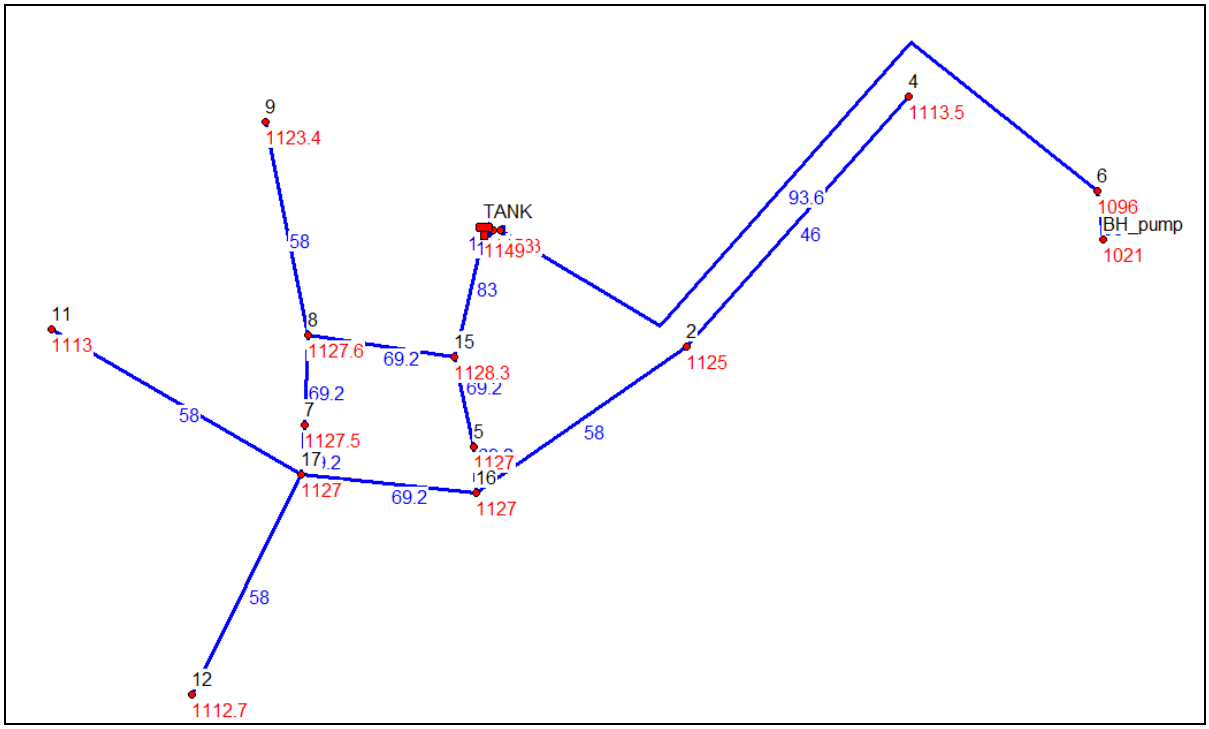


Figure 8: Primary Water Distribution Network

An extended period analysis of 168 hours (1 week) was undertaken based the demand pattern for township taps presented in the *Water Design Manual*. Figure below represents the pressure head in the storage tank with pumping from 5:00 AM to 9:00 PM

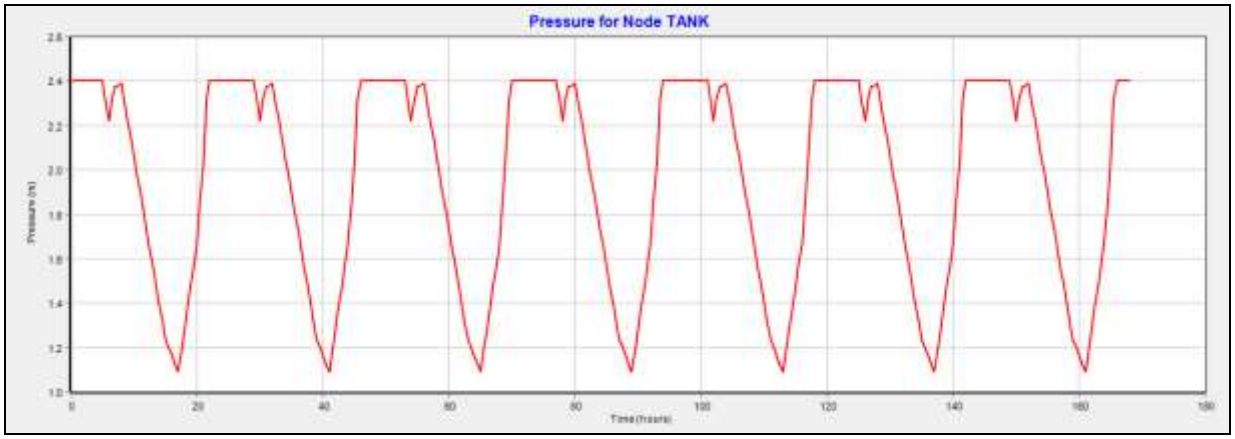


Figure 9: EPANET results for Water Levels in Storage Tank

The analysis results of the pressure ranges are presented in Table below.

Table 21: Epanet Results for Nodal Pressures

Node ID	Pressure (m)	
	static	minimum
Junc 2	26.4	11.03
Junc 4	37.9	20.91
Junc 5	24.4	12.78
Junc 7	23.9	9.19
Junc 8	23.8	9.11

Node ID	Pressure (m)	
Junc 9	28	11.21
Junc 11	38.4	22.38
Junc 12	38.7	20.09
Junc 15	23.1	14.34
Junc 16	24.4	11.96
Junc 17	24.4	9.68
Junc 6	72.23	57
Junc 1	0	0
Junc 3	-1.6	-2.91
Junc BH_pump		132
Tank	2.4	1.09
Project estimates		

b) Secondary distribution, service connections and Public supply points

The Project is based on a "demand-driven" approach requiring consumer surveys and payment of commitment fees to determine the locations of consumer connections and public stand posts. The secondary distribution and service lines which are a function of the "demand-driven" approach will be confirmed during construction following a programme of publicity, consumer education, application and payment of the required deposit.

Based on the Socio-economic survey 15% of population can afford an onsite water connection. This translates to 200 yard taps and 10,000m (50m maximum service pipe length) in Year 2023. The locations of Public water points will also be undertaken in consultation with the stakeholders; a total of 6no multi-tap stand posts have been included in the Project estimates based on 23% population affording PSP service level and 250 persons per stand post.

Table below provides a summary of the primary and secondary distribution pipework.

Table 22: Summary of Distribution Pipework

Component	Quantity
Primary Distribution system	
OD90 HDPE PN 6	300 m
OD75 HDPE PN 6	1,500 m
OD63 HDPE PN 6	1,950 m
OD50 HDPE PN 6	550 m
Total	**4,000 m**
Secondary Distribution (estimates)	
- OD20 – OD40 HPDE	**5,000 m**
- OD20 – OD25 HDPE service pipes	**10,300 m**
- Public Stand posts	**6 no**
- Yard Taps	**200 no**

3.2.14 Water Office and Supply of Equipment

A new Water Office block will be constructed for the public interface with the Operator of the water system in receiving payment of water bills, requests for new connections and reporting of faults. The office will be furnished and equipped under the construction contract.

The Office block and adjacent Visitors Toilet Block will be constructed in rendered blockwork, burglar proofed metal casement windows and clay roofing tiles. Site infrastructure will include septic tank and soak-pit, access road and hard standing, security lighting and fencing.

The construction contract will also include provision of equipment and tools to be handed over to the Operator of the new water system.

3.2.15 Sanitation facilities

The proposed project will require approximately 0.024 acres of land of 10m x10m for each for 6 stance water borne toilets. A total of 4no. will be constructed at the locations below;

Table 23: Location of public toilets

PAP Ref	Toilet Site Name	Institution/Land Owner	Location (Village, Parish, Subcounty)	X_COORD	Y_COORD	Remark
KKR/0147	Kikoora Subcounty Headquarters	Kakindo/Kikoora Subcounty	Kikoora A, Kikoora, Kikoora	298714.820	127468.842	New Toilet Facility (10 X 10 metres)
KKR/0148	Kikoora Market	Kakindo/Kikoora Subcounty	Kikoora A, Kikoora, Kikoora	298557.473	127030.739	New Toilet Facility (10 X 10 metres)
KKR/0149	St Mary Secondary School	St Mary Catholic Church	Kikoora B, Kikoora, Kikoora	298216.227	126966.734	New Toilet Facility (10 X 10 metres)
KKR/0150	Queen Mary Community School	Queen Mary Community School	Betania, Kigoma, Kikoora	294092.593	129657.677	New Toilet Facility (10 X 10 metres)

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 Kikoora RGC. A sustainable piped water supply and sanitation system have beneficial impacts on the social economic status of communities especially in terms of improving outcomes in the areas of health, poverty reduction and education.

3.2.16 Summary of Water Supply Proposals

Proposals for the water supply are summarized in Table below.

Table 24: Summary of Water Supply Proposals

Component	Unit	Quantity
Production Borehole		
Electric submersible pump set; 24m^3/hr at 94 m head	no	1
OD80 PVC Super Heavy Duty borehole riser pipe	m	76
20 kWp Solar Power System:	Unit	1
Site works, Attendants Quarters + Guardhouse	unit	1
Grid Power Supply		
3-phase power line	m	1,500
Transformer	kVA	30
Pumping main		
OD110 uPVC/ PN 16	m	1,480
DN100 steel at tank	m	25
Storage Tank		

Component	Unit	Quantity
Pressed steel tank on 18 m tower	m^3	105
25 m^2 Building + chlorination system	no	1
Site development works and fencing	sum	
Primary Distribution system		
OD90 – 50 HDPE PN 6	m	4,000
Secondary Distribution (estimates)		
OD20 – OD40 HPDE	m	5,000
Public Stand posts	no	6
OD20 service pipes	m	10,300
Yard Taps	no	200
Water Office, 55m^2	no	1

Project Estimates

3.3 Construction Activities

a) Project Phases

- *Mobilization Phase* - This phase will involve mobilization of the construction human resource, equipment, construction materials, erection of 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.
- *Construction Phase* - All project activities under this phase are supposed to be carried along the tracks, route and access paths within the boundaries of the identified project sites without disturbing or obstructing the neighbors 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 case of trenches, proper barricade has to be applied to warn and protect the people of 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:
    - Setting out to demarcate rights of way, work areas, clearing limits. Access paths, detours, bypasses and protective fences or barricades should all be in place before construction begins.
    - Excavation of trenches for water pipe lines;
    - Trench sheeting and bracing to protect collapsible trench side walls;
    - Placing concrete to bases of foundations;
    - Laying of mains water pipes; and
    - Backfilling, disposal of overburden and surface restoration to at least match the condition that existed prior to the water works construction.
- *Demobilization Phase* - Demobilization phase will involve clearing of 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 and 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.
- *Operation Phase* - This will involve employment of operators both skilled and unskilled, operation of the water supply system, maintenance of the facilities put in place, etc.

b) Construction Method

The actual choice of construction method and resources will be the Contractor's responsibility as dictated by the site conditions, productivity and construction schedule. The choice has a bearing on the cost implication. In all construction activities safety of operations is paramount. It entails carrying out of construction activities and operation of equipment by experienced personnel under supervision of experienced and qualified staff and use of well serviced construction equipment in good working condition. Safety on site will be managed by close supervision of the contractor's Health & Safety Officer and the Engineer's construction Supervision staff of the site activities with regard to the working environment in accordance with the applicable Environment, Safety, Health and Social Safeguard Policy.

c) Plants and Equipment

Because of the nature of the construction activities that will be undertaken, a number of plants and equipment will be used to execute the assignment by the contractor or the sub-contractor(s) and these will include among the following: Graders, Vibrators /Rollers, Water Trucks, Bulldozers, Front End Loader, Vehicles, Containers, Excavators, Water Pumps, Mechanical Tool Boxes, Civil Plate Compactors, Dump truck, Concrete Mixer, Crane and Compactor.

d) Earthworks

The earthworks including site clearance, general filling and excavation, and trenching can be carried out either by manual labor or mechanical equipment where large quantities are involved.

e) Concrete works

Concrete production is expected to be by the use of concrete mixers and/or manual production for the small works and where use of a mixer may be impractical.

f) Structural Steel

The lifting of heavy structural steel sections will be by cranes. The steel sections will be joined by either bolts or welding.

g) 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.

h) Masonry

All masonry work is to be by manual labor using the necessary hand tools.

i) Pipe laying

Pipe laying is expected to be carried out by manual labor using the necessary hand tools and pipe lifting equipment for the heavy pipes.

j) Electro-Mechanical Installations

All electro-mechanical installations are to be carried by manual labor using the necessary hand tools and mechanical lifting equipment.

k) Implementation Schedule

The main objective is to determine a total duration of the project, which equals a "critical path" of events that determine the total duration. The anticipated implementation schedule is as per Table 25.

Table 25: Implementation Schedule

Activity	Duration (Months)
Tendering Process	4

Tender Evaluation	
Contract Negotiation and Award	
Construction of Works	20
Defects Liability Period	12
Total	**36**

3.4 Quality Assurance

It is the responsibility of the supervising consultant to ensure that the desired quality of work is achieved. The materials supplied for the works should not deviate from those specified. At each stage during the construction process, samples of materials have to be taken to the Materials Laboratory for testing to ensure conformance to the specifications.

4 ESIA METHODOLOGY

4.1 Introduction

This section outlines the methodology that was used to assess the E&S baseline and to identify, predict & assess the environmental and social impacts of the project on each relevant environmental and social component. It also covers the methodology for the identification of mitigation and monitoring measures that was recommended to address these impacts and identification of relevant stakeholders. The methodology consists of a review of Uganda's institutional arrangements, regulations and policies. Environmental and social impacts of the proposed project will be predicted in relation to environmental and social receptors and natural resources while comparing prevailing pre-project conditions and post-project situations.

The requirement for environmental impact assessment in Uganda is set out by the *National Environment Act No. 5 of 2019* and the *Environmental and Social Impact Assessment Regulations of 2020*. This process was guided by the Environmental Impact Assessment (EIA) Guidelines (NEMA, 1997) and the process is schematically presented in Figure 10 overleaf.

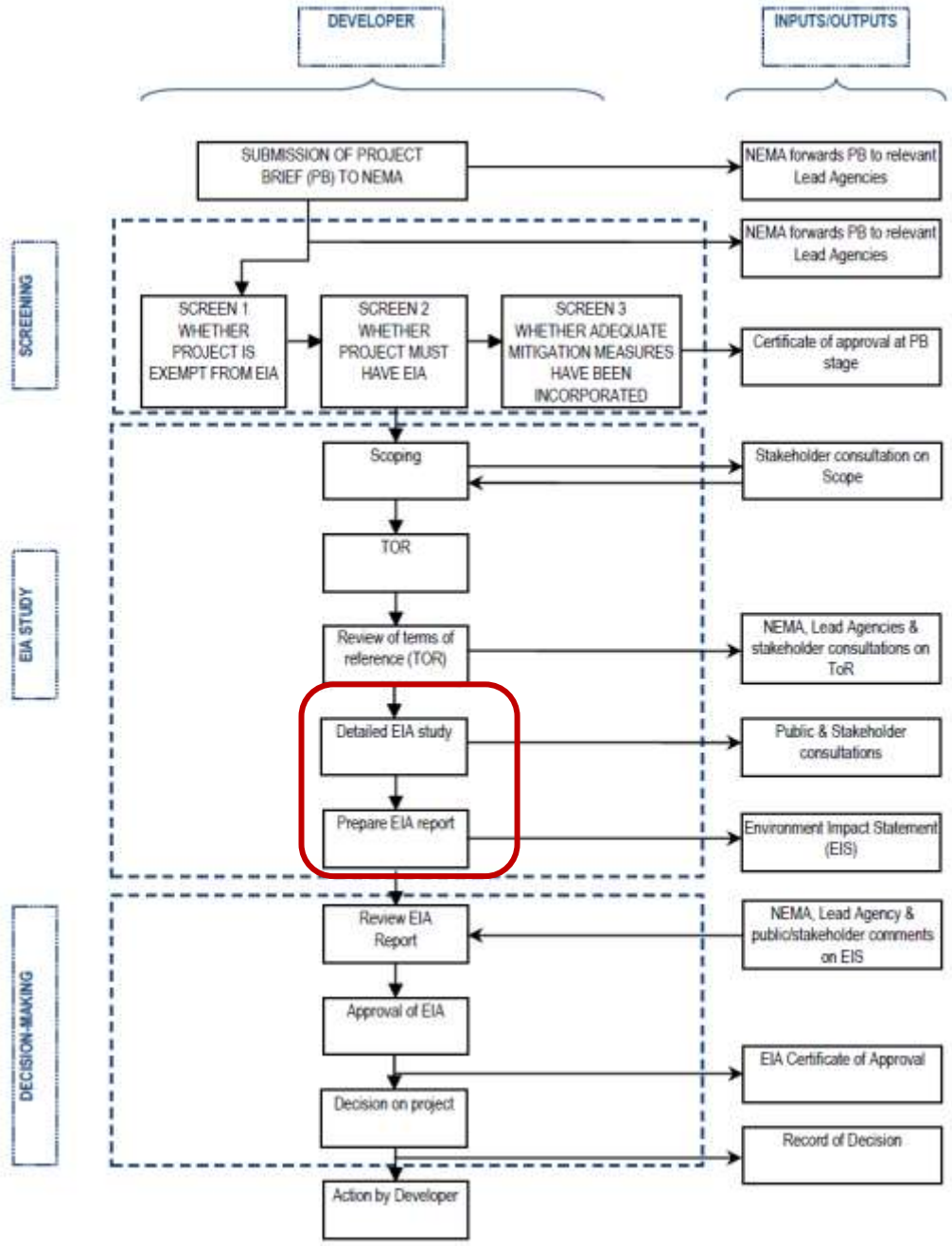


Figure 10: ESIA process that was adopted as provided for under the Laws of Uganda

4.2 Physical Environment

Baseline noise levels and air quality were measured, not only to inform construction contractors about pre-construction conditions existing at proposed sites, but also the first annual environmental audit. Water quality analysis results obtained at the design stage have been adopted in this ESIA report. These were determined through the following actions:

4.2.1 Ambient Noise Assessment

Baseline noise measurements were undertaken at locations around the proposed facility sites (i.e. at production well and construction site for the pump station) with potential receptors. Measurement of ambient noise levels were carried out using a precision integrating sound level meter, with an active range of 0-130 decibels (dB) and complying with IEC 651 and ANSI S4 standards. A Casella CEL-621C

digital noise logger will set to record for a sample period of 10 minutes at each of the selected locations. The assessment procedure involved recording the LA_{MAX} and LA_{MIN} decibel levels. Measurement points were recorded using a GPS receiver and the noise sources together with the ambient environment at each location noted. The obtained results have been compared against the National Environment (Noise Standards and Control) Regulations, 2003. The regulations require that persons to be exposed to occupational noise exceeding 85 dBA for eight hours in a day should be provided with requisite hearing protection.

4.2.2 Air Quality Assessment

Baseline air quality was measured using a pair of digital MX6 iBrid™ portable gas meters (Industrial Scientific-Oldham) and a Microdust 880nm digital aerosol monitor (Casella®). Measurement points or locations were selected basing on presence of potential receptors (such as construction sites for the pump station, sanitation facilities etc.) and an averaging period of 8 hours was used.

For gaseous emissions.

- The equipment was powered on and left in measuring mode for the first two minutes to allow zeroing and self-calibration. This was followed by ten minutes of measurement to allow digital readings to stabilize before they could be recorded.
- Measurements were conducted at each of the selected points to determine whether there would be any gaseous emissions detected.
- Values for Lower Explosive Limit (LEL), Carbon monoxide (CO), Oxygen (O_2), Hydrogen sulphide, H_2S, volatile organic compounds (VOCs) will be noted.

For particulate matter.

- The equipment was allowed for two minutes for zeroing down and thereafter, it captured the samples for five minutes with interval of 10 seconds.
- For every sampled point, a GPS coordinate was noted.

4.3 Biological Environment

4.3.1 Flora

Transect walks were taken along the areas planned for the water supply and sanitation systems and records were made of the vegetation. While some plant species were identified on site, specimens of others were collected and taken for confirmation at the Makerere University Herbarium. Additional information was obtained through consultation with communities on the local names, use and importance of some plant species. An inventory of the impacted vegetation was taken. The International Union for Conservation of Nature's Red List of Threatened Species (IUCN 2022) was utilized for categorization of species. Some of the tools that were used included: Plant press, Secateurs, Ivy tags, Measuring tape, Diameter tape and camera.

4.3.2 Fauna

- *Birds* - Bird species occurrences were surveyed through point count surveys using observations, hearing and consultations during which all species detected and encountered were recorded. Great emphasis was placed on species of conservation importance. Species identification were based on Stevenson and Fanshawe (2002). While some species were categorised according to IUCN (2015). Some of the tools used included: Binocular and camera.
- *Butterflies* - Random sweeping using sweep net were done (Biodiversity Rapid Assessment) and it involved a transect walk through the areas recording all butterfly species encountered on wings. Sample specimens were taken for most of the species, except for those whose

identification could be easily confirmed in the field. Opportunistic observations were included to help build the species list. Each of the butterfly species was assigned to one of the ecological categories (Akite, 2008). Some of the tools used included: insect net and camera.

- *Herpetiles* - Both reptiles and amphibians were surveyed using Visual Encounter Survey (VES) method (Rodda *et al.,* 2007). Visual Encounter Surveys were conducted by observation while walking through a designated area for a prescribed period of time, visually searching systematically along transects for animals. VES involved a search on the ground, trees and grasslands. Herpetiles were surveyed during the day from 08:00 am to 07:30 pm (Spawls *et al.,* 2006). Some of the equipment that was used include: camera and snake stick.

4.4 Social Environment Survey

Key stakeholders were identified at the national, regional, district, Sub County and community level through interviewing experts, brainstorming and document review. Stakeholder identification and engagement is an on-going process that requires regular review and updating. Therefore, the stakeholder list can be updated from time-to-time. The consultant collected and analysed data and held consultations with various stakeholders and other interested and affected parties involved, to ensure that all existing data relevant to the assignment is available to us. We undertook site survey to determine the area of influence and gather information under several key areas such as: (a) Socio-economic conditions in the surrounding communities such as health and infrastructure and (b) Current land use in the proposed project sites. Participatory stakeholder identification was used in identifying and analysing the key stakeholders, including planning for their participation. Therefore, it was the starting point of our participatory processes and provides the foundation for the design of subsequent stakeholder activities throughout this study. Identified stakeholders include:

Table 26: Categorization of Stakeholders to be engaged during ESIA

Category	Stakeholders targeted	Method of engagement	Roles and responsibilities
National	National Environment Management Authority (NEMA); Ministry of Gender, Labour and Social Development (MGLSD)	Key Informant Interviews (KIIs)	-NEMA is be responsible for the review and approval of ESIAs, post-implementation audits and monitoring of approved projects. Coordinate, inspect, supervise and monitor project activities to ensure that the environment and natural resources are not depleted but managed sustainably. -MGLSD under department of Occupational Health and Safety (OHS) is responsible for inspecting and registering the workplace and monitoring of conditions under which employees on the project are subjected.
Regional	Regional offices of the Ministry of Water and Environment including: Rural Water and Sanitation Regional Centres (RWSRCs), Umbrella Authorities	KIIs	Construction supervision including the implementation of the proposed ESMP and implementation of the WSPP.

Category	Stakeholders targeted	Method of engagement	Roles and responsibilities
	(UAs), NEMA, Water Management Zones (WMZs		
District	District Local Government of Rakai. Specifically, the following offices of Water, Natural Resources, Planning, Health, Production and Community Development and the political wing including the Chairperson LC V and Councilors representing the beneficially areas	KIIs	Mobilize support for the project. Monitor social-environmental impacts both during construction and operation phases
Sub County	Sub county Chief, Community Development Officer, LC III Chairpersons	Focused Group Discussions (FGDs and KIIs	Mobilize local communities and key stakeholders to participate in EIA consultations and/or public hearings
Community	Local Council I, Landlords of sites where the water infrastructure will be constructed and any CBOs or local NGOs in the sector	FGDs and KIIs	Develop construction (works) schedules in their respective areas. -Participate in the scheduled meeting regarding the project activities and progress -Identify mitigation measures of the environmental and social issues -Monitor the progress of the project activities Input in the planning and identification of water and sanitation facilities.

4.4.1 Sampling and Selection of Respondents

The sampling process was primarily purposive. The ESIA targeted particular individuals, groups and communities that have a stake in the proposed project. As thus, only such entities as identified in the stake holder analysis were selected to participate in the consultation process. Social data of affected persons was obtained through use of a questionnaire, interviews, Focus group discussions, meetings with affected communities and technical teams at local government levels. Key informants at various levels and from different specialties, right from the community were also purposively selected to contribute their views on the impact of the project. This widened the perspectives on the projects, enrich the data collected and ultimately provided deep insights about the knowledge and attitudes of the various stakeholders towards the project.

Socio-economic surveys were conducted to define impacts and to provide a monitoring baseline following an initial desktop data review. The survey used a questionnaire aimed at capturing the full range of livelihood Capitals based on the Sustainable Livelihoods Framework.

The data was collected via a mixed-method approach incorporating both quantitative and qualitative assessments, as well as an assessment of available secondary resources. Quantitative surveys were conducted for all Project Affected Households (PAHs) whereas the qualitative data was gathered to

provide supporting details for the quantitative data collection surveys. Qualitative data collection was based on KIIs, FGs, and participatory methodologies including village transect walks. Household socio-economic surveys was undertaken alongside the cadastral and asset surveys. The land and asset component measured and described fixed assets for each household including land holdings, land type, buildings, crops, and trees. This information was collected to inform compensation agreements and to assist in resettlement impact assessments. Details of the household survey are presented in the RAP and Valuation Report.

4.4.2 Study Methods

Stakeholder analysis sought to answer the following fundamental questions: Who are the key stakeholders (primary/secondary)? What are the interests of these stakeholders? How have they been and or will be affected (positively/negatively)? Which stakeholders are most important for the success of the study? How will various stakeholder groups participate throughout the study? The following methods were used for the social environment survey.

i. *Primary data source* - Primary data sources included Focused Group Discussions (FGDs and Key Informant Interviews (KIIs) with local technocrats and leadership[3].
ii. *Key Informant Interview (KII)* - targeted civil servants, political leaders and representatives of the management structures who are responsible for environmental management activities on various levels. Key informants were selected and interviewed on the basis of their roles as leaders, specialized knowledge and experience on the subject under study.
iii. *Focused Group Discussions (FGDs)* – targeted stakeholders at Sub County, Parish and Village levels. FGDs were used as a qualitative approach to gain an in-depth understanding of social issues. The method aimed at obtaining data from a purposely selected group of individuals on the proposed project activities.
iv. *Secondary sources* - These included: existing data, existing environmental data, existing reports/documents, pre- and post- implementation of management/construction decisions, EIA reports and ESMPs in place. Examples of these documents include: Kakumiro District Development Plan, District State of Environment Report, and Engineering Design Report for Kikoora RGC Water Supply and Sanitation System etc.

4.5 Impact Assessment and Evaluation Method

Based on the project details and the baseline E&S status, potential impacts as a result of the construction, operation and decommissioning of the proposed project activities were identified. We therefore proposed an impacts analysis criteria that took into account the magnitude or intensity of impacts based on project activities and sensitivities in the project area that were identified in the environmental and social baseline. Impact characteristics to be considered are described in Table 24 and include:

- Type of impact, whether direct or indirect
- Nature, whether positive or negative
- Duration of impact
- Intensity of impact
- Likelihood of impact occurring
- Spatial extent of area of impact
- Sensitivity of receptor of impact

[3] Primary sources can be described as 'a firsthand testimony or direct evidence concerning a topic under investigation whose nature cannot be determined without reference to the topic and question it is meant to investigate' or 'primary sources are those items that are original to the problem under study'.

The first six parameters give a sense of magnitude of impact, which together with sensitivity; result in an overall severity of impact.

Table 27: Impact Assessment and Evaluation

Criteria	Description
Type of Impact	▪ Direct - An impact that appears immediately as a result of an activity of the project. For example, the loss of vegetation is a direct impact of site clearing. The direct impacts would be experienced mainly during the construction process, and include effects on the physical environment, health and safety of the construction workers including community members within the project area. ▪ Indirect - An impact that is related to the project but that arises from an activity of the project at a secondary level. For example, the demand for supplies and services may cause indirect impacts on the local economy by increasing indirect employment opportunities.
Nature	▪ Positive ▪ Negative
Duration	▪ The lifetime of the impact; this is measured in the context of the life-time of the proposed development. Whether the Impact will be: ▪ Intermittent – not occurring at all times. ▪ Temporary-only for a short period. ▪ Short term - the impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase. ▪ Medium term - the impact will last for the period of the construction phase, thereafter it will be entirely negated. ▪ Long term - the impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter ▪ Permanent
Intensity	▪ Whether or not the intensity (magnitude) of the impact would be high, medium, low or negligible (no impact). An attempt to quantify the impacts of components on the affected environment will be described as using following definitions: ▪ Negligible ▪ Low - where impact alters the affected environment in such a way that natural processes of functions are not affected in any significant way. ▪ Moderate - where the affected environment is altered, however, function and process continue, albeit in a modified manner. ▪ High - where function or process of the environment is seriously altered and disturbed to the extent where it temporarily or permanently ceases.
Spatial Extent	▪ The physical and spatial size of the impact; a description of whether the impact would occur on a scale described as follows: ▪ Site - whether the impact will be within limited locale of the project site / study area affecting the whole or measurable portion of the area. ▪ Local - whether the impact will affect the environment or communities along the border of the study area or in the extended area adjacent to the site or perhaps outside the immediate environment. ▪ Regional - whether the impact extends beyond the study area affecting areas on a regional scale.
Likelihood	▪ The probability or likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The probability that a certain impact will occur on scale described below:

	▪ Uncertain - insufficient information to determine its probability. Because the precautionary principle is followed, this increases the significance of the impact. ▪ Improbable - the impact is unlikely to occur. ▪ Probable - the impact could possibly happen, and mitigation planning should be undertaken. ▪ Highly probable - it is most likely that the impact will occur at some or other stage of the development. ▪ Certain - the impact will take place regardless of any prevention plans, and only mitigatory actions can be relied on to contain the effect.
Sensitivity	▪ Degree of change effected on natural processes or people's livelihoods; the sensitivity of the receptor of the impact to change ▪ Very low ▪ Low ▪ Moderate ▪ High

Table 28 below presents a quantitative format for ranking impacts based on parameters above, summarized as magnitude and sensitivity.

Table 28: Quantitative Rating of Impacts

Significance			**Sensitivity**			
			Very low	Low	Medium	High
			1	2	3	4
Magnitude	Very low	1	1 Negligible	2 Minor	3 Minor	4 Minor
	Low	2	2 Minor	4 Minor	6 Moderate	8 Moderate
	Medium	3	3 Minor	6 Moderate	9 Moderate	12 Moderate
	High	4	4 Minor	8 Moderate	12 Moderate	16 Severe

Table 29 below presents the overall impact rating criteria, with illustrations of such impacts.

Table 29: Overall Impact Rating and Description

Overall Impact Rating	**Description of Impact**	**Significance**
Severe	▪ Non-compliance with national policy, environmental laws and regulations ▪ Highly noticeable, irreparable effect upon the environment ▪ Significant, widespread and permanent loss of resource ▪ Major contribution to a known global environmental problem with demonstrable effects ▪ Causing mortality to individuals of a species classified as globally or regionally endangered ▪ Major exceedance of water/air quality and noise guidelines representing threat to human health in the long and short term ▪ Causing widespread nuisance both on and off site ▪ Extensive property damage or loss, ▪ Widespread effects on livelihoods.	>12
Moderate	▪ Frequent breaches of national regulations, including water/air quality and noise guidelines, wetlands and river banks regulations causing localized nuisance both on and off site	6 – 12

Overall Impact Rating	Description of Impact	Significance
	▪ Noticeable effects on the environment, reversible over the long term. ▪ Localized degradation of resources restricting 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 but returning to normal in the medium term ▪ Elevated contribution to global air pollution problem partly due to preventable releases ▪ Unplanned immigration flows ▪ Increased traffic in sensitive environments ▪ Increased serious crime rates ▪ Widespread physical resettlement, affecting livelihoods	
Minor	▪ Noticeable effects on the environment, but returning naturally to original state in the medium term ▪ Slight local degradation of resources but not jeopardizing further usage ▪ Disruption/disturbance to normal behaviour of a globally or regionally endangered species returning to normal in the short term ▪ Small contribution to global air problem through unavoidable releases ▪ Elevation in ambient water/air pollutant levels greater than 50% of guidelines ▪ Infrequent localized nuisance ▪ Population increase not expected to stress existing infrastructure	2 – 4
Negligible	▪ No noticeable or limited local effect upon the environment, rapidly returning to original state by natural action ▪ Unlikely to affect resources to noticeable degree ▪ No noticeable effects on globally or regionally endangered species ▪ No significant contribution to global air pollution problem ▪ Minor elevation in ambient water/air pollutant levels well below guidelines ▪ No reported nuisance effects. ▪ Temporary or intermittent changes to livelihoods or life quality aspects	< 2

4.6 Identifying Mitigation Measures and ESMP Preparation

Possible mitigation measures considering all the project implementation phases have been identified and described in detail. Measures and actions to address negative impacts have followed the risk management hierarchy of avoidance and prevent, minimization, mitigation or restore and compensation. Measures proposed follow the Ugandan legislation and those of the World Bank safeguard Operational Policies.

The ESMP is well defined with performance indicators, targets and acceptable criteria that can be tracked over defined periods, with estimates of the resources and responsibilities for implementation. The ESMP format is flexible to ensure the integration of project specific mitigation, enhancement and

monitoring requirements. The ESMP's scope and level of details is proportional to the number and complexity of the measures required to ensure the project's environmental and social sustainability.

The following components constitute the minimal contents of an ESMP:

a) *Objectives of the ESMP* - This section specify what the ESMP aims to bring the project into compliance with applicable national environmental and social legal requirements and the Bank's safeguards policies and procedures. The other objective of the ESMP is to outline the mitigating/ enhancing, monitoring, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse environmental and social impacts, or to enhance the project beneficial impacts. It also addresses capacity building requirements.
b) *Context the ESMP* - briefly describes project activities and major environmental and social components that will likely be affected positively or negatively by the project. It describes and analyses the physical, biological and human conditions prevailing in the project area, highlighting relevant environmental and social issues among others.
c) *Beneficial and Adverse Impacts* - This section focuses on beneficial impacts that can be enhanced to improve the project environmental and social performance as well as on adverse impacts that require mitigation measures to be minimized or compensated.
d) *Enhancement/Mitigation Measures and Complementary Initiatives* - This section proposes feasible and cost effective measures to address the impacts previously defined, in order to accrue project benefits through enhancement measures or to reduce potentially adverse environmental and social impacts to acceptable levels (mitigation measures).
e) *Environmental and Social Monitoring Program* - A monitoring program aims to ensure that mitigation and enhancement measures are implemented, that they generate intended results and that they are modified, ceased or replaced when inappropriate.
f) *Responsibilities and Institutional Arrangements* **-** The implementation of enhancement and mitigation measures and the completion of the monitoring program require to clearly establish responsibilities among the various organizations involved in project implementation and operation. The ESMP proposes support to the organizations that may have insufficient capacities to fulfil their obligations. This support could be provided through various means including technical assistance, training and/or procurement.
g) *Estimated Cost* - This section estimates the capital and recurrent cost associated with the various proposed measures (enhancement and mitigation), the monitoring program, consultations, complementary initiatives and institutional arrangements.

Table 30 provides a summary template for Monitoring Requirements.

Table 30: Summary Template for Monitoring Requirements

Phasing	Mitigation Measure	Parameters to be Monitored	Location	Measurements	Frequency	Responsibilities	Cost
Pre-Construction Phase							
Construction Phase							
Operation and Maintenance Phase							

A monitoring program aims at ensuring that mitigation and enhancement measures are implemented, that they generate intended results and that they are modified, ceased or replaced when inappropriate. Further, it allows assessing compliance with national environmental and social policies and standards. A monitoring program include two parts:

a) *Surveillance activities* - The surveillance aims to ensure that the proposed mitigation and enhancement measures are effectively implemented during the construction phase.
b) *Monitoring activities* - These activities consist of measuring and evaluating the project impacts on some environmental and social components of concern and to implement remedial measures, if necessary.

The program defines as clearly as possible the indicators for monitoring the mitigation and enhancement measures that need to be assessed during project implementation and/or operation. The monitoring program also provides technical details on monitoring activities such as methods to be used, sampling locations, frequency of measurements, detection limits, and definition of thresholds that will signal the need for corrective actions. The process for establishing a monitoring programme consists of the following actions as provided for in this ESIA:

- Specific management and monitoring objectives;
- Identification of the scope of monitoring;
- Recommend appropriate monitoring environmental and social aspects and technology;
- Specify how the information collected should be used in decision-making;
- Define the spatial boundaries and select map scales and sites for observation, measurement or sampling;
- Select key indicators for direct measurement, observation or sampling;
- Define how the data will be analysed and interpreted and how it should be presented in monitoring reports;
- Define the precision and accuracy required in the data;
- Consider compatibility of data to be collected with historical data and with related contemporary data;
- Set minimum requirements for monitoring.

5 ENVIRONMENTAL & SOCIAL BASELINE

5.1 Climate

Kikoora project area has tropical climate with bimodal rainfall patterns due to its proximity to the equator, Lake Albert and numerous rain forests. Climatic data for of parameters; temperature, wind, solar, rainfall, relative humidity was obtained from UNAM and analysed. Records of daily rainfall data for a period of 40 years (1944 to 1983) for Kakumiro weather station (previously in Kibaale district) were extracted and used to calculate average monthly and annual rainfall. Daily rainfall data for every month was summed up and averages obtained over the years for a specific month as seen in Figure 10.

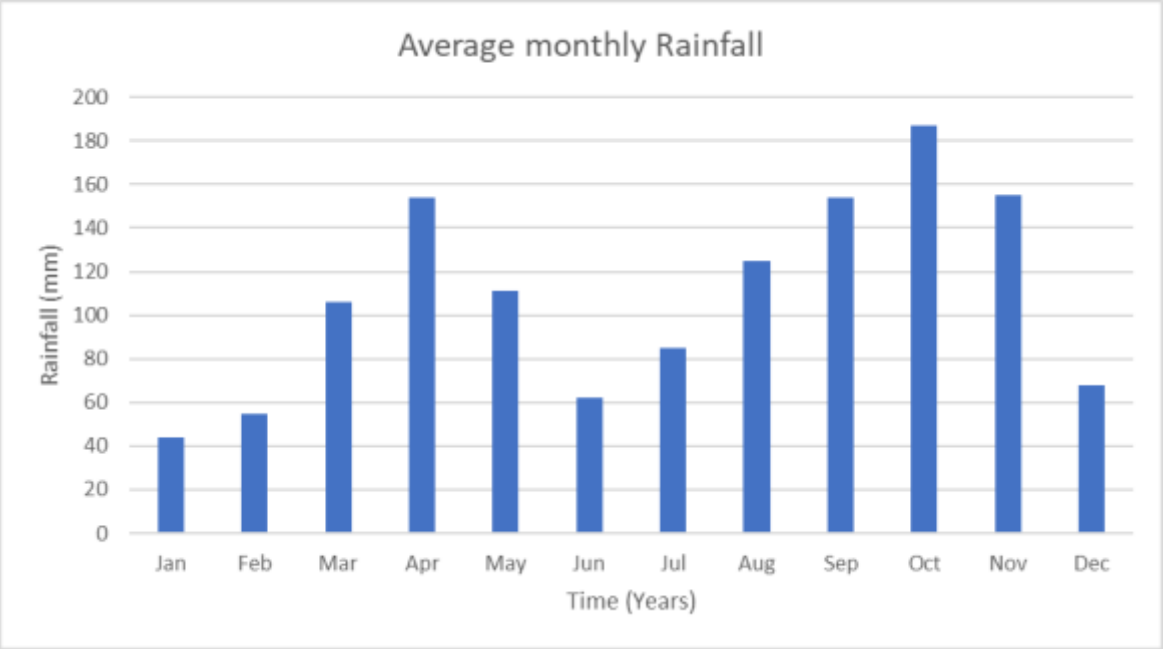


Figure 11: Annual distribution of mean monthly rainfall (P)

In Figure 4, it was observed that the project area experiences a bi modal rainfall pattern receiving peaks of rainfall in April (154 mm) and October (187mm) while lows in January(44mm) and February (55 mm). The wet months receive rainfall of 150mm while during the dry months, the rainfall received is below 60mm.

5.2 Topography

The elevation in the study area ranges from 2000 to 4000 ft above the sea levelthe project area is a hilly and rocky area and most water sources are located in valleys while people stay on slopes of hills and hill tops which have no water sources. The nature of terrain contributes to long distances to be covered in order to access water and very tedious for people carrying water on the head. Average walking distance to water source is about 1.5kms while in some communities, people walk as far as 3kms to access safe water. In Kakindo Sub County, people are settled on top of the hills but water is found in the valleys. Evidently, the slopes are very steep which are not easy to climb.

Plate 2: The topographic view of the project area (Kikoora RGC)

5.3 Geology and Soils

The process of erosion and accumulation that acted on the land surfaces gave rise to many types of soils in the project area. The soils are ferrallitic type. Productivity of this area largely depends on favorabled rain fall. The main types of soils include Buwekula, Kamusene and Buyaga catena. These soils are mainly sandy clay loams. They have moderately infiltration rates. Over ninety percent (90%) of the project area is covered by ferralitic soils with a few outliers of lithosols. Groundwater recharge potential is fairly good in comparison with the Lower Muzizi, Aswa and Kahomba sub-catchments. This is as a result of the high sand content in the loam soils as compared to the clayey ferralitic soils can be expected in the fractured bedrock.

Plate 3: Examples of the soils within the project area

5.4 Flora

Kikoora RGC is greatly characterised with tree farming/ man-made woodlands, with a limited range of habitats for plants and animals. Fruit trees especially, mangoes, avocados, jackfruit trees and paw paws are common. The vegetation within this project area is a blend of riverine forests, shrub savanna, woody savanna and thicket clumps. The area is predominantly covered by grassland, short herbs, shrubs and scattered eucalyptus plantations. The natural vegetation mainly the borehole area, pumping stations, water storage tank and along the pipeline network is largely simplified and/or

cleared to open up space for agriculture. Most of the plant species recorded are classified at Least Concern by IUCN status and these included: *Cyperus papyrus L., Cassia mimosoides, Ageratum conyzoies, Digitaria abyssinica, Hyparrhenia filipendula, Melinis repens, Guizotia scabra, Andropogon schirense, Perenni rufus, Conyza floribinda, Cyperus latifolius, Pavetta ternifolia, Melanthera scandens, Panicum trichocladum, Hyparrhenia filipendula, Paspalum scrobiculatum, Kalanchoe crenata, Ocimum lamiifolium* among others. All are fairly common and widely occurring species.

Riverine forests were observed to occur along streams and wetlands/swampy areas and some of the identified species include: *Neoboutonia macrocalyx, Albizia glaberrima var. glaberrima, Phoenix reclinata*, *Erythrina abyssinica*, *Macaranga kilimandscharica* and *Sterculia dawei*. The herbaceous layer is mainly composed of *Aframomum sp.* and different species of sedges such as *Cyperus spp*. and *Mariscus spp*. and these are locally dense where the tree canopy is open. The shrub coverage along hilly areas with rock outcrops in some areas include: *Harungana madagascariensis, Schrebera alata* and *Entada abyssinica*. Dominant grass species observed included: *Themeda triandra, Cymbopogon nardus, Aloe volkensii* and *Hyparrhenia spp*. The dominant trees in the woody savanna are *Acacia abyssinica, Acacia sieberiana, Albizia adianthifolia, Combretum molle, Croton macrostachyus, Ficus thonningii, Polyscias fulva, Sapium ellipticum*. Dominant shrubs are *Lantana camara* and *Acacia hockii* and may be locally abundant as well as the shrubby plant *Asparagus flagellaris*. The continuous grass layer is mostly composed of *Sporobolus pyaramidalis, Brachiaria decumbens* and *Panicum maximum*.
None of the flora species in the project area is of conservation concern with regard to IUCN Red list of threatened species

Plate 4: Some of the vegetation around the production well in the project area.

5.5 Fauna

There was generally low species diversity and abundance across the project area and within the areas earmarked for pumping stations, water storage tank and along the pipeline network probably due to disturbance that already exists from cultivation, cattle ranching, infrastructure for human settlement and the eucalyptus savannah that provides very few micro habitats for exploitation by different butterfly species and communities. Butterflies belonging to three families Pieridae, Nymphalidae and Hesperidae were encountered across the project area. *Belenois creona* and *Mylothris rubricosta* family Pieridae were the most encountered followed by *Bicyclus vulgaris* and *Ypthima asterope* family Nymphalidae.

Reptiles and amphibians are a unique group of vertebrates and are very sensitive to changes in their environment such as habitat loss and modification. The Amphibians recorded were of Least Concern as their conservation status and included: Flat-backed Toad (*Amietophrynus maculatus*),

African Common Toad (*Amietophrynus regularis*), Reed frog (*Afrixalus quadrivittatus*). One of the common reptiles encountered was the Monitor lizard (*Varanus exanthematicus*). There were no endangered amphibians and reptiles recorded, and even if they did occur, it is not likely that there will be a large population in the kind of landscape of such species.

Birds are some of the most widely used indicator taxon for monitoring human mediated impacts on the environment. The following bird species were recorded: Black-and-white Mannikin (*Lonchura bicolor*), Common Waxbill (*Estrilda astrild*), Bronze Mannikin (*Lonchura cucullata*), African Firefinch (*Lagonosticta rubricate*), Fan-tailed Widowbird (*Euplectes axillaris*), Spectacled Weaver (*Ploceus ocularis*), Grey-headed Sparrow (*Passer griseus*), Fork-tailed Drongo (*Dicrurus adsimilis*), White-crested Helmet-shrike (*Prionops plumatus*), Collared Sunbird (*Hedydipna collaris*), Grey-backed Camaroptera (*Camaroptera brachyuran*), Ross' Turaco (*Musophaga rossae*), Hadada Ibis (*Bostrychia hagedash*), African Pied Wagtail (*Motacilla aguimp*) among others. Common migrant species included: Grey Heron (*Ardea cinerea*), Ring-necked Dove (*Streptopelia capicola*) and Cattle Egret (*Bubulcus ibis*). All are listed as LC on the IUCN Red List of Threatened species.

5.1 Noise Levels

There are no cases of noise pollution at the proposed project areas. Thus the project site indicates a generally pristine environment with respect to ambient noise. However, as would be expected due to the increased human activities and construction activities noise levels are likely to increase. Noise levels recorded at selected locations within the proposed project area are presented in Table 31.

Table 31: Noise levels measured at the proposed project sites.

Area	Location	LA_{min} dB	LA_{max} dB	LA_{Eq} dB	Comments
Kikoora BH area	1° 8'46.67"N, 31°12'7.50"E	30.4	32.0	31.2	Swishing tree leaves, twittering birds and human conversations
Kikoora RGC area	1° 8'43.83"N, 31°11'24.86"E	35.7	38.9	37.3	Swishing tree leaves, twittering birds and human conversations
Reservoir tank area	1° 8'55.74"N, 31°11'31.41"E	30.4	33.2	31.8	Swishing tree leaves, twittering birds and human conversations

The levels are based on land use Category D (Residential plus Industry or small scale production and commerce) for which daytime and night limits are 60 and 50 dBA, respectively according to the National Environment (Noise Standards and Control) Regulations 2003. All measurements were conducted during daytime.

5.2 Air Quality

The ambient air quality is assumed to be good as there are no major industrial sources of air emissions. The primary sources of air emissions in the area are automobiles (vehicles and motor cycles). Fugitive dust is attributed to vehicular movements along loose surface/murram roads, which dust levels, are exacerbated during dry, sunny and windy periods. Air quality measurements indicated a reasonably clean environment with respect to air quality as presented in Table 32.

Table 32: Results of air quality measurements taken in the project area

Area	Location	*O_2 (%)*	*CO (ppm)*	*VOC (ppm)*	*$PM_{2.5}$ ($\mu g/m^3$)*	Air pollutant
NEMA (Draft Air Quality Standard for Ambient Air)		*19.5-23.5*	*9.0*	*15*	*25*	
IFC, 2007 Standard					*25*	

Kikoora BH area	1° 8'46.67"N, 31°12'7.50"E	20.0	0.0	0	Max 0.130 Ave 0.053	Dust elevated by wind
Kikoora RGC area	1° 8'43.83"N, 31°11'24.86"E	21.0	0.0	0	Max 0.021 Ave 0.210	Dust elevated by wind
Reservoir tank area	1° 8'55.74"N, 31°11'31.41"E	19.1	0.0	0	Max 0.000 Ave 0.000	Dust elevated by wind

All the assessed parameters were within the within permissible values in accordance with the NEMA (Draft Air Quality Standard for Ambient Air) and IFC, 2007 Standard. There were no detectable levels of NO, NO_2, CO, H_2S, Cl_2, ClO_2 and SO_2 at all measurement locations.

5.3 Ground Water Resources

Water resources are based on borehole DWD 53725, that has a test yield of 24m^3/within the town. Pumping is to be powered by 20kW solar PV system and grid power is required to extend the borehole output to meet the ultimate water demands. Plate 7 shows the Kikoora RGC water supply pump.

Plate 5: Kikoora water supply production well.

5.4 Population

According to the Uganda Bureau of Statistics, the district population is projected at 513,200 of which 261,200 are males and 252,000 females. Based on the 2014 National Population and Housing Census (NPHC), Kikoora parish had a population of 12,202 in 2,711 households during the baseline survey based on the population of the previous Uganda Bureau of Statistics (UBOS) census of 2014. The population growth rate in the project area was comparable to the district average population growth rate and has been maintained in the design review. However, the *UBOS Population Projection 2018* growth rate of 8.1% pa for Kakumiro District to 2030 is considered too high. A growth rate of 4.05% pa, which is more in-line with the national average, has been adopted for design period of this Project because the district growth rate will not apply evenly across the sub counties and Kakindo Sub County had the highest population (Census 2014) in the district and should attract lower migration than less populated areas.

5.5 Ground Water Resources

Ground water is one of the main sources of water supply currently in use by the residents in the project area. The project area has point water sources that are currently in use but are inadequate to meet the water demand. About 56% of the household in the sub-county access water from unimproved water sources (UBOS, 2014). While access to protected springs seemed to be high, there were several complaints regarding the quality of water from these facilities

5.6 Economic Activities

The major occupation of the household livelihood in the Project areas is subsistence farming (87.3%) growing crops that include cassava, Irish potatoes, maize, beans, ground nuts, sweet potatoes among others. Being largely peasant farmers, they consume domestically what they produce and sell the surplus in local markets for cash. Other activities include petty businesses in the village and trading centers, operating small kiosk grocery shop, road side sale of farm products, casual labour and formal employment. The economy in Kakumiro District is basically reliant on crop production and livestock production. The main crops include bananas, coffee, cassava, beans, potatoes and maize. Pineapples, tomatoes, cabbages and passion fruits are more recent additions which are also on an upward trend. Coffee is the conventional cash crop, while all other crops provide both food and cash.

The majority of the population is engaged mainly in subsistence agriculture. Bananas are the staple food and cash crop in the area and also a source of a local brew from which some of the local people earn income. Additionally, there are small businesses dealing in general merchandise in the trading centres. The area is being connected to power supply by the Rural electrification Agency. The socio economic survey found commercial (5%) and subsistence (58%) crop farming as the main activities in the area. Animal rearing where main animals reared are cattle, sheep and goats. A few households also reared chicken. The main method of animal rearing was tethering while in a few places there were paddocks for dairy cows. Brick making and sand mining is common within the project area.

Plate 6: Brick making within the project area

Plate 7: Sand mining within the water source catchment

5.7 Sanitation

The overwhelming majority of survey participants (99%) have access to a pit latrine only, 1% use communal pit latrine, none in the project area has a flushing toilet. It was observed that many people actually use the communal toilet at the market. The percentage of survey respondents with access to a flush toilet is aligned with the national rural averages according to the 2016 UDHS. Only 19% of Ugandan households use improved sanitation. Urban households are more likely than rural households to use improved sanitation (27% versus 16%). Eight in ten households use unimproved sanitation: 20% use a shared facility, 55% use an unimproved facility, and 7% have no facility.

The households without any form of sanitation and use neighbours or communal pit latrines is mainly due to the expenses and difficulty involved in the construction of sanitation facilities. Some of the soils in the project area are loose and often collapse making the difficult and more expensive. Therefore, the Kikoora RGC Water Supply and Sanitation Project will supplement sanitation efforts by constructing 4 public toilet facilities listed in It is proposed that the Kikoora RGC Water Supply and Sanitation Project shall construct 4No. 6 stance water borne toilets in public place as mentioned in Table 23 above.

5.8 Existing Water Sources

The quality of life is dependent upon availability of clean drinking water, which is rarely the case in most rural areas. Hence the need to assess water sources and their quality. In the entire project affected areas, there was a combination of both ground and surface water sources. Within the project affected households, the commonest sources of water for domestic use include Piped water (15.5%), Community boreholes (74.5%) and Ponds / Dams (10%). Despite the existence of the piped water system under Umbrella water, people still trek distances to the boreholes ad ponds to access free water. In an attempt to understand why, A KII was conducted on the Subcounty Chief and the LCIII who confirmed that the piped water system in the area is expensive and un reliable. It can take weeks to work on a leakage when there is an issue with the pipe network, they over charge people due to their inability to read the meter bills.

According to the survey conducted, 52 of the 55 respondents admitted that they buy water between 100-300/=. Further still, they allege that it takes one about an hour for a round trip (to and from) to get water home. In Kikoora especially Kikoora A and B villages, water taps are within vicinity but people fetch water more from the boreholes. The study established that there is a relationship between the cost of a jerrycan of water and the radius where the water is fetched from. Hence the variation I the costs of a jerrycan of water.

Plate 8: One of the handpump borehole in the project area that almost dries up during dry season

5.9 Land Use and Land Tenure System

The land tenure system among 145 out of the 150 total Project Affected Persons (PAPs) in Kikoora RGC is majorly Customary (96.6%%) and only 5 out of 150 (3.33%) is Licensee. The land tenure is characterized by local customary regulation which applies local customary regulation and management to individual and household ownership, use and occupation of, and transactions in, land. Providing for communal ownership and use of land in which land parcels may be recognized as subdivisions belonging to a person, a family, or a traditional institution. Land is considered as owned in perpetuity. The major land tenure system in the project area is customary land ownership. In Kakumiro district, a good proportion of land is covered by forest reserves; the land is therefore unequally distributed. The biggest chunk of land in the District is owned by absentee Buganda Landlords owing to the colonial historical background. This partly causes land disputes from time to time.

Plate 9: One of the private Eucalyptus plantation within the project area

5.10 Health

Across all communities, malaria was the most commonly reported illness. Respondents admitted the existence of other diseases flu, cough, and stomach disorders but insisted that malaria is the most rampant within their community and rated number one against all other diseases.

The malaria rates align with the national averages reported in the 2016 UDHS study[4,] which indicated that in Uganda, three out of ten children tested positive for malaria by Rapid Diagnostic Test (RDT). Malaria prevalence is higher among rural children (35%) than urban children (12%), and ranges from 1% in the Kampala region to 69% in the Karamoja region. It is highest among children whose mothers have no education (42%) and those from the poorest households (52%).

Majority of the PAPs had no vulnerabilities except the 2 PAPs whom necessary support should be accorded to i.e.; elderly with limited support (1 PAP) and one with a dependent who lives with disability. These will need extra support like looking out for them as they may not be able to come and gather at engagements centers with the community. Therefore, during project implementation there is need to ensure they benefit from the Kikoora RGC Water Supply and Sanitation Project in the same aspect like the other PAPs.

Despite the prevailing common diseases and vulnerability in the project area, several factors were forwarded by the surveyed population as the causes that limit their access to healthcare. 26.8% of the surveyed population attach cost as their highest limitation to access healthcare, while the distance to

[4] Uganda Bureau of Statistics (UBOS) and ICF. 2017. 2016 Uganda Demographic and Health Survey Key Findings. Kampala, Uganda, and Rockville, Maryland, USA. UBOS and ICF.

the healthcare facility equally affected 73.2% of the surveyed population. With the implementation of the Kikoora RGC Water Supply and Sanitation Project, many people will have at least access to better sanitation as the area develops further for them to equally access better healthcare within reach

5.10.1 HIV/AIDs

According to the Uganda HIV/AIDs country progress report July 2016-June 2017, the country has made great strides in reducing HIV incidence, HIV related mortality, infant HIV infection and HIV prevalence where the National HIV/AIDS Strategic Plan (NSP) targets were surpassed. The Uganda Population HIV Impact Assessment (UPHIA) results revealed that the country has made significant progress in reducing the HIV prevalence from 7.3% in 2011 to 6% in 2017. More still according to UNAIDS report, there are 1,400,000 people living with HIV and AIDS in Uganda of which 84% know their HIV positive status and 72% of people living with HIV were on treatment. Women are disproportionally affected by HIV in Uganda: of the 1 300 000 adults living with HIV, 770 000 (59.23%) were women. New HIV infections among young women aged 15–24 years were more than double those among young men: 14 000 new infections among young women, compared to 5000 among young men. HIV treatment was higher among women than men, however, with 79% of adult women living with HIV on treatment, compared to 63% of adult men (UNAIDS 2018[5]). According to the kakumiro District Third District Development Plan (DDP III) 2020/21 – 2024/25, the HIV prevalence rate is at 5.75%. Regarding the factor that contribute to the spread of HIV/AIDS, respondents indicated lack of information 19.2%, poverty 11.7%, peer pressure 40.1% prostitution 25.3% and alcohol/drug abuse 3.7%. Some of the strategies of controlling HIV/AIDS, respondents revealed various ways in which it can be controlled such as sensitization activities, Bylaws against prostitution, Promotion of ABC and Bylaws against drug/alcohol abuse among others.

5.11 Solid Waste Management

The main type of domestic solid waste generated are food peelings 69%, cooking materials 23%, polythene bags 35% and wastepaper 17%. Some 39% of households use a dust bin as the primary storage and thereafter use several informal methods of disposal, namely; broadcasting the garden, or dump onto refuse heap for burning. Some 9% of respondents pay to have their garbage disposed of at a weighted average cost of UGX 9150 per trip.

5.12 Energy Sources

Majority of the households 94% (981) use firewood as the main source of energy for cooking. A small number 6% (66) use charcoal as the main source of energy for cooking, only 0.2 % (2) use hydropower as the main source of energy for cooking. It is not surprising that majority of the households are using firewood as main source for cooking, because the Census, 2014 reported that 85% of the rural population were using firewood as the main source of energy for cooking. The use of firewood as the main source of energy for cooking enhances environment degradation. Deliberate efforts to find alternative sources of energy must be made to conserve the environment.

5.13 Communication Infrastructure and Transport

The project area is well covered with mobile telecommunication network services (AIRTEL and MTN). Various FM radios and Television stations are received as well in the area. The main means of transport are taxis and pickups which connect to the neighbouring towns. Boda bodas are also used within the project area. The project area is largely connected to the Hydro Electric Power from the national grid.

5.14 Gender Aspects

In Kakumiro District, issues of gender mainstreaming still require concerted efforts. Understanding the gender of the household heads, helps the project implementers understand the kind of assistance that may be deemed necessary for a particular household especially in a male-dominated society. In the project area, men make the final decisions in nearly all aspects of life unless the household is headed by a woman. The decisions made are crucial because they impact the household members either positively or negatively. Results on gender distribution of household heads in the project area established that there were more male headed households (89.1%) in comparison to females headed households (10.9%). During project implementation, collective participation and decision making at the household level needs be encouraged. The information collected from the project area for the period of 2020 by the Uganda Police crime indicates that there 99 reported cases of sexual assault, 75 cases related to child abuse and 120 cases of common assault. Field consultation with area police station also indicated that there are several forms of GBV and these included; Defilement (21), Domestic violence (37), Child abuse (4) and Rape/attempted rape (6).

6 PROJECT NEED AND ANALYSIS OF ALTERNATIVES

6.1 Introduction

This Section evaluates available options to the proposed action, so as to arrive at the most environmentally friendly alternative, which maximizes economic, social and technical benefits resulting into minimal or insignificant environmental impacts. The comparison of alternative was done to evaluate and address the design alternatives that were examined and proposed during the feasibility and pre-design study of the proposed project. Therefore, according to the 2011 EIA Guidelines for water resources-related projects, the following alternatives/options were considered:

a) Project or No Project Alternatives;

b) Technology Selection Alternatives

For each of the alternatives, the potential environmental and social impacts, including land and energy requirements implications were analysed as possible, including their economic values where feasible. The selected alternative/options were the most reliable and suitable under local conditions taking into account, their institutional, training, and monitoring requirements i.e., strikes a balance on the above factors with viable mitigations measures for residual impacts.

6.2 No Project Alternative

Analysis of the "no project option" as an alternative provides an environmental baseline against which impacts of the proposed action can be compared. This alternative means that the water supply systems will be left in their original states. The alternative ignores all positive impacts likely to be realized in the project area, like the increased access to safe and clean water, livelihood improvement, creation of both skilled and un skilled employment, induced development among others. This option is mostly applicable in situations where the proposed project area is in ecologically or socially sensitive areas and the negative impacts will be of significance and no proper mitigation measures can be formulated to eliminate or minimize the impacts to manageable or acceptable levels. The land on which the water supply system infrastructure will be put is less ecologically sensitive and no households will be displaced. The No Project Option is the least preferred option from both the socio-economic and partly environmental perspective because individuals, institutions, other water users and the business communities would be deprived of increased accessibility to clean and suitable water.

6.3 Project Alternative

Project alternative means proceeding with the current plan and implementing the project as it is with some adjustments to forestall environmental damage and risks associated with community and occupational safety. The proposed Kikoora RGC is urgently needed by the community improve water access and to accelerate development in the project area. All stakeholders consulted had no objection to the proposed project implementation activities. They were very optimistic about the project citing its contribution to developments in the district, through job creation, revenue collection by government and other secondary socio-economic benefits, which the proposed development will create.

6.4 Alternative Water Sources

6.4.1 Production Borehole DWD 53725

The Directorate of Water Development undertook the hydrogeological investigations and provided the Project with the drilling, test pumping and analysis reports for the production boreholes. One successful high yield borehole was drilled in Kikoora with details shown in Table below.

Table 33: Details of Borehole DWD 5375

Location	UTMX	UTMY	Borehole completion Depth	Static Water Level (mbgl)	Dynamic Water Level (mbgl)	Pump test yield (m^3/hr)	Recovery	Pumping Depth (m)
Kikoora	299869	127061	102	4.88	16.2	24	64.9% in 6 hr	93
Source: ***DWD data***								

6.4.2 Analysis and Design of Borehole DWD 53725

Analysis of Borehole DWD 53725 is summarized in Table below.

Table 34: Borehole DWD 53725 Analysis Summary

Parameter	Value
Aquifer type	Unconfined
Safe Yield	24 m^3/hr
Transmissivity,	479 m^2/d
Specific Capacity	0.014
Well Efficiency (%)	2%
Recommended Pump Installation Depth	72 – 78 m

6.4.3 Borehole Output versus Water Demands

The borehole pumping hours required to achieve the projected water demands are presented in Table below.

Table 35: DWD 53796 Pumping hours to meet Projected Water Demands

	2023	2028	2033	2038	2043
Max. Day Demands (m^3/d)	196	276	382	535	736
Pumping hours (h)	**8.2**	**11.5**	**15.9**	**demand not met**	
Project estimates					

A Solar hybrid system using grid power is required at commencement of the Project period. Grid power is already available in Kikoora. Additional borehole resources are required from Year 2035 when the existing borehole will be pumping to the maximum 18 hours per day.

6.4.4 Surface Water

There are no large volume perennial surface water sources near Kikoora RGC. However, the small runoff within the nearby swamp is seasonal and not reliable.

A number of water supply improvement and production capacity enhancement options have been explored, notably; sighting and drilling of an additional borehole with a safe yield of 24m^3/hr to meet the current and future demand.

6.4.4 Point Water Sources

The communities rely on water sources such as; springs, boreholes, shallow wells and streams. Low safe water access and functionality both impact on open water sources as people are forced to directly draw water or carry out illegal activities in open water bodies thus contaminating them. However, these streams easily dry up during the dry periods. Communities also depend on rainwater harvesting in the institutions like schools and the health centres however, this water source is only reliable during the rainy season.

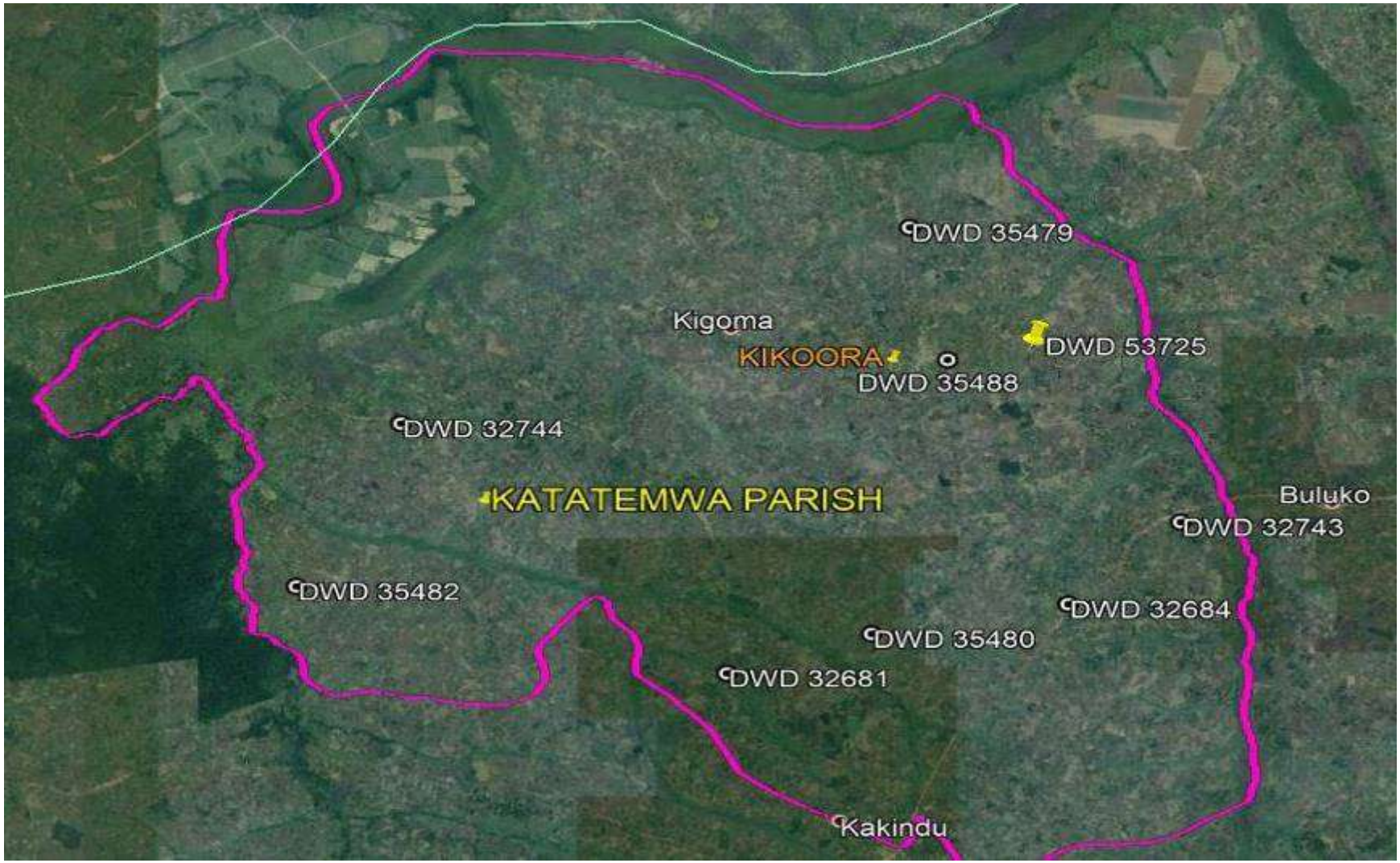


Figure 12: Boreholes in Katetemwa Parish, Kakindo S/C

Plate 10: School children struggling to fetch water within the project area

6.4.5 Surface Water Sources and Rainwater Harvesting

There are a number of streams and rivers within project area. Some people also rely on these streams for water supply like washing clothes and making of bricks especially during the rainy seasons in some cases. However, these streams easily dry up during the dry periods. Rainwater harvesting is done by the institutions like schools, markets and the health centres within the project area and this water source is only reliable during the rainy season. Queuing was observed in some of the boreholes, and the environmental condition around the water facilities was generally poor as some are shared with animals.

In conclusion on the ground or point water or surface water alternatives, the surface water source of open dams/streams is not safe for the human consumption as they are shared with livestock. Point water sources within the project area are also not feasible has they are intermittent and only reliable during rainy seasons. This leaves the groundwater sources in the form of production well of Kikoora as the viable source of water for the piped water supply system for Kikoora RGC.

7 STAKEHOLDER ENGAGEMENT

7.1 Introduction

Consultation with relevant stakeholders and regulatory institutions was carried out to ensure participation of relevant stakeholders, as recommended by the National Environment Act, No.5 of 2019, EIA Regulations (2020), and conduct of Environmental Practitioners (2001) and guidelines for EIAs in Uganda. The consultations aimed to identify and take note of environmental and social concerns and views of all the stakeholders at an early stage so that appropriate mitigations are incorporated in the final implementation plan for the proposed project.

Stakeholder meetings were held at Kakumiro District, Kakindo Sub County. The consultation process ensured that their concerns were captured and have been addressed during ESIA. A wider intensive consultation process was carried out during the Environmental and Social Assessment. These include stakeholders freely expressing their concerns on the project's environmental and social risks, impacts and mitigation measures. Informal conversational interviews and observations were the key data collection methods applied. The consultation process ensured that their concerns were captured and addressed. All consented stakeholders supported the project and found it to be beneficial.

7.2 Objectives of Public Disclosure and Consultations

The purpose of the stakeholders' consultations was to provide an overview of the project to the relevant agencies, stakeholders and all the communities where the Kikoora RGC Water Supply System components are to be located and therefore impact on the communities. It further helps them to understand how the MWE and the project team will operate to the highest possible environmental, social, health and safety standards prior, during and after the construction of the Water Supply System related infrastructure.

The specific objectives of the Consultations were;

i) To obtain an understanding of the number and types of stakeholders in the socio-economic study area
ii) To provide information about the project and to tap stakeholders' information on key environmental and social baseline information in the project area
iii) To get views of the stakeholders/public regarding the environmental and social concerns and opinions about the project
iv) To manage expectations and misconceptions regarding the project
v) To discuss potential impacts and verify significant or major environmental, social and health impacts identified.
vi) To inform the process of developing appropriate mitigation and management measures as well as institutional arrangements for effective implementation.
vii) inform stakeholders about the engagement process and grievance management
viii) provide a mechanism for ongoing stakeholder engagement and ways in which the stakeholders can continue to participate in the stakeholder engagement process
ix) Ensure regulatory requirements and project standards are met.

Stakeholder consultations and public participation during the ESIA process were conducted in line with the requirements of the National legislation and regulations. According to the National Environment (Environmental and Social Assessment) Regulations, 2020, Part III under section "*Procedure for Undertaking Scoping and Environmental and Social Impact Study*", Sub-section 16; "*Stakeholder*

consultation during the environmental and social impact study", stakeholder consultation is crucial during the ESIA study.

7.3 Stakeholder identification and analysis

7.3.1 Stakeholder Identification

A stakeholder may be defined as 'any individual or group who is potentially affected by the project or can themselves affect the project. To develop an effective stakeholder involvement programme, it is necessary to determine exactly who the stakeholders are based on their roles, influence, objectives and priorities specific to the project. The ESIA team formulated a stakeholder matrix and identified key stakeholders who were engaged during the study. A stakeholder engagement plan was drafted and populated with additional stakeholders during the ESIA study. The study targeted individuals, groups/institutions and communities that have a stake in the proposed water project. Thus, only such entities as identified in the stakeholder analysis were selected to participate in the consultation process.

The following aspects were considered when identifying and prioritizing stakeholders for this ESIA:

(i) Who could be adversely affected by environmental and social impacts?
(ii) Who are the most vulnerable among the potentially impacted, and are special engagement efforts necessary?
(iii) Which stakeholders can best assist with the early scoping of concerns and impacts?
(iv) Who strongly supports or opposes the changes that the project will bring and why?
(v) Who is it critical to engage with first, and why? (IFC 2007)

7.3.2 Stakeholder analysis

The stakeholder categories and sub categories identified are presented in Table 36.

Table 36: Stakeholder Matrix

Group	Stakeholder	Description and key attributes
Funder	World Bank	✓ To ensure that the World Bank Safeguard OPs have been observed and implemented as appropriate. ✓ Support the project with funding and implementing support
National Level Stakeholders	Ministry of Lands Housing and Urban Development (MoLHUD)	✓ Approves all reports presented by the consultant regarding valuation
	Ministry of Gender, Labour and Social Development (MoGLSD)	✓ Protection of human rights and vulnerable social groups. ✓ Occupational and community health and safety of workers. ✓ Approval and monitoring of the social safeguards ✓ Approval of permits like workplace permits, OHS
	Ministry of Water and Environment (MWE)	✓ Overall mandate to monitor, assess and regulate water resource ✓ Monitor and guide the use of wetlands for sustainability and other water bodies within the project areas ✓ Approval of the Water abstraction permits

		✓ The implementer of the proposed Project ✓ Overseeing and monitoring the proposed project activities
	NEMA	✓ Regulation of the environmental aspects of the project(s). ✓ Legally mandated to handle certain critical environmental issues ✓ Provide the necessary permits and approvals for quarries, borrow pits and other auxiliary sites ✓ Work closely with the project team to handle all matters related to environmental protection ✓ Overall clearance of ESIA and other project briefs about the project facilities. ✓ Monitor and supervise the ESIAs compliance
Local Governments	District (Kakumiro District Local Government)	✓ Mobilize various stakeholders including the communities/beneficiaries ✓ Monitoring and supervision support for the implementation of the projects. ✓ Offer security to the project team (RDCs Office) ✓ Review the ESIA and give comments (Environment, and Community Development Offices)
	Kakindo/Kikoora Sub County (Technical and political staff)	✓ Make decisions that may affect the project, ✓ Offer support and supervision of the project ✓ Help in the identification of the location of the water and sanitation facilities.
	Local Councils	✓ Mobilize communities ✓ Offer support in the planning, implementation and operation of the project ✓ Offer support in the identification of the locations of the water and sanitation facilities ✓ Monitoring of the projects ✓ Provide social justice to vulnerable communities ✓ Incorporate information about the project in their teachings, gatherings/meetings for acceptance especially regarding water and hygiene-related information.
Different Community groups,	Traders, landlords, tenants, business people, affected persons (Landowners who offered land for the facilities)	✓ Develop construction (works) schedules in their respective areas. ✓ Participate in the scheduled meeting regarding the project activities and progress ✓ Identify mitigation measures of the environmental and social issues ✓ Monitor the progress of the project activities ✓ Input in the planning and identification of water and sanitation facilities.

7.4 Stakeholder engagements

Different methods were espoused to undertake the stakeholder engagements on this project. These were taken up depending on two major premises; the type of information required and the number of participants involved in the data collection process. These methods were used to inform the development of an appropriate water supply system within this proposed project area. Here-under are the methods that guided the stakeholder engagement process.

Table 37: Stakeholder Engagement methods

Target Group	Engagement Method
Regulators (NEMA), CGV, Ministerial Zonal Offices (MZOs)),	• Consultative regulatory matter meetings • Exchange of emails and letters.
Policy-makers (MWE, MLHUD, CGV)	• Sensitization meetings to create project implementation process awareness • Exchange of emails and letters.
Local Governments (CAO, LC V, RDC, City, Councillors, Area Members of Parliament, District Land Boards, LCIII Chairpersons, Subcounty Chiefs, CDOs	• Sensitization meetings to create awareness • Courtesy calls to update district leaders • Consultative livelihood restoration and community development program meetings.
Project Affected Persons/Communities	• Sensitisation meetings to create Project process awareness • Consultative compensation package meetings with PAPs • Focus Group (FG) discussions with vulnerable PAPs, women, and children • Group meetings on PAH verification and compensation package disclosure • Family meetings with PAPs regarding land and property disputes, Letters of Administration, and grave relocations • Individual PAP meetings to disclose compensation packages and notices to vacate • Sensitization materials (posters, radio messages, leaflets) • Consultative livelihood restoration meetings.

7.4.1 Meeting with the Stakeholders

The project had an inception workshop where all the stakeholders were invited as a start meeting to inform all the stakeholders about the project. MWE organized the meeting to inform all stakeholders about the project, its objective, the intended activities, the project extent, and the related studies to be undertaken, including the RAP and ESIA, water-related studies, source of water among others. The main object was to solicit, potential impacts and possible mitigation measures and also solicit initial community responses. The stakeholders were able to express comments and queries during this meeting as seen in the minutes under annex 3.

7.4.2 Key informant interviews

Key informant interviews (KIIs) were held with individuals who were assumed to have specific information related to the project. Some of these were pre-set while others were identified during the interactions with other stakeholders. Some of such stakeholders included; The LCV Chairperson's office of Kakumiro, the District Engineers office, the Office of Public Health, DCDO, Environmentalist among others.

Plate 11: Consultants engaging the CAO, Kakumiro DLG

Plate 12: The consultants engaging the District Environment and Water Officers at Kakumiro DLG

Plate 13: Consultants engaging the Kakindo Sub County Chief and the LCIII Chairperson

Plate 14: The consultants together with the Kakindo Sub County Speaker visiting the water source

Key informants at National level included staff from MoGLD and Regional MWE officers and below were the issues raised and responses by the Consultant;

Table 38: Stakeholder engagement at National level

Stakeholder	Views and concerns	Response
MoGLSD on 13th September 2022	Land will have to have secured especially for intake, WTP, reservoir and along transmission and distribution networks. MWE should have Consent forms from local leaders	The project RAP will incorporate this requirement
	Health and welfare: ▪ Welfare provision based on gender ranging from accommodation and sanitation facilities. All employees should have written documentation of their contracts (explaining their salary/ wage, time-off duty etc.) ▪ The employees should be pre-medically examined to determine mental capabilities before they are engaged or assigned with different tasks. ▪ HIV/AIDS services should be extended to the employees through provision of contraceptives and allowing them to optionally share among themselves.	MWE will ensure that the Contractor has all that lined up in the ESMP and comply to these standards
	Health and safety considerations:	The Contractor to provide PPE, sanitary facilities and clear

	▪ Personal Protective equipment should be provided based on the risk assessed. ▪ Safety (occupation & community) during construction should be observed. Risk assessment should be done, mitigation measures addressed and protection explained for preparedness. ▪ The contractor should construct sanitation facilities to cater for labour force to be employed different from public toilets planned for the communities. ▪ During digging of ditches, sites should be hoarded off with clear signage. ▪ Traffic control through signage / flagmen and diversions should be done with the aid of Police and other concerned stakeholders.	signage at the construction sites. MWE to ensure the contractor complies.
	Community engagement: ▪ The vulnerable groups should be planned for especially during the design of sanitary facilities ▪ The redress mechanism plans should be in place to address challenges among workers, workers to community. A committee should be formed therein having natives of the area especially LC chairperson to bridge the gap between workers and community.	The designs for the sanitary facilities will be gender segregated and cater for vulnerable groups. GRM will be in place at all levels (National, District, Sub county and village)
	Employment: ▪ The employment policy of the country should be followed; contracts, payment mechanisms, appointment letters should be in place. Children should not be employed ▪ The contractor should be gender sensitive during employment for gender equality. And when employing, some percentage should be from the local people as part of ownership and sustainability of the project.	These will all be captured in the contractor's ESMP and MWE to ensure the contractor complies.
MWE Regional offices in	For every catchment area identified for source water protection, the catchment management organization/ committee should be engaged.	This has been provided for in the WSPP that has been developed

Fort portal (AWMZ, RWSCR, NEMA and Wetlands) on 27th September, 2022	Develop Water Source Protection Plans and ensure that they are implemented during the commencement period of the project such that the implementation activity takes place alongside the project so as everything is finalized at the same time and this will reduce on the man power required.	These have been developed for all the Sources for the 4 RGCs in the region (Kikoora, Mwitanzige, Bugwara and Kabamba)
	Ensure to develop sanitation/ solid waste management plans and clearly indicate the dumping so as to prevent issues of leachates and salts flowing to water sources and pollution of the environment due to improper solid waste handling.	This will be incorporated in the ESMP
	In cases where there are floods and likelihood of ground water contaminations emanating from improper sanitation and open defecation, ecosan toilets should be provided.	This will be considered during the study
	The developer should not negate their responsibility of managing the entire ecosystem. They must work closely with the catchment management committee and wetland committee to ensure the catchments or the wetland are effectively managed and conserved without causing more harm.	This was noted and will be referred to the MWE for action
	The developer should consider motorizing other neighbouring hand pumps in the project area.	This will be forwarded to DWD as a recommendation.
	The ministry has a policy of up to 3% of the project budget of any water intake/ source project to be used for the implementation, preparation of the source water protection and the developer should note this in the BOQs.	This will be forwarded to DWD as a recommendation.

7.4.3 Community Meetings

Consultations at community level targeted Leaders and community members from Kikoora subcounty, and people likely to be affected by land acquisition for the borehole sites, reservoir sites, access roads, and sanitation facilities sites and land owners along existing community access roads along which the transmission and distribution pipes will be laid. The affected communities/PAPs were mobilized with support from the local leaders.

The meetings were conducted in local languages such as Luganda, Runyoro, Rukiga and Runyankore to cater for any linguistic barriers that would deter the opportunity to participate.

The local leaders -- especially the LC1s -- helped mobilise PAHs. Consultations commenced at 12pm, 3pm or 5pm to enable participation of all interested groups including women and children.

Table 39: Schedule for community meetings

Phase	Stakeholder	Key Officials Present	Date of engagement	Location	Numbers	
					Male	Female
Inception Meeting	District Consultations					
	Kakumiro	District water Engineer, LCV, D RDC, LCII Kikoora Parish, Councilors, Chairpersons	26.09.2022	Kakumiro District Headquarters	07	03
Detailed Disclosure and Assessment Phase	Kikoora Subcounty Consultations					
	Subcounty Leaders and Opinion Leaders	Subcounty chief, CDO, Speaker to council, DISO, LC Chair Persons,	28.09.2022	Kikoora Subcounty	03	09
	Community/ Lower-Level Consultations					
	Leaders and Community members	LC Chair Persons, Parish Chief, LCIII and Councilors and community members	08.10.2022	Kikoora T/Council	13	05
	Leaders and Community members	LC Chair Persons, Parish Chief, LCIII and Councilors and community members	09.10.2022	Rutooma Village	18	25

Plate 15: Consultants engaging the local community members at Kikoora A village

7.5 Key findings from stakeholder consultations

In relation to the proposed project, the main findings from the engagements and public participation were largely categorized into two parts; the envisaged impacts (Both negative and positive) and general concerns on the project. The main findings from the engagements were both from the district top level officials (RDC, LCV- Chairperson and DWO among other) and the local community members as presented below;

Table 40: Key findings from the top level district officials stakeholder engagement

Stakeholder	Issue/comment	Response
DRDC	If ministry intends to Compensate, then it will be a smooth project due to the land wrangles at the water Source	The RAP study will guide the MWE on the way forward
DISO	We appreciate your effort to ensure that the people are given an opportunity of accessing clean water	Noted with thanks.
Chairman LCV	The area is highly populated and the project is timely for them. There is an NGO which is handling ODF in Mwitanzige. We believe these two combined will cause a high transformation in the area in terms of health and sanitation	We shall seek more clarity from the local people in terms of impact of the ODF new
DWO	World Vision implemented a scheme in Kikoora but its insufficient due to the fact that it uses solar. We thus thank MWE for remembering to revive this project. We wondered what had happened ever since they drilled the boreholes for the water source, There are land wrangles about compensation both in Kikoora and Mwitanzige. We hope the MWE will address this issue since they are taking charge of the project now.	The construction contractor will be updated accordingly to ensure that during trenching, the existing system is incorporated. These will be handled to their conclusion since the MWE intends to compensate the affected persons
Dist. Councilor Kakindo S/c	Will our people be given some jobs and where should they apply?	The jobs will be available at the construction phase through the DWO and the SAS's office.
Female Rep. Dist. Councilor	Are the people going to be compensated?	Yes, the RAP study is one of the steps that guides on the procedures and process and the basis for compensation.
CAO Kakumiro District	There were complaints about land issues during implementation of the project. There is need of involving the technical team in the project	
Environmental Officer,	• There were complaints about land issues during implementation of	

Stakeholder	Issue/comment	Response
Kakumiro district	the project. • There is need of involving the technical team in the project • Need of a copy of the design for the project. • There is need of sensitization of community people about the project. • Labour needs clarification that is involving the locals both skilled and unskilled. • There were complaints about need of fencing off the project area. • The pits that will be put during construction should not be left open and also trenches should be protected. • There is need to provide noise control measures during the construction process. • There should be sensitization of workers of HIV prevention measures. • The vehicles carrying construction material should be covered • Materials for construction should be bought from legally operating suppliers. District team should also be involved for example politicians	
Total Number of attendees 8		

Plate 16: Engagement with Sub county leaders in Kikoora RGC

Table 41: Findings of the community stakeholder engagements

Date & Venue	Target Community / Villages	No. of participants		Views/Concerns/Questions	Response
		Female	Male		
29/09/22	Subcounty Leaders	03	09	• Where is the water source? • Will there be payment for water installation at my compound? • Which organization is to be in charge of the water? • How is this project any different from umbrella Water, they promised fair prices but prices are actually very high? • What are the requirements for one to have a tap at their house?	• The water source is a borehole in Rutooma village • Yes, a connection fee will apply upon your successful application to the water offices. • MWE will give guidance on the management of the water but rest assured it will be affordable compared to the current cost of a jerrycan of water • • They will apply through the water office and will be guided accordingly.
				• Water vendors sale between 500-100/= will there be a difference with this water from government? • How will you handle leakages that arise?	• Yes, water will be affordable and a standard rate will be applied to enable people access clean water. • The water office will provide contact details where leakages can be reported and worked upon.
				• When are you beginning to work? • People don't know how to read and the Umbrella water team is using that as an advantage to bill people beyond what is consumed	• We already began and the surveyors will be here soon to collect survey ad cadaster data • Let the leaders take this on and intervene through the district water officer.
29/09/22	Kikoora A	05	13	• Will bear lad be	• Compensation will

Date & Venue	Target Community / Villages	No. of participants		Views/Concerns/Questions	Response
		Female	Male		
Kikoora A and B	Kikoora B			compensated for?	be done for the land only if nothing else is being affected
				• There are a number of water distribution pipes in Kikoora A, how are you going to make sure they are not damaged	• The water project by World vision has got a design which MWE has access to. being the custodian of water and environment, thus there won't be any challenges in merging the two schemes into one for the good of Kikoora.
				• Will you compensate the entire land or only the affected piece of land	• Compensation is done for only the affected area not the entire piece of land and is based on the current market value of the land in the area.
				• Will you pay for all the beans where the pipe is to be laid?	• Only perennial crops will be assessed and seasonal crops will not be compensated for, as you will be given time to harvest them. Nevertheless, only what is likely to be demolished is what is paid for not the whole plantation
				• How much are we paying for the water?	• MWE through the water offices that will be responsible for the water supply system will communicate on the prices.

Date & Venue	Target Community / Villages	No. of participants		Views/Concerns/Questions	Response
		Female	Male		
				• How will you determine compensation values for our houses?	• Our design has been made to cater for provision of water to homes and avoid displacement at all ways possible. Where not possible, the district compensation rates will guide on plants, trees and all crops while standard rates will be applied to structures in case it so happens.
				• How much shall we pay for the water	• That will be determined by MWE or the agency that will be in charge of the system after the water has been installed
29/09/2022	Rutooma	18	25	• How will I be compensated for my crops destroyed while digging the water source?	• This is noted and will be forwarded to MWE for further management. Anything likely to be destroyed from now on, our team of surveyors and valuers are going to document it for purposes of valuation and compensation
				• Will the water be for sale	• Yes, water will be for sale at an affordable price to ensure sustainability of the water supply system.
				• The owner of the land where the water source is has	• We are here to attach a value to his land so that the

Date & Venue	Target Community / Villages	No. of participants		Views/Concerns/Questions	Response
		Female	Male		
				never been paid.	government can process the payment for him. The land will now belong to government after paying him.
				• Will the one source be able to supply all the villages	• The source will be enough to supply all villages and besides before the source is confirmed, there has to be extensive research done to ensure it's sufficient.
				• Will compensation be done before the digging start?	• Compensation will be done before the implementation of the project
				• Will you pay for Avocados and plants?	• All perennial crops as earlier said will be assessed and compensated for by the government.

All the stakeholders consulted supported the project on the basis that it would induce development in their area/district and lead to the establishment of more related projects. However, it was mentioned that the developer should be able mitigate all project related negative impacts such as waste generation, noise, destruction of crops during trench digging and pipe installations and any other negative impact as would be realized as seen in the Minutes from the stakeholder meetings above. Stakeholder engagements will continue throughout the implementation and operational stage with different stakeholders. It is likely that more relevant agencies and stakeholders will be identified during these phases, and will be engaged accordingly.

7.6 Public Disclosure and Consultation Plan

Public Consultation and Disclosure Plan (PCDP) is a key element in the engagement and essential for collective involvement of stakeholders in the proposed development. Disclosure refers to the provision of relevant and adequate project information to enable stakeholders understand risks, impacts and opportunities of the project. Consultation is an inclusive and appropriate process that provides stakeholders with opportunities to express their views which should be considered, responded to and incorporated into the decision-making process. In the context of the proposed development, stakeholder consultation aimed at:

- Generating good understanding of the project;
- Enabling stakeholders to engage and participate in proposed project design;
- Understanding what local community expect throughout the life of the project;
- Optimizing local benefits of the project;
- Developing effective mitigation measures and management plan;
- Characterizing environmental, health and socio-economic impacts of the project.

Like stakeholder identification, public consultations and information disclosure is a continuous process throughout the ESIA exercise. KIIs and FGDs were utilized for PCDP. A scoping exercise was undertaken on 7th February and then the consultative meetings on 23rd March 2022 at Kakindo Sub County and were aimed at disclosing key project information (such as changes in the water source etc.) and to generate a master list of Stakeholders to be consulted. Key stakeholder concerns were also identified so that they could be considered in the implementation of the project. Key issues identified are outlined in Table above.

Grievance Redress Mechanism

Grievance Redress Mechanism (GRM) as a key element of the PCDP to actively identify, manage and follow up grievances received to ensure that appropriate resolutions and actions are taken by the relevant authorities especially MWE, Kakumiro District Local Government and Kakindo Sub County (currently Kikoora).

In order to ensure transparency and accountability, a GRM shall be established by the Project Support Team in line with the guidance provided in the ESMF. The GRM shall have a clear set of goals and objectives and a well-defined scope for its interventions, especially geographical area coverage to ensure its accessibility and effectiveness. A set of procedures for receiving, recording, and handling complaints shall be available in the GRM. This will be managed by a National Grievance Redress Committee (GRC) consisting of a MWE Chair, the IWMDP Project Coordinator, the assigned Resettlement Social Development Specialist, the Project's Environmental Focal Point, the chair of the community mediation board, a member of a recognized non-government organization, and a community leader. The GRC members shall be qualified, experienced, and competent personnel who can win the respect and confidence of the affected communities.

Community Grievance Redress Mechanisms

GRCs shall also be established at District and Lower Local Government Levels as appropriate. For easy accessibility, GRCs shall also be formed at or closer to project implementation site at Rakai District. Grievances shall be first reported and handled at the lowest level or project site, and referred to the next level if not resolved. The GRM shall include procedures for:

- recording, registering, and sorting grievances;
- conducting an initial assessment of grievances;
- referring grievances to appropriate units or persons;
- determining the resolution process;
- making decisions, including parameters and standards for accurate and consistent decision making;
- directing relevant agencies responsible for implementing decisions;
- notifying complainants and other affected parties of eligibility, the resolution process, and outcomes;
- tracking, monitoring, documentation, and evaluation; and

- a Grievance Log, that shall summarize all grievances registered, resolution reached, and feedback provided.

Depending on the nature and the severity of the complaint/s, the GRC in consultation with the Project Affected Persons (PAPs) or Complainant, shall identify and decide on an approach for grievance resolution. Where appropriate, complainants shall be given the choice of selecting an affordable approach with which they are comfortable and confident and that is beneficial to them. For construction-related complaints, it will be the Contractor's responsibility to address them. Usually these kinds of complaints are described as environmental and social impacts and include issues related to dust, flooding, blasting (noise, vibration, and evacuation), lost access, and dangers to life, damage caused to public roads from heavy machinery, deteriorating water quality and quantity, damage to property and crops, soil erosion, workers' misbehaviour, defilement/child abuse, and others. The project GRMs will have other measures in place to handle sensitive and confidential complaints, including those related to Gender based violence, Sexual Exploitation and Abuse/Harassment (GBV, SEA/SH), Referral pathways based on the survivor centred approach will be incorporated in the GRM processes and disseminated in the stakeholder engagement plan. Existing legal and administrative structures will be contacted to resolve grievances of a criminal nature.

Workers Grievance Redress Mechanism

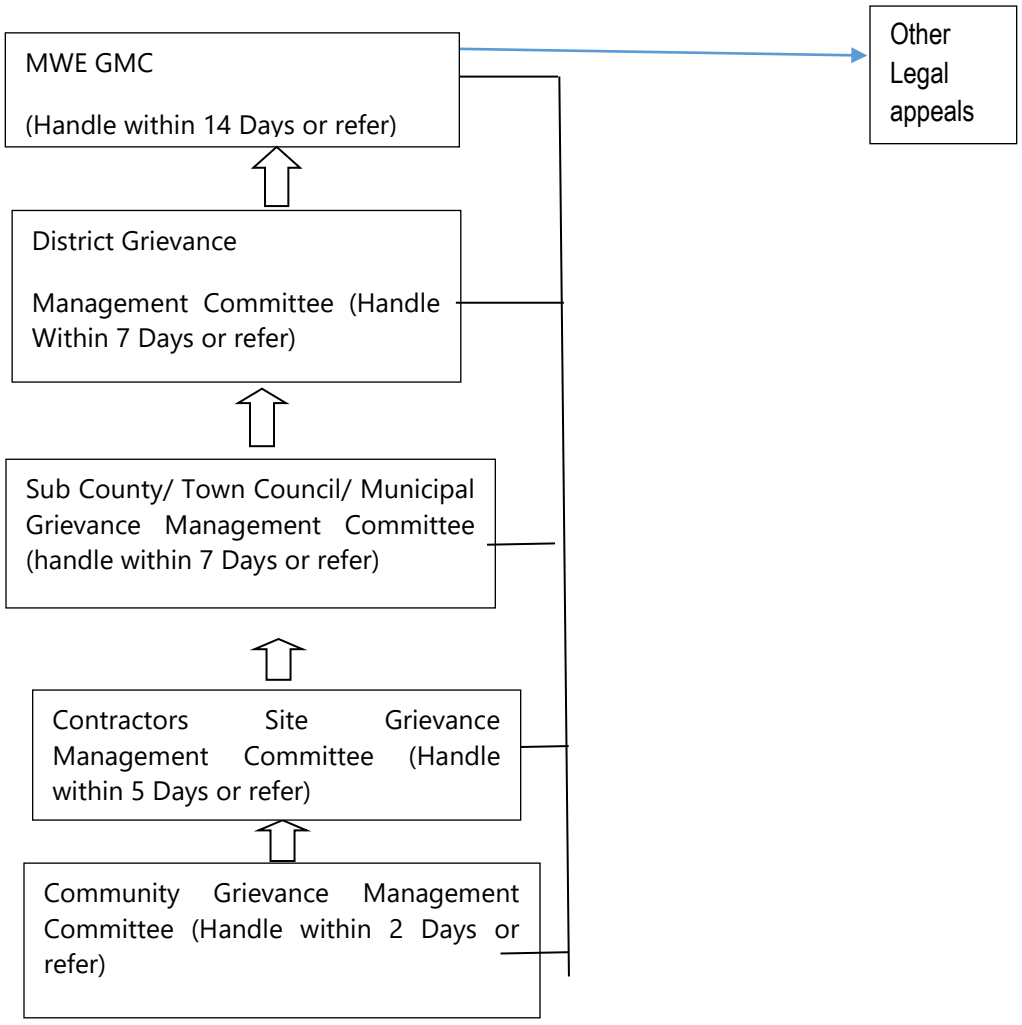
In accordance with the Employment Act (2006), the MWE/RWSSD shall ensure that the Contractor has provided contracts to all workers and has established a GRM and grievance redress committee with workers' representation. It is the responsibility of the Contractor(s) to ensure that Workers GRMs and with redress and appeal processes and institutions is in place and shared with MWE/RWSSD before the commencement of the Construction Phase.

The steps in grievance handling for the PAPs and the community in general are outlined in Table 48 below and once received, all grievances will be responded to in a maximum of 19 days.

Table 41: Grievance handling steps

#	Step	Responsibility
1	Receive Grievances and Provide PAPS with a Grievance Acknowledgement Form	MWE, RAP Implementation Consultant, and GMCs
2	Grievance Registration and Acknowledgement	MWE, RAP Implementation Consultant, and GMCs
3	Grievance Sorting and Logging in database and tracking system	MWE, and RAP Implementation Consultant
4	Grievance Assignment	MWE
5	Grievance Processing and Feedback (19 days)	MWE, RAP Implementation Consultant, and GMCs
6	Corrective Actions, Grievance Follow Up and Closure	MWE

Flow of Appeals or Referral of Grievances and Timelines



8 ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS

8.1 Introduction

Key potential E&S impacts of the project for each stage of the project cycle are assessed in this chapter and an Environmental and Social Management Plan (ESMP) is provided in the Chapter 9. Prediction and analysis of possible positive and negative impacts of construction works for the water system are discussed. Impact analysis involved determination of nature of impact, its magnitude, extent, duration of potential impacts. For the proposed development, potential positive and negative impacts were identified both for the construction phase and operation phases. Throughout this report, impacts have been characterized as:

a) "Positive" when they;
   - Enhance socio-economic welfare e.g. health, employment,
   - Enhance quality of existing environment.

b) "Negative" when they;
   - Reduce socio-economic welfare of people,
   - Reduce quality of existing environment,
   - Reduce economic value e.g. of surrounding property.

An improvement and increase in potable water supplies and sanitation may generate interrelated improvements in health, economic and social welfare of the community. However, in addition to the many possible beneficial impacts, adverse impacts may arise from these improvements. The impact of potable water supply and sanitation on health depends on the quality and quantity of the piped water supply; the proportion of population covered; and the utilization of the water and sanitation facilities by the population. In this chapter, prediction and analysis of possible positive and negative impacts of construction and operation of the water pump station, Sanitation facilities, Office block and the reservoirs is presented, with main focus on the proposed construction of the pump station at the motorized borehole. Table below provides a summary of the Positive benefits that will be realised as a result of implementation of this project.

Table 42: Positive Impacts of the Proposed Project

No.	Impact	Remarks
1.	Increased access to clean water	▪ Reduction in the current water shortages. ▪ Improvement of water quality. ▪ Reduction of the time spent and distance travelled to fetch water, which would signify an improvement in the general living conditions of the people. ▪ Improvements in public and household sanitation. ▪ Awareness of personal hygiene. ▪ Overall improved health conditions for the beneficiary population. ▪ Income generating activities for the poor will increase as result of availability of reliable supply of water in public places e.g. commercial water service providers.
2.	Employment opportunities and increased household	▪ The use of appropriate labour-intensive methods for some of the construction activities (e.g. construction of the pump station, office block and Reservoir) would present employment opportunities for

	incomes and revenues	local people and generate direct income benefits to local households. ▪ Some people will be employed in the digging of the transmission and distribution networks, sand and stone quarries, and sale of earth materials to the proposed project and in the service sector around the project site.
3.	Income to material/ equipment suppliers and contractors	▪ Earth materials needed for construction, for example, aggregate (stones and sand) will be obtained from quarry operations. ▪ Number of equipment and materials (such as gravel, bricks, plumber, steel reinforcement and cement for civil works) will be sourced locally within Kakumiro district and the neighbouring districts.
4.	Increased Public Revenue / Taxes	▪ People who have never worked on such projects would acquire such skills, which they would use to seek employment in future. ▪ The Project would provide grassroots management opportunities for the local people to both be involved in the management of the water supply and protect their local environment.
5.	Boost to the local Economy	▪ Provision for direct employment opportunities to the workforce thus contributing towards alleviation of poverty and income generation for the local community; ▪ Stimulation of business activities related to contracting works for local entrepreneurs (sub-contractors); ▪ Providing trading opportunities for local communities and other small enterprises in the area; ▪ Providing opportunities for provision of basic and other services for the contractors and immediate community. The project will consider employment of locals.
6.	Gender Benefits	▪ The expected reduction in water collection distances and times would lead to a reduction of Gender-Based Violence (GBV) that women and girls experience while walking long distances to fetch water. It may also reduce conflict/fights that often occurs at water sources due to big crowds. ▪ It will mean more opportunities for girls to attend schools and more time for women to engage in other economically and educational beneficial activities and also more time for women to take care of their families including caring for the sick and elderly.
7.	Health Benefits	▪ Direct health benefits of the project to the affected population will result in a reduction in the incidence of water-related diseases particularly diarrhoea, typhoid, intestinal worms, skin and eye problems, and dysentery and cholera. ▪ Loss of productivity resulting from sickness related to water-borne diseases and expenditure on related medical care will therefore reduce.
8.	Improved service delivery	▪ The proposed project would result in bringing improved water and sanitation services closer to the people.
9.	Eradication of poverty and improved livelihoods of the local people	▪ The proposed project would result in an increase in 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.
10.	Combat HIV/AIDS, malaria, typhoid, and other diseases	▪ The awareness campaigns for public health, hygiene and sanitation particularly targeted at women and girls would be widened to include measures for tackling HIV/AIDS and other diseases such as schistosomiasis and diseases related to excreta contaminated water and poor hygiene (cholera, typhoid, and diarrhoeal diseases).
11.	Ensure environmental sustainability	▪ Implementation of catchment and water source protection measures would ensure reliability to the water source.
12.	Develop a global partnership for development	▪ The Project would provide opportunities for the GoU through MWE/DWD to aim at achieving the Sustainable Development Goals (SDG) specifically SDG 6.
13.	Increase in investment in the area standard of living	▪ MWE/DWD will invest heavily in the construction and operation of the Kikoora RGC water supply system which would involve use of locally available materials. ▪ The business community could take advantage of the proposed development to establish businesses that would otherwise be impossible without safe piped water.
14.	Develop a global partnership for development	▪ The project will provide opportunities for the GoU and in particular the Ministry of Water and Environment to work together to achieve the Sustainable Development Goals (SDGs) specifically SDG 6 and 12

8.2 Positive Impacts during Construction Phase

The anticipated positive impacts of the construction phase are elaborated below.

a) Employment opportunities

The design, feasibility and planning phase provided financial benefit and employment for local consultants. This is a positive but short-term and reversible socio-economic impact. Contract provisions for the construction works require most of the labour force (at least 50%) to be drawn from the local population with particular emphasis on youth and women. Since construction is estimated to take a certain number of months, this phase will provide short-term job opportunities for local people. The project is estimated to employ around 70 workers during the construction phase.

Furthermore, indirect opportunities for employment will be stimulated in the other sectors related to construction, such as manufacturers of local raw materials and finished products and providers of services. It is also anticipated that indirect employment opportunities will be created within local communities through the provision of services to the construction teams, such as the sale of food and beverages.

Impact Enhancement

The contractor should involve local leaders in recruitment process to ensure full and fair participation of local communities. Wherever feasible, local people should be considered for job opportunities commensurate with their level of skills. Adequate occupational health and safety standards should be provided to ensure the work environment is conducive. A training programme for artisans (builders, plumbers) in the project area could be facilitated by the project to ensure skills transfer during the construction period.

b) Income to material/ equipment suppliers and contractors

The scale of construction works is moderate in the proposed project area. Although some of the equipment and materials required for the project will be sourced nationally or even internationally to ensure quality is achieved, a number of equipment and materials (such as gravel, bricks, plumber, steel reinforcement and cement for civil works) can be sourced locally within Kagadi district and the neighbouring districts. Local suppliers of materials and equipment involved in the project will benefit financially. This is a positive but short-term and reversible impact.

Enhancement measure

Earth materials needed for construction, for example, aggregate (stones and sand) will be obtained from quarry operations. 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 should therefore be a contractual obligation for contractors to procure construction materials from quarries legitimately licensed by the respective district authorities.

c) Acquisition/improvement of skills

People who have never worked on such projects would acquire such skills, which they would use to seek employment in future, and as a benefit from the capacity building incorporated in the program, the implementing authorities would have adequate capacity for managing the environmental and social assessment and permitting processes. The Project would provide grassroots management opportunities for the local people to both be involved in the management of the water supply and protect their local environment.

Enhancement measures

The Local leaders will play a vital role in screening and recommending those seeking for employment to weed out wrong elements who may instead cause serious setbacks to the project in terms of offering labour both skilled and unskilled.

d) Increased Public Revenue / Taxes

The implementation of the project will increase revenue and taxes for both the central and local authorities. This includes indirect taxes resulting from the construction project such as Value Added Tax (VAT) on materials and services, Pay As You Earn (PAYE) for construction workers and other formally employed persons who will form by far the majority of created employment opportunities) as well as revenue to pension funds such as National Social Security Fund (NSSF).

e) Impacts on Local Capacity

The scale of the construction of the project with the logistics involved and speeds of construction that will be required, while maintaining construction, health and safety standards will involve considerable management and planning skills and will contribute to capacity building within the country's engineering and construction sector. Co-operation between international suppliers of specialized equipment and contractors and local contractors and sub-contractors and companies will result in the transfer of skills and will also build additional local capacity.

f) Boost to the Local Economy

The workforce will get most of their food and other necessities from the surrounding area and this will provide a market for the local agricultural producers, and craft producers and other small businesses (local shops). This will in turn increase the incomes of the local people, which can be invested in other (productive) activities and be used for paying school fees, medical expenses and other domestic needs. The project will stimulate local economic activities by:

- Provision for direct employment opportunities to the workforce thus contributing towards alleviation of poverty and income generation for the local community;
- Stimulation of business activities related to contracting works for local entrepreneurs (sub-contractors);
- Providing trading opportunities for local communities and other small enterprises in the area;
- Providing opportunities for provision of basic and other services for the contractors and immediate community. The project will consider employment of locals.

g) Capacity Building

It is expected that for the construction of the water source points, some degree of capacity building will be provided (organised and un-organised) through the transfer of new technologies and new skills to (un-skilled) labour. This will happen through on-the-job training as well as through exposure to modern water quality practices, management and logistics procedures. Local sub-contractors and companies will also benefit from the transfer of skills and will also build additional local capacity.

Enhancement Measures

To maximise capacity building for local communities, programs and technical training courses as well as on-the- job training will be provided in specific skills areas for suitable candidates from local communities to enhance minimum levels of education and the possibility of being employed during operational phase.

8.3 Positive Impacts during Operational Phase

a) Improved health status of households of the project host communities

The provision of an adequate, safe water supply and sanitation has positive impacts on the health of users by greatly reducing the incidence of communicable enteric and infectious related diseases, which, in many instances occur in communities due to lack of adequate sanitation and potable water supply. Both potable water supplies as well as safe disposal of human excreta are needed to break the chain of transmission diseases. Changes in water supply may affect different groups of disease in different ways; one group may depend on changes in water quality, another on water quantity and availability and another on indirect effects of standing water which is related to sanitation. Therefore, improvement in water supply in several of the poor informal settlements will directly contribute to improved public health within the project communities.

Enhancement measures: Educate users on the proper use, regular cleaning and effective maintenance of both the household and public facilities.

b) Educational enrolment and attendance

Construction and Operation of the water system will lead to considerably increased and consistent access to safe water for the project host communities. In relation to increased provision of potable water supply, time savings are the most immediate and easily measured benefits although its magnitude will depend on the conditions prevailing before the construction of the piped water supply.

Consequently, time spent on searching and waiting for water by women and children will be saved. This will enable children, especially the girl child to attend school regularly, while mothers will get more time to prepare their children for school. Assuming other factors are available (such a scholastic material, teachers) school attendance and performance will improve.

c) Acquisition of new skills

Most water supply and sanitation projects are built through the labour of local residents who are directed by a small cadre of sub-professional or supervisory personnel from outside the community. Community participation can also have a great impact on the effectiveness and sustainability of water supply and sanitation programs. It can also help to minimize many of the potential negative environmental impacts associated with them.

Enhancement measures: Where the required skills are available locally, the local people should be given first priority commensurate to their level of training.

d) Improvement in household economic status

The increased provision of potable water supply and sanitation has positive beneficial impact on health and ultimately directly and indirectly on productive and economic benefits.

- *Livestock and poultry keeping:* Improved water supply would lead to an increase in poultry and livestock keeping in homesteads. A permanent water source near or on the farm will permit an increase in cattle and improve the production of milk and beef. Those farmers who previously felt water to be a crucial constraint preventing them from keeping such livestock as grade cows and pigs, poultry like chicken or expanding their activities in this regard, may find it feasible to do so.
- *Small scale gardens:* The increased provision of piped potable water supply may have positive beneficial impact on the irrigation of small-scale gardens around homes if there is excess water available and it can be used for irrigation of small-scale garden plots near each household or tap. This will have positive beneficial *impacts* on increasing agricultural productivity and perhaps also improving nutrition status of households.
- *Small scale industries:* The ample availability of piped potable water supply may lead to improvements in the small-scale industrial development and increased production.

Enhancement measures: Water supply should be set taking into consideration the different levels of users. The users should also be educated to avoid wasteful use of the resources.

e) Employment opportunities

Operation of the constructed water supply system will create additional long-term technical and non-technical job opportunities for professionals, casual labourers, etc. Staffing will be required in the Sub County and Rural Growth Centre (RGC) to operate the constructed water supply system by: Operating the system in accordance with the service standards; Maintaining the system; Developing the system; Billing the consumers; Collecting revenue; Receiving applications for and making new connections; Making extensions to the system or assets; Attending to all customers; Keeping records of the operations of the system; and Writing status reports for the operations of the system.

Enhancement measure: Wherever feasible, local qualified people will be considered for job opportunities. Adequate occupational health and safety standards should be provided to ensure the work environment is conducive.

f) Promotion of gender equality and empowerment of women and the girl child

The proposed project would free women and girls of the burden of having to spend a lot of their time collecting and carrying water almost on a daily basis often from sources distant from their houses. This reduction in burden would allow women and girls time for other activities including involvement in economic ventures that could contribute to reducing poverty and furthering their education (thus increasing school enrolment).

g) Attainment of the Sustainable Development Goals; SDGs

The effect of providing safe water and hygienic sanitation services would help in the attainment of all other Sustainable Development Goals (infant mortality, poverty reduction, improved health and increased school enrolment rate).

h) Increase in investment in the area

Through the MWE/DWD investing heavily in the construction of the Kikoora RGC water system which would involve use of locally available materials, the business community will take advantage of the proposed development to establish businesses that would otherwise be impossible without piped water.

i) Environmental sustainability

The skill for managing water supply and sanitation facilities would result in building social capital which could be extended to better manage the local environment and water resources. The project would include environmental awareness which could be deployed to manage the environment better.

j) Combat HIV/AIDS, malaria, and other diseases

The Project would result in prevention of vector borne diseases related to water sources (such as guinea worms, Onchocerciasis, and schistosomiasis) and diseases related to excreta contaminated water and poor hygiene (cholera, typhoid, and diarrhoeal diseases) due to the increased provision of safe and clean water. Safe drinking water, personal/household hygiene and improved sanitation would reduce infant/child morbidity and mortality; improve their nutritional status and their ability to perform better in schools. The marginal price of improved hygiene and sanitation promotion would make them cost effective health interventions.

8.4 Negative Impacts during Construction

a) Land acquisition for infrastructure and loss of structures/property

This is likely to be a moderate impact of the proposed project. It includes permanent land acquisition for the construction of the water source intake (Motorized borehole), office block, pipeline network and trenching to the detriment of land owners. The land-take would be permanent where all the project components would be constructed and temporary along the pipeline network. However, both the transmission and distribution lines would be confined to the road reserves where possible. The sites for permanent land acquisition – Water Source Site, Reservoir Site, Access Roads, and Sanitation Facility Sites are of minimal land take or located on land parcels with minimal impacts on economic and livelihood activities of affected persons.

The construction of the proposed Kikoora WSS is associated with:

- Construction of new water supply systems which include;
  - ✓ Construction of distribution line
  - ✓ Construction of transmission line
  - ✓ Construction of the reservoir
- Construction of public toilets at: Kikoora Sub County Headquarters, Kikoora Market, St Mary Secondary School, Queen Mary Community School.

The Kikoora RGC Water Supply and Sanitation Project will require a permanent land take of 2.1933 acres and an Easement corridor of 2.8435 acres with a total of 150 PAPs. The construction contractor may require land for construction of lay down areas, and camps during the construction phase. In addition, unintended damage to crops and structures may occur. For the purposes of defining impacts, a distinction was drawn between households that will be both physically and economically displaced and those that will only economically displaced, as follows:

- **Physical Displacement:** Loss of shelter and assets resulting from land acquisition associated with a project that requires PAP to relocate.
- **Economic Displacement:** Loss of income streams or livelihood means resulting from land acquisition or obstructed access to resources (land, water, or forest) resulting from the construction or operation of a project or its associated facilities. For example, economic displacement can result from loss of access to farmland and can occur without physical displacement occurring.

Another important distinction in defining impacts is between permanent land acquisition and permanent land restrictions, which are defined as follows:

- **Permanent land acquisition** involves the project acquiring all land including land registration and title processing. This is the case for land required for the boreholes, and reservoirs.
- **Permanent land restriction** involves limitations imposed on the land under easement corridors for water pipes which prohibits building any structures or cultivating perennial crops and trees within the corridor. However, any existing PAH retains land use/ownership rights and cultivation of seasonal crops within the easement corridor, or any other land uses. Land use restrictions decrease land use potential which decreases the land value. It is this diminution (reduction in value) that is compensated. The table below shows the land take for Kikoora WSS.

Table 43: Land take for Kikoora RGC WSS

#	Impact	Land Affected in Acres
1	Permanent Land Affected (Water Source Sites, Reservoir Sites, Access Roads, And Sanitation Facility Sites)	2.1933
2	Permanent Land Restriction (Easement for Transmission and Distribution Pipes)	2.8435
3	**Total Land Affected in Acres**	**5.0368**

Mitigation Measures

- The district and local authorities in Sub County have already been engaged together with the local land lords and they agreed with communities whose land will be used for the proposed project construction (Consent forms were signed and they have been attached to this report; see appendix IV). No grievances were reported and are envisaged.
- Land owners that require compensation (where possible) as project affected persons should be compensated before commencement of the project activities.

- MWE shall ensure that this land and any impacted assets are compensated for in accordance with the provisions of this RAP before project implementation starts/commences.

b) Loss of crops and vegetation cover and top soil

The existing vegetation and top soil will be cleared to give way to the construction process on all sites i.e. the borehole, water tank, pumping stations and pipeline network areas. However, clearing of this vegetation will lead to permanent loss of vegetation cover and likelihood of soil erosion due to removal of top soil. The project activities are likely to destroy vegetation with subsequent loss of some shrubs and grasses from the area of operation albeit on a small scale. This is likely to cause loss of habitat and disturbance to faunal communities in the affected sites but at an insignificant level. A corollary livelihood impact resulting from the loss of household land is the loss of crops and fruit trees planted on that land. There are also impacts related to loss of timber trees and woodland areas. The Project will impact 341 banana clumps and 128 coffee plants at various stages of maturity, the majority being in Kikoora parish. The Project land take will result in the loss of 13 fruit trees, the majority of which are mangoes and paw paws, followed by jackfruit and avocado. The majority of the affected fruits are in Kikoora parish. The Project will impact 39 timber-productive trees, most of which are eucalyptus followed by nsambya trees. The majority of these affected trees are in Kikoora parish followed by Nyamaligita parish.

Mitigation Measures

- After construction, there should be landscaping and re-vegetation. The premises will be planted with vegetation/grass and ornamental trees.
- The water source should be fenced off to reduce on going agricultural activities around the borehole to avoid pollution entering the boreholes especially when it rains heavily.
- Minimize vegetation clearance by clearly demarcating work areas.
- Provide environmental awareness training to all employees.
- Rehabilitate all disturbed areas
- MWE shall ensure that this land and any impacted assets are compensated for in accordance with the provisions of this RAP

c) Fauna

Disturbance or loss of protected/endangered animal species/communities and their habitat due to construction activities (noise, dust, fumes, pollution, vehicles) at the borehole, water tank, pumping stations and pipeline network areas.

Mitigation / Enhancement Measures

- Minimize vegetation clearance to the project specific site.
- Protect water resources from pollution.
- Protect soils from contamination.
- Rehabilitate all disturbed areas.
- After construction, there should be landscaping and re-vegetation. The premises will be planted with vegetation/grass and ornamental trees.
- Provide environmental awareness training to all employees.

d) Increase susceptibility to Soil Erosion

Increased soil erosion is likely to occur in the vicinity of project sites during the construction of the water source points and other related construction works. The site earthworks will reduce soil stability and hence make the soils aggregated and more susceptible to erosion especially during the rainy season.

Mitigation / Enhancement Measures

- The sites 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 storm water.
- The project proponent will also ensure that proper landscaping and vegetation restoration is carried out to further reduce the possibility of soil erosion.
- The Project Contractor should backfill all trenches immediately after laying the pipes for the transmission and distribution networks and compact such areas as to near level prior to excavation.
- Pursuant to Section 23(1) of The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, No. 3/2000 (under section 53 of the National Environmental Act NO.5 of 2019), the 100m protection strip is administered by NEMA and the developer shall apply for a permit from NEMA in order to undertake planting, to reduce erosion; and improve the biodiversity of the area by re-establishing indigenous grass/ tree species on site especially at the water sources/boreholes. Any replanting will be undertaken in consultation with the District Environment Office (DEO) and District Forestry/Natural Resources Office.
- Use proper techniques for trenching and shoring.

After application of the above mitigations, the impact significance is anticipated to be of a minor ranking. Therefore, no further mitigations are proposed at this stage.

e) Effects of Poor Solid Waste Management

Waste will be generated from the construction sites. The waste to stream from the construction sites will include Cement bags, timber and pipe cuttings empty water bottles, food remains from the construction workers and other forms of waste. If not well managed, the area could be prone to nuisance from foul smell, breeding of vermin and vectors, and lead to outbreak of diseases. Extent of this impact will be local to areas where waste is dumped or their immediate neighbourhoods. The impact intensity is assigned low due to the lack of a well streamlined waste management system in Kagadi. The sensitivity of receptors is assessed as 'low' given that similar activities have and are taking place in the area and that an experienced contractor will be hired. This gives rise to minor impact significance.

Mitigation Measures

- Waste collection bins will be provided at strategic positions at the construction sites for temporary waste storage.
- The waste collection bins should be provided with covers to avoid spillage by scavengers and clearly coded for sorting purposes.
- The contractor will hire a certified waste collection company to transport the waste for final disposal to designated waste dumping sites by NEMA/KDLG/Sub County.
- Burning of waste on-site shall not be allowed.

f) Generation of Noise

Due to the nature of the construction process, noise levels will fluctuate in line with the combination of machinery or equipment being used at any one time. Noise and vibrations will mainly result from use of equipment like excavators and including bulldozers, graders and dump trucks during site preparation and construction activities. However, noise levels will also vary depending on time and distance as the construction spread progresses along the pipeline route thus the local residents will not, therefore, be continually exposed to the noise levels for extended periods. Construction traffic

associated with the pipeline construction will be routed via main roads and along the ROW as far as is possible. Some minor roads will have to be used for access to the pipeline spread itself and some new access roads will be created.

The increase in traffic movements on minor roads may cause a noticeable increase in daytime noise levels through small villages; this effect will be localised and temporary, and will, for the most part, be restricted to the construction phase of the project. A number of roads will require repair prior to use for construction vehicle access. These repairs will help to reduce noise levels generated by such access, and other vehicular movements. Due to the intermittent and short-term nature of the activities, the intensity of impact is assessed as low and sensitivity of the receptors as medium, given that most of the proposed routes for the water pipelines are located in relatively noisy mixed residential and commercial areas of the project area and its neighbourhood. Roadside pipe laying activities (such as dust, noise, potential for accidents especially at night), access to schools, markets, shops, etc. night time safety, storage of excess excavated materials on road side, storage of pipes and supplies during pipe laying, equipment parking, etc. are envisaged however, the impact is assessed to be much lower than the construction site limit of 85 dB (A) including the receptor sensitivity.

Mitigation strategies:

- Contractor will ensure that equipment is properly maintained and fully functional in accordance with the manufacturer's recommendations.
- The contractor should ensure that noise levels emanating from machinery, vehicles and noisy excavation and construction activities are kept at a minimum for the safety, health and protection of people in the nearby areas. This will be done through regular monitoring of noise levels.
- Regular maintenance, monitoring and, where necessary, the use of silencing equipment will be employed with the aim of reducing noise emissions.
- The selected contractor will be required to submit detailed information on the noise levels which will be generated by the specific methods and equipment proposed and to identify actions required to minimise the noise impact.
- Pumps, generators and other mobile equipment will be sited as far as practicable from housing and other noise sensitive locations, work will not be carried out Sunday during service time or hours.
- During periods of inactivity, equipment will be switched off whenever possible. A limited number of construction activities may have to continue on a 24-hour basis. These include horizontal direction drilling, pipeline cleaning and hydrostatic pressure testing which are relatively low noise activities.
- Conduct noise monitoring and use of PPE where levels are beyond the recommended threshold.

g) Increased siltation of the aquatic habitats

Some of the excavated sediments from the project site and the construction spoils emanating from the excess excavated material and construction debris are likely to increase siltation especially in the nearby seasonal swamp ecology and therefore affecting the associated aquatic habitat.

Mitigation / Enhancement Measures

- Ensure that the site is at all times drained adequately and surface run off is directed appropriately to avoid water logging of adjacent area and of the undulating drainage channel in the Sub County.
- Pursuant to Section 23(1) of The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, No. 3/2000 (under section 53 of the National Environmental Act NO.5 of 2019), the 100m protection strip is administered by NEMA and the developer shall apply for a permit from NEMA in order to undertake planting, to reduce erosion; and improve the biodiversity of the area by re-establishing indigenous grass/ tree

species on site especially at the water sources/boreholes. Any replanting will be undertaken in consultation with the District Environment Office (DEO) and District Forestry/Natural Resources Office.
- The project proponent will also ensure that proper landscaping and vegetation restoration is carried out to further reduce the possibility of soil erosion.

h) Increased incidences of diseases

The increase of people involved in the project activities is likely to increase the incidences of diseases in the area. The above situation will be aggravated by the entry of commercial sex workers into the area following the commencement of the project activities. Consequently, there will be potential risk of contracting sexually transmitted diseases (STDs) especially the Human Immuno-Deficiency Virus/Acquired Immuno-Deficiency Syndrome (HIV/AIDS) among the program workers and the local communities. This will be increased due to influx of people seeking for employment.

Mitigation / Enhancement Measures

- The contractor should liaise with the District and Sub County CDO to mobilise communities during the recruitment process to reduce on influx of people who are unskilled.
- The contractor should emphasise equal opportunities for both men and women.
- The Contractor should, in conjunction with local health authorities, undertake to educate and sensitise the workforce on communicable diseases such as cholera, STDs and HIV/AIDS. Condoms must be made available to the workforce.

i) Visual intrusion

This will mainly arise from the erection of service reservoir tanks on the high altitude. In addition, visual intrusion will occur where project activities are likely to create disfigured landscapes in the project area especially where the construction activities will result in deposition of large spoils and digging of the trenches for the pipeline network and site fencing activities.

Mitigation / Enhancement Measures

- The contractor should maintain as much as possible the existing landscapes and plant trees and vegetation to enhance the visual aspect.
- Rehabilitate all areas disturbed by construction and landscape with trees, grass and shrubs
- Keeping the site tidy including managing spoil/soil from excavations by spreading excavated soil

j) Increased accidents and occupational hazards

Implementation of the project will definitely increase volume of human and motor traffic in the project area. The increase in human and motor traffic will be aggravated by the transportation of construction materials, water pipes and other equipment required in the construction of the water supply facilities. This is likely to result in a higher risk of accidents and occupational hazards occurring in the area of operation. Factors that may exacerbate this situation are inadequate appropriate working gears for project workers including the helmets, overalls, boots and gloves. Accidents could cause considerable ecological damage, financial loss and harm to human life. While largely reversible, some impacts such as loss of human life are irreversible. The receptor sensitivity is considered high given that such impacts may be irreversible once they occur. The impact intensity is considered to be low since MWE will procure a qualified contractor who is aware of OHS measures.

Mitigation / Enhancement Measures

-
- The primary measure to mitigate OHS impacts is prevention which entails identification of risks and instituting pro-active measures to avoid them. In part this can be achieved by following GIIP or national guidelines. For unavoidable risks, personal protective equipment (PPE) should be provided to workers.
- Orient all staff on safe work practices and guidelines and ensure that they adhere to them.
- Training staff on how to prevent and manage incidences. This should involve proper handling of electricity, water etc. and sensitization on various modes of escape, conduct and responsibility during such incidences.
- Regular safety drills to constantly follow on various possible incidences.
- Use signage to warn staff and/ or visitors that are not involved in work of dangerous places.
- Develop evacuation procedures to handle emergency situations.
- Provide adequate OHS protective gear for all laboratory staff.
- Implement lock-out-tag-out (LOTO) procedures to address electrical safety risks
- Deploy only certified staff to undertake specialized tasks such as electrical work.
- Traffic guides and signs should be utilized to avoid accidents on busy roads and junctions especially with vehicles transporting materials.
- Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or accident

k) Sourcing of Construction Materials

Sourcing of materials such as sand, gravel bricks/blocks and timber if not well regulated and controlled can have a significant impact in the points of sourcing.

Mitigation Measures

- The Contractor should liaise with local authorities to ensure that materials such as sand and gravel are only taken from quarries and borrow pits with the necessary environmental permits.
- Prepare separate Project Briefs as required by the National Environment Act (2019) for all new sites where materials like sand and stones are to be extracted/sourced.

l) Archaeological / Historical Sites/cultural sites

Throughout the consultations with the locals and local leaders, no known archaeological or historical sites exist on the proposed project routes, and proposed construction sites. Therefore, no impacts on any features of importance to national heritage are expected. The Asset survey indicates that the Kikoora RGC Water Supply and Sanitation Project will not impact any graves. However, the activities of the Kikoora RGC Water Supply and Sanitation Project have the potential to trigger OP 4.11 Physical Cultural Resources. During excavation works for Project infrastructure, there might be chance finds. Any chance finds will be treated in line with the requirements of OP 4.11. The objective of OP 4.11 is to avoid, or mitigate, adverse impacts on cultural resources from World Bank Funded Development Projects. Annex VI provides a Chance Finds Procedure on Physical Cultural Resources Management.

Mitigation measures

- Although no archaeological features were observed or known to exist at the proposed project sites and on transmission routes & sites, the Contractor shall ensure that key members of his staff are

briefed. Any such features that may be found that were not apparent on surface investigation will be reported by the project management and appropriate procedures followed to hand them over to the authority responsible for national heritage and antiquities.

- Chance find procedures are annexed on this report for reference

m) Groundwater Quality

Disturbance or loss of protected/endangered plant species or communities (terrestrial, wetland, aquatic) due to construction activities of the different project components.

Mitigation measures

- The borehole should be covered and sealed so that dirt, flooded water, sand and other debris cannot fall in.
- The boreholes should have a raised concrete apron around its base to prevent dirty water seeping back into the hole.
- Do not develop pit latrines close boreholes (recommended distance between these two is at least 50m).
- Dispose of all waste in an approved disposal site.

n) Risk of Accidents within the community

The water pipelines will have to be laid across existing roads that are used by motorist and cyclists in addition to pedestrians. The trenches created for the pipe crossing can lead to accidents if proper signage is not put in place. Construction traffic accidents would be a significant social impact and likely to affect public members like children, women, disabled, elderly people and livestock, etc. The duration of the risk will be short-term occurring only during the construction phase. Although some effects of the accidents (e.g. minor injuries) may be reversible, some, for example, loss of human life are irreversible. The receptor sensitivity is medium given the number of pedestrians and commercial activities along the roads while the intensity is medium given the temporary nature of the construction activities, however, some of the impacts may be irreversible.

Mitigation measures

- Best transport safety practices will be adopted with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public by: employing safe traffic control measures, including road signs and flagmen/traffic guides to warn of dangerous conditions and children crossings; and setting speed limits on all access roads in the project area will be 30km/h for light vehicles and 20km/h for heavy vehicles.
- Service ducts installed by the road contractor will be used where applicable to avoid cutting through roads that have just been upgraded.
- All workers, including sub-contractors and casual labour, will undergo an environmental, health and safety induction before commencing work on site. This will include a full briefing on site safety and rules.
- The affected communities will be informed of the timing and duration of the construction activities across access roads and any uncertainties or potential for change and also sensitised on the dangers of construction sites and the need to keep away.
- Identifying optimum routes from pipe storage areas to the ROW to avoid sensitive receptors such as schools and hospitals, wherever possible and putting in place journey management plans.

- Restrictions on hours of driving (including night time restrictions where sensitive receptors may be affected) and timing of vehicle movements to avoid busy periods in urban areas, particularly the start and end of school and the working day
- Control over routes used by vehicles to avoid construction traffic using inappropriate roads and other road users gaining access to the pipeline spread and access roads.
- Ensuring adequate vehicle maintenance to ensure that vehicles do not produce significant emissions and that all safety features including brakes, lights etc. are in good condition.
- Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or accident

o) Social Misdemeanour by Construction Workers

While most workers may originate from the local community where they have families, there might be others from distant places and working away from their families. With some disposable income to spend, this might induce illicit sexual relationships, with attendant risk for spread of HIV/AIDS. Irresponsible sexual relationships in project communities can break families and heighten risk of contracting HIV/AIDS. Illicit sexual relationships can be short-term but have long-term and irreversible effects. The concentration of workers in the villages, in migration of people from different regions as well as occasional payment in wages may lead to behavioural influences which may increase the risk spread of diseases thus exposing the workers or other members of the surrounding community to the hazard of infections that include HIV-AIDS and sexually transmitted diseases. Similarly, labour influx of job seekers is associated with social vices which can disturb the social order and even lay the ground for escalation of HIV/AIDS cases whose impacts are likely to be prolonged in prevalence. The sensitivity is however very high as these poor communities would struggle to cope with the challenges of being HIV positive. The impact intensity is however low due to the low number of workers (about 40, with priority hiring of non and semi-skilled labour from project villages) expected on the project.

The Code of Conduct for Contractors shall be signed by contractor upon award of contract and copies displayed for workers to view. In addition, a Code of Conduct for workers must also be signed by each project worker, and adhered to by the contractors It ought to be translated into predominant local language of the workforce. Labour influx in the project community is likely to increase HIV/AIDS due sexual relations between project workers and the local community; workers taking advantage of young girls in the community due to high poverty levels and vulnerability, teenage pregnancies and dropping out of school etc. Violence Against Children (VAC) such as potential use of child labour; sexual relationship with underage children, teenage pregnancies, school drop outs etc. Conflict in the community/families (social cohesion and disruption) due to project workers engaging in sexual relationships with married women in the community etc. is also anticipated.

Regarding GBV, may be experienced, 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 potential for increased tensions due to females receiving funds. This also refers to other GBV-related risks incurred as a result of project implementation that do not adequately consult women and adolescent girls in the community about safety and security issues related to the delivery of water and sanitation services. However, the impact intensity is ranked as low because of the low number of workers who would be exposed to incomes that can encourage irresponsible behaviour. The overall significance is ranked as ***Moderate.****Mitigation measures*

- As a contractual obligation, contractors shall be required to have an HIV/AIDS policy and a framework (responsible staff, action plan, etc.) to implement during project execution.

- A sensitisation programme for the would-be affected local communities will be conducted prior to commencement of and during the project implementation and the following issues should be included i.e. HIV/AIDS, VAC, GRM in place and conflict management.
- A code of conduct (appropriate to behaviours in workplace and with respect to relations with local community) will be developed and approved by MWE which will be signed by all workers on the project.
- Local workers will preferentially be employed, paid directly through their banks and access to bars by workers from outside the project area in the local communities controlled.
- All construction workers shall be orientated and sensitized about responsible sexual behaviour in project communities.

8.5 Negative Impacts during the Operation Phase

i) Water quality and pollution

The quality of water recommended is that which is physically, chemically and bacteriologically safe for human consumption. When not thoroughly treated, water could be a source of water related diseases which could affect the whole project communities, thereby causing an epidemic in the area. Transmission of water can also result into pollution entering the boreholes.

Mitigation Measures

- The borehole should be covered and sealed so that dirt, water, sand and other debris cannot fall in. Transmission and distribution pipes should also be covered underground to reduce exposure.
- The boreholes should have raised concrete aprons around their bases to prevent dirty water seeping back into the hole.
- The drilled borehole areas should be raised well-head by building earthworks to prevent the flooded water, dirt and other debris to accumulate around them.
- Conduct regular water quality tests and analysis for raw water to inform the treatment options.

- Prepare and implement a water source protection plan (WSPP).

ii) Water quantity and yield

This could be due to declining groundwater recharge and over pumping. The project sites are prone to suffering from rapid land use change (deforestation, soil erosion, etc.) thus the recharge of the ground water supplying the boreholes may be affected in the long run.

Mitigation / Enhancement Measures

- Get involved with catchment management planning that could improve land management and restore groundwater recharge.
- Encourage contour ploughing, mulching and other agricultural practices that increases soil water retention and percolation into the underlying aquifer.
- Reduce the amount of water being taken – if demand in the area is growing then look at developing new water sources.
- Keeping records of how much is being pumped (either volumes or number of hours for which the pump is being used per day). Find out if sudden drops in level correspond to pumping activity.
- Prepare a water source protection plan.

iii) Water supply system failure

Insufficient cost/funding for operation and maintenance would lead to poor maintenance of the system which eventually could lead to frequent breakdowns of the water supply system and consequent shut down, which further could require major and costly rehabilitation. Other sources of failure in the water system could be due to sabotage (possibly by the water vendors who envisage loss of livelihoods), illegal connections which could result in decreased water pressure, and vandalism (theft of water system parts).

Mitigation / Enhancement Measures

- Payment for water supply services is the only way to keep the service running continuously and therefore tariffs would be designed to ensure financial viability. Cost recovery would be achieved through service fee payments.
- Put in place a water user committee to oversee the operations of the water system.
- Fence off the areas like water abstraction points, pump houses, water storage reservoir tanks and other water supply structures like the community tap stands to mitigate trespass and sabotage.

iv) Pollution of water due to cutting of pipes.

Digging and construction of water facilities within close vicinity/on the water transmission network could result in pollution and loss of water.

Mitigation / Enhancement Measures

- The developer should hire services of security guards to monitor and guard the water supply system facilities.
- Sensitization and awareness about the dangers of vandalising the water supply system facilities should be done especially by the local leaders and the developer (MWE/DWD).
- Legal and applicable punitive measures like arrests and prosecution should be taken to those caught vandalising the water system facilities in order to curtail and to serve as an example to those who would want to engage themselves in such acts.
- The developer should fence off all the premises of the different project components like the pumping stations, reservoir sites and any other erected structures.

v) Noise from Generators

Operation of the generators to boost the pumping of water for some hours will generate moderate levels of noise which may be a nuisance to the neighbouring communities and this must be handled appropriately.

Mitigation / Enhancement Measures

- Installation of solar system instead of the generator
- Regular servicing, maintaining and monitoring of the generators
- Switching on the generators for few hours just to boost the pumping of water but to always use the solar systems.

8.6 Environmental Impacts of Decommissioning

After the water system infrastructure has attained its lifetime, it will either be rehabilitated or decommissioned to return the affected area to a natural environment similar to that which would have existed prior to construction. However, some of the structures/facilities may still have other beneficial uses such as: run-off control, recreation, and water supply among others. Therefore, prior to destroying the

structure it is crucial to know whether the structure can be reused through refurbishment of the structures and equipment. Decommissioning of the water system can have negative impact on environment of the area from the release of built up sediments into the neighbouring ecosystems. There will be changes in the quality of the seasonal swamp (physical and chemical characteristics). These will include:

- *Changes to aquatic ecology:* The smaller animals like the macro–invertebrate's population distributions would be affected especially during the rainy season, as their digestions would become slower leading to unfavourable conditions for reproduction. When the levels of suspended solids are in excess, the non–organic sediments loading increases where the sediment particles are ingested and becomes hard to digest.
- *Pollution:* Decommissioning will lead to temporary increase in noise and vibration as well as air pollution due to emissions of dust. The removal of concrete and similar non-recyclable construction materials may cause land degradation.
- *Socio-economic impacts:* Removal of structure may impact the socio-economic conditions such as loss of employment thus reduced livelihoods damage of land use.

Mitigation / Enhancement Measures

The water system infrastructure can always be rehabilitated from time to time and might not necessarily have a life span and with the passage of time social and environmental scenario will change. Therefore, the decommissioning plan discussed above cannot be framed in present scenario however; the various mitigatory measures should meet the following requirement in addition to decommissioning plan to be developed before decommissioning:

- Decommissioning will be undertaken in accordance with the legislation prevailing at that time, in liaison with the relevant regulatory authorities and adhere to the health and safety guidelines to ensure that the decommissioned facilities do not deteriorate to the point where they become a hazard to the public or the environment.
- Safe disposal of waste and concrete and similar non-recyclable construction materials, restoration of all disturbed sites to pre-construction conditions through bioengineering measures.

Tables 44, 45, 46 and 47 below presents a summary of an evaluation of the above envisaged impacts as a result of the implementation of the project.

Table 44: Identified Environmental and Social Impacts during Design Phase

Item	Environmental and social Component	Potential Negative Impacts	Potential Mitigation Measures	Impact Rating before Mitigation	Impact Rating after Mitigation
D1.	Groundwater Resources	Local lowering of water table levels, due to abstraction of groundwater for the water supply system.	▪ Undertake a hydrological study of boreholes to determine water table depths, borehole yields and local use of groundwater.	Moderate	Minor
D2.	Groundwater Quality	The groundwater could become polluted as a result of pit latrines and indiscriminate waste disposal practices.	▪ Avoid prospecting in areas that are prone to flooding, waste disposal sites and pit latrines.	Moderate	Minor
D3.	Soils	Soil erosion/damage due to survey activities and vehicle tracks. Soil contamination from oil and diesel spills.	▪ Minimize number of tracks. ▪ Use right angle intersections & use bunding. ▪ Avoid seasonally marshy areas & floodplains.	Minor	Negligible
D4.	Flora	Disturbance or loss of endangered plant species or communities (terrestrial, wetland, aquatic) due to survey activities.	▪ Discourage any wanton destruction of vegetation and habitats beyond the designed project works.	Minor	Negligible
D5.	Fauna	Disturbance or loss of protected/endangered animal species/communities and their habitat.	▪ Minimize vegetation clearance. ▪ Protect water & soils from pollution.	Minor	Negligible
D6.	Noise	Noise generated by survey activities, especially vehicles, pump testing activities	▪ Working hours should be restricted from 7am – 6pm.	Moderate	Minor
D7.	Air quality	Dust from vehicle movements.	▪ Avoid excessive vehicle movements. ▪ Limit vehicle speeds on unsurfaced tracks to 20kph.	Moderate	Minor
D8.	Health and safety	Risk of accidents and ill health as a result of the project.	▪ Hold safety talks with workers before work. ▪ Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or	Moderate	Minor

			accident		
D9.	Public nuisance	General nuisance such as noise, waste and dust.	▪ Minimize number of workers at site.	Moderate	Minor

Table 45: Environmental and Social adverse/negative impacts during Construction Phase

Item	Environmental and social Component	Potential Negative Impacts	Potential Mitigation Measures	Impact Rating before Mitigation	Impact Rating after Mitigation
C1.	Land acquisition for infrastructure	The land-take would be permanent where all the project components would be constructed and temporary along the pipeline network. However, both the transmission and distribution lines would be confined to the road reserves where possible	▪ The district and local authorities in Sub County have already been engaged together with the local land lords and they agreed with communities whose land will be used for the proposed project construction (MoUs/Consent forms signed as attached in RAP. No grievances were reported and are envisaged. ▪ Compensation (where possible) to land owners as project affected persons.	Moderate	Minor
C2.	Loss of vegetation cover and top soil	The existing vegetation and top soil will be cleared to give way to the construction process on all sites. This is likely to cause loss of habitat and disturbance to faunal communities in the affected sites but at an insignificant level.	▪ After construction, there should be landscaping and re-vegetation. The premises will be planted with vegetation/grass and ornamental trees. ▪ The water source should be fenced off to reduce on going agricultural activities around the borehole to avoid pollution entering it especially when it rains heavily. ▪ Minimize vegetation clearance by clearly demarcating work areas. ▪ Provide environmental awareness	Moderate	Minor

			training to all employees. ▪ Rehabilitate all disturbed areas.		
C3.	Increase susceptibility to Soil Erosion	Increased soil erosion is likely to occur in the vicinity of project sites during the construction of the water source points, pump stations, installation of the water pipe reticulation and other related construction works. The site earthworks will reduce soil stability and hence make the soils aggregated and more susceptible to erosion especially during the rainy season.	▪ The sites will be hoarded off to intercept any eroded material and any soil material will remain within the site. ▪ The project proponent will also ensure that proper landscaping and vegetation restoration is carried out to further reduce the possibility of soil erosion. ▪ Use proper techniques for trenching and shoring	Moderate	Minor
C4.	Increased siltation of the aquatic habitats	Some of the excavated sediments from the project site and the construction spoils emanating from the excess excavated material and construction debris are likely to increase siltation especially in the nearby seasonal swamp to the motorized borehole and therefore affecting the associated aquatic habitat.	▪ Ensure that the site is at all times drained adequately and surface run off is directed appropriately to avoid water logging of adjacent area and the undulating drainage channel	Moderate	Minor
C5.	Effects of Poor Solid Waste Management	Waste will be generated during the construction of the WSS. The waste stream from the construction will include cement bags, timber and pipe cuttings, empty water bottles, food remains from workers onsite and other forms of waste. If not well managed, the area could be prone to nuisance from foul smell, breeding of vermin and vectors, and lead to outbreak of diseases.	▪ Waste collection bins will be provided at strategic positions at the sites for temporary waste storage. ▪ The waste collection bins should be provided with covers to avoid spillage by scavengers and clearly coded for sorting purposes. ▪ The proponent will hire a certified waste collection company to transport the waste for final disposal to designated waste dumping sites by NEMA/KDLG/ Sub County. ▪ Burning of waste on-site shall not be allowed.	Moderate	Minor

C6.	Increased incidences of diseases.	The increase of people involved in the project activities is likely to increase the incidences of diseases in the area. Consequently, there will be potential risk of contracting sexually transmitted diseases (STDs) especially the Human Immuno-Deficiency Virus/Acquired Immuno-Deficiency Syndrome (HIV/AIDS) among the program workers and the local communities. This will be increased due to influx of people seeking for employment.	▪ The contractor should liaise with the District and Sub County CDO to mobilise communities during the recruitment process to reduce on influx of people who are unskilled. ▪ The contractor should emphasise equal opportunities for both men and women. ▪ The Contractor should, in conjunction with local health authorities, undertake to educate and sensitise the workforce on communicable diseases such as cholera, STDs and HIV/AIDS. ▪ Condoms must be made available to the workforce	Moderate	Minor
C7.	Visual intrusion	This will mainly arise from the erection of service reservoir tanks on the high altitude (hills). In addition, visual intrusion will occur where project activities are likely to create disfigured landscapes in the project area especially where the construction activities will result in deposition of large spoils and digging of the trenches.	▪ The contractor should maintain as much as possible the existing landscapes and plant trees and vegetation to enhance the visual aspect. ▪ Rehabilitate all areas disturbed by construction and landscape with trees, grass and shrubs.	Minor	Negligible
C8.	Increased accidents and occupational hazards	Implementation of the project will definitely increase volume of human and motor traffic in the project area. The increase in human and motor traffic will be aggravated by the transportation of construction materials, water pipes and other equipment required in constructing the water supply facilities. This is likely to result in a higher risk of accidents and occupational hazards occurring in the area of operation.	▪ The contractor should ensure that workers are provided with adequate personal protective wear to mitigate injuries such as gloves, helmets, overalls and gumboots. ▪ Traffic guides and signs should be utilized to avoid accidents on busy roads and junctions especially with vehicles transporting materials ▪ Fence all construction sites. ▪ Place warning signs. ▪ Enforce maximum traffic speeds to 20kph	Moderate	Minor

			▪ Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or accident		
C9.	Sourcing of Construction Materials	Sourcing of materials such as sand, gravel bricks/blocks and timber if not well regulated and controlled can have a significant impact in the points of sourcing.	▪ The Contractor should liaise with local authorities to ensure that materials such as sand and gravel are only taken from quarries and borrow pits with the necessary environmental permits.	Moderate	Minor
C10.	Occupational Health and Safety Risks for the Workforce	Construction traffic, excavation machinery, blasting of rocks and trenches may pose accident risk to workers either when equipment is operated by inexperienced workers or when in a poor mechanical condition or falls into the trenches.	▪ All construction workers will be oriented on safe work practices and guidelines and ensure that they adhere to them. ▪ Training will be conducted on how to prevent and manage incidences. This should involve proper handling of electricity, water etc. and sensitization on various modes of escape, conduct and responsibility during such incidences. All must fully be aware and mentally prepared for potential emergency. ▪ Regular drills will constantly follow on various possible incidences. This will test the response of the involved stakeholders. Such drills will keep them alert and they will become more responsive in the case of incidences. ▪ Signage will be used to warn staff and/ or visitors that are not involved in construction activities of dangerous places.	Moderate	Minor
C11.	Social Misdemeanour by Construction Workers	• While most workers may originate from the local community where they have families, there might be others from distant places and	▪ Framework (responsible staff, action plan, etc.) to implement during project execution. ▪ A sensitisation programme for the	Moderate	Minor

		working away from their families. With some disposable income to spend, this might induce illicit sexual relationships, with attendant risk for spread of HIV/AIDS • Labour influx in the project community such as increase in irresponsible activities that may increase HIV/AIDS due sexual relations between project workers and the local community; workers taking advantage of young girls in the community due to high poverty levels and vulnerability, teenage pregnancies and dropping out of school etc. • Violence Against Children such as potential use of child labour; sexual relationship with underage children, teenage pregnancies, school drop outs etc. • Conflict in the community/families (social cohesion and disruption) due to project workers engaging in sexual relationships with married women in the community etc.	would-be affected local communities will be conducted prior to commencement of and during the project implementation. ▪ A code of conduct (appropriate to behaviours in workplace and with respect to relations with local community) will be developed and approved by MWE which will be signed by all workers on the project. ▪ Local workers will preferentially be employed, paid directly through their banks and access to bars by workers from outside the project area in the local communities controlled. ▪ All construction workers shall be orientated and sensitized about responsible sexual behaviour GBV, Violence Against Children, HIV/AIDS etc. in project communities ▪ Contractor(s) will maintain a complaints redress mechanism for all complaints that will arise from the interaction between construction workers and the communities within the project sites/areas including a record of how these complaints have been addressed		
C12.	Archaeological / Historical Sites	Throughout the consultations with the locals and local leaders, no known archaeological or historical sites exist on the proposed project routes, and proposed construction sites. Therefore, no impacts on any features of importance to national heritage are expected.	▪ The Contractor shall ensure that key members of his staff are briefed. Any such features that may be found that were not apparent on surface investigation will be reported by the project management and appropriate procedures followed to hand them over to the authority responsible for national	Minor	Negligible

			heritage and antiquities.		
C13.	Groundwater Quality	The groundwater could become polluted as a result of construction activities, pit latrines and indiscriminate waste disposal practices.	▪ The borehole should be covered and sealed so that dirt, water, sand and other debris cannot fall in. ▪ The boreholes should have concrete aprons around their base to prevent dirty water seeping back into the hole. ▪ Do not develop pit latrines close to boreholes. ▪ Dispose of all wastes in an approved disposal site.	Moderate	Minor
C14.	Fauna	Disturbance or loss of protected/endangered animal species/communities and their habitat due to construction activities (noise, dust, fumes, pollution, vehicles)	▪ Minimize vegetation clearance. ▪ Protect water resources from pollution. ▪ Protect soils from contamination. ▪ Rehabilitate all disturbed areas.	Minor	Negligible

Table 46: Operation Phase Adverse/Negative Impacts

Item	Environmental and social Component	Potential Negative Impacts	Potential Mitigation Measures	Impact Rating before Mitigation	Impact Rating after Mitigation
OP1	Water quality and pollution	The quality of water recommended is that which is physically, chemically and bacteriologically safe for human consumption. When not thoroughly treated, water could be a source of water related diseases which could affect the project communities, thereby causing an epidemic in the area. Transmission of water can also result into pollution and pollution entering the boreholes	▪ The borehole should be covered and sealed so that dirt, flooded water, sand and other debris cannot fall in. Transmission and distribution pipes should also be covered underground to reduce exposure. ▪ The boreholes should have raised concrete aprons around their bases to prevent dirty water seeping back into the holes. ▪ The drilled borehole areas should be raised well-head by building earthworks to	Moderate	Minor

			prevent the flooded water, dirt and other debris to accumulate around it		
OP2	Water quantity and yield	This could be due to declining groundwater recharge and over pumping. The project sites are prone to suffering from rapid land use change (deforestation, soil erosion, etc.) thus the recharge of the ground water supplying the borehole may be affected in the long run.	▪ Get involved with Water source catchment protection and management planning that could improve land management and restore groundwater recharge. ▪ Encourage contour ploughing, mulching and other agricultural practices that increases soil water retention and percolation into the underlying aquifer. ▪ Reduce the amount of water being taken – if demand in the area is growing then look at developing new water sources. ▪ Keeping records of how much is being pumped (either volumes or number of hours for which the pump is being used per day). Find out if sudden drops in level correspond to pumping activity.	Severe	Minor
OP3	Water Supply System failure	Insufficient cost/funding for operation and maintenance would lead to poor maintenance of the system which eventually could lead to frequent breakdowns of the water supply system and consequent shut down, which further could require major and costly rehabilitation. Other sources of failure in the water system could be due to sabotage (possibly by the water vendors who envisage loss of livelihoods), illegal connections which could result in decreased water pressure, and vandalism (theft of water system parts)	▪ Payment for water supply services is the only way to keep the service running continuously and therefore tariffs would be designed to ensure financial viability. Cost recovery would be achieved through service fee payments. ▪ Put in place a water user committee to oversee the operations of the water system. ▪ Fence off the areas like water abstraction points, pump houses, water storage reservoir tanks and other water supply structures like the community taps like kiosks to mitigate trespass and sabotage	Moderate	Minor
OP4	Water pollution due to cutting	Digging and construction of water facilities within close vicinity/on the water	▪ The developer should hire services of security guards to monitor and guard the	Moderate	Minor

	of the pipes	transmission network could result in pollution and loss of water	water supply system facilities. ▪ Sensitization and awareness about the dangers of vandalizing the water supply system facilities should be done especially by the local leaders. ▪ Legal and applicable punitive measures like arrests and prosecution should be taken to those caught vandalizing the water system facilities in order to curtail and to serve as an example to those who would want to engage themselves in such acts.		
OP5	Noise levels from Generators	Using of generators to boost the pumping of the water at the pumping stations may lead to moderate noise levels around the project area	▪ Installation of solar system instead of generator ▪ Service the generators regularly to minimize on the noise. ▪ Switch on generators only for few hours to boost on the pumping hours but always use the solar systems	Minor	Negligible

Table 47: Decommissioning Phase Adverse Impacts

Environmental and social Component	**Potential Negative Impacts**	**Potential Mitigation Measures**	**Impact Rating before Mitigation**	**Impact Rating after Mitigation**
Surface Water Quality	Pollution of water bodies from erosion of unconsolidated materials, contaminated soil, wastes (solid and liquid), etc. As a result of demolition activities.	• Rehabilitate all areas e.g. grass/tree planting. • Take samples of the runoff water into the receiving water body nearby and ensure free pollution. • Remove all contaminated soil identified and dispose of it in an approved site. • Close any waste disposal facility on site and make provision for drainage in such a way as to prevent future pollution.	Moderate	Minor

Flora	Disturbance or loss of plant species or communities (terrestrial, aquatic) due to dust fall-out onto leaves and soil, dump erosion.	• Rehabilitate or stabilize all cleared areas using indigenous vegetation until handover of the site.	Minor	Negligible
Fauna	Disturbance or loss of animal species/communities and their habitat due to the lack of rehabilitation etc.	• Rehabilitate or stabilize all cleared areas using indigenous vegetation where possible.	Minor	Negligible
Soils	Re-use of soils in rehabilitation and re-instatement of pre-project capability.	• Replace subsoil and overburden first and then cover with saved topsoil. Do not use heavy equipment to replace topsoil because this can cause compaction.	Minor	Negligible
	Soil erosion from denuded areas and demolition activities.	• Maintain erosion protection works. • Rehabilitate or stabilize all disturbed areas.	Minor	Negligible
Topography	Reinstate the topographic profile.	• Backfill, contour and landscape.	Minor	Negligible
Air quality	Dust from un-rehabilitated sites and demolition activities.	• Avoid dusty activities e.g. loading and dumping on windy days & monitor dust emissions.	Minor	Negligible
	Odours from waste dump.	• Avoid activities that can lead to pilling of wastes in the project area. • Dispose of all the wastes in gazetted sites	Minor	Negligible
Noise and vibration	Noise generated by demolition equipment and earth moving equipment	• Prescribe noise reduction measures if appropriate e.g. restricted working and transport hours and noise buffering.	Minor	Negligible
Health and safety	Risk of accidents and ill health as a result of the project	• Fence all unsafe and dangerous areas & monitor environmental health (air quality, water quality). • Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or accident	Minor	Negligible
Aesthetic and amenity values	Improvement of the visual impact of the site on scenic views.	• Rehabilitate with trees, grass and shrubs where possible. • Consult with the local community and tourist industry.	Minor	Negligible

Note:

- Mitigation measures were designed in order to avoid, reduce, mitigate, or compensate for adverse environmental and social impacts and inform the ESMP
- Closure and decommissioning of the project was identified as a key issue. An environmental management plan is developed during the assessment and it prescribes procedures for closure and post-operation to ensure that the environment is restored as much as possible to its original state.

9 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

9.1 Introduction

The objectives of the Environment and Social Management Plan (ESMP) include: compliance with applicable national E&S safeguards; propose mitigation, enhancing, management, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse E&S impacts and; address capacity building requirements. The Plan includes details such as the issue to monitor, the indicators, responsibility for collecting and checking data and reporting, costs of implementation (where applicable), responsibility for implementing the action and training or orientation of responsible person (if applicable). It should, however, be noted that the costs indicated in the ESMP are indicative only and the responsible implementing parties such as Contractors, Supervising Consultants, and respective MWE teams and other agencies responsible for monitoring should prepare budgets to include the aspects covered in this ESMP. The proposed project may have minimal adverse environmental effects, provided that recommendations and mitigation measures identified in this Chapter are incorporated into all project phases and are implemented by the developer and the contractors.

Table 48 presents management plan with specific mitigation measures to be implemented during Design, construction, operation and Decommissioning phases of the proposed project.

9.2 Role of the Ministry of Water and Environment

The developer will be responsible for:

- Disclosing and adopting the ESIA to guide project implementation Implement the approved conditions provided by NEMA (approval certificate), and permits from lead agencies including DWRM (Ground Water Abstraction Permit), MoGLSD, (Workplace Inspection Certification), MWE (River bank), NEMA (Environmental Management).
- Costs related to complying with the Environmental and Social Safeguards as applicable to the construction and operation of the Water Supply System will be met by the developer.
- Implementing and complying with the conditions of the ESMP forms part of the conditions of appointment of all Consultants and Contractors throughout the life of the project;
- Appointing Independent environmental experts to audit the implementation of, and compliance with, the ESMMP and monitoring plan, as well as the NEMA Approval conditions on an annual basis; and the independent environmental Compliance audits, together with other relevant monitoring information made available to the public, throughout the life of the project, summarized in lay person's terms and in a culturally accessible manner.
- Training and awareness creation in environmental and social management and the mitigation of impacts are provided to MWE Project staff, to ensure they are aware of their responsibilities and are competent to carry out their work in an environmentally and socially responsible manner

9.3 Role of Relevant Lead Agencies

Agencies such as NEMA, WMD, MGLSD, KDLG, Office of CGV, will be involved in the various phases through the life of the Project as proposed in the ESMP. The responsibilities of each respective agency

will be those that are within their mandate, and as such, no extra costing has been included in the ESMP since it is expected that their annual operational budgets will be made to include the required works for this Project. For this reason, MWE should regularly update the respective lead agencies with the Project progress, and challenges and opportunities presented during the implementation of the project.

9.4 Role of Construction Supervision Consultants

The Consultants to whom supervision work is outsourced during project implementation will be responsible for the following:

- Reviewing project design, contractor's contract, BOQs and all other project documents like the ESMP, ESIA report, NEMA project certificate conditions, RAP so as to familiarize with the documents in order to build up an additional mechanism for enforcing compliance as per those in contract.
- Ensuring that contractors familiarize themselves with the environmental and social management framework for the project sites and activities.
- Reviewing and approving Contractor's plans as required in the above documents like; EHS Plans, Waste Management Plan, Traffic Management Plan, Emergency Response Plan, Gender Management Plan, Erosion and sediment control plan, Decommissioning and Restoration Plans of the site; among others.
- Following up on Contractor's obligation in acquiring the various permits in relation to the project works which then will be verified like; permit for excavation, permit for hoarding and scaffolding, Work registration permit.
- Monitoring the Contractor's performance in EHS aspects, particularly in regard to the above-mentioned plans; using the safeguards documents provided by MWE and NEMA, as well as permits from other Lead Agencies, using the safeguards documents provided.
- Ensuring that all the contractors and their subcontractors receive basic training or are sensitized on E&S matters, including acceptable conduct, storage and handling of potentially hazardous substances, waste management, and prevention of pollution of natural resources.
- Receiving daily, weekly and monthly reports from the Contractor on EHS aspects, and furnishing MWE with the information during monthly meetings or site visits. Any urgent issues will have to be reported to MWE immediately to allow appropriate timely action to be implemented.
- Preparing the environmental and social supervision statement and also approving of invoices or payments with consideration of ESMP performance.
- Regularly engaging with the local communities to ensure continued social acceptance in the areas where the Contractor is in operation, and also to ensure that Contractor adheres to the recommendations made in this ESMP.
- Instructing the contractor to correct within the timeframe determined as per contract in case of any corrective actions. If there is breach of contract or strong public complaints on contractor's environmental performance, the Supervision Consultants is obligated to order the contractor to correct, change or stop the work, reporting to relevant agencies and the MWE.

9.5 The Role of the Contractor.

- During sites preparation and construction, the contractor will be responsible for ensuring compliance with all relevant national legislation and World Bank Safeguard OPs including adhering to all environmental and socio-economic mitigation measures specified in this ESIA.
- The contractor will also be responsible for managing the potential environmental, socio-economic, safety and health impacts of all contract activities whether these will be undertaken by themselves or by their subcontractors.

- The Contractor should prepare Environmental, Social, Health and Safety Action Plans to comply with the above requirements.
- Conduct day-to-day implementation of the ESMP.

9.6 The Monitoring Team

It is recommended that a core team of people preferably headed by the Kakumiro District Natural Resources/Environment Office, District Water Office and composed of other officials from DWD and respective local environment committees will carry out monitoring activities. The monitoring team will start its work during the site preparation and construction process and continue throughout the operation phase and should ensure that the proposed mitigation measures are implemented as suggested and recommended in this EIA study. The monitoring team will most particularly check for the following issues among others:

- Changes in the water quality and quantity.
- Compliance with the conditions set out on the water abstraction permit.
- Compliance with the conditions on the issued Certificate of Approval from NEMA.
- The activities of this team are not a substitute to the obligations of the Contractor and Supervision Consultant.

9.7 Environmental and Social Monitoring Plan.

A monitoring process will be established to check/assess the implementation progress and effectiveness of the mitigation measures suggested and the resulting effects of the proposed project on the environment. The process will begin during site preparations, construction stage and continue throughout the operation phase. It also includes regular reviews of the impacts that cannot be adequately assessed before the beginning of the project, or which arise unexpectedly. In such cases, appropriate new actions to mitigate any adverse effects will be undertaken.

The recommendations will provide a basis for tracking progress of the proposed project activities with regard to sound environmental and social practice and mitigation measures. This will be done with the support of supplementary documents such as specific architectural and engineering plans and designs for civil and mechanical works to be undertaken on the site.

Environmental Management and Monitoring Plan is presented below under Table 48.

Table 48: Environmental Management and Monitoring Activities and Criteria

Ref. No	Affected Environment	Mitigation Measures	Objective to Address Impact	Indicators	Monitoring Activity	Project Phase	Responsibility	Freq.	Mitigation Cost (UGX)	Monitoring Budget (UGX)
M1.	Ground water Resources	▪ Water source catchment protection and management planning that could improve land management and restore groundwater recharge. ▪ Encourage contour ploughing, mulching and other agricultural practices that increases soil water retention and percolation into the underlying aquifer. ▪ Reduce the amount of water being taken – if demand in the area is growing then look at developing new water sources. ▪ Keeping records of how much is being pumped (either volumes or number of hours for which the pump is being used per day). Find out if sudden drops in level correspond to pumping activity.	To minimise on the Local impact of lowering water table levels, due to abstraction of groundwater for the system	Changes in Ground water level	Hydrological study of boreholes to determine water table depths, borehole yields and local use of groundwater	Pre and post construction	MWE	Quarterly	-	5,000,000
M2.	Ground water quality	▪ The borehole should be covered and sealed so that dirt, water, sand and other debris cannot fall in. ▪ The boreholes should have concrete aprons around their base to prevent dirty water seeping back into the hole. ▪ Do not develop pit latrines close to boreholes. Dispose of all wastes in an	To minimise on the impact of ground water pollution	% of water tests parameters that meet the water quality standards	Water Quality Testing	Throughout project period	MWE	Quarterly	-	4,000,0000

Ref. No	Affected Environment	Mitigation Measures	Objective to Address Impact	Indicators	Monitoring Activity	Project Phase	Responsibility	Freq.	Mitigation Cost (UGX)	Monitoring Budget (UGX)
		approved disposal site.								
M3.	Soils	▪ Use right angle intersections & use bunding and avoid seasonally marshy areas & floodplains ▪ Replace subsoil and overburden first and then cover with saved topsoil. ▪ Do not use heavy equipment to replace topsoil because this can cause compaction.	To minimise on the Soil erosion/damage due to survey activities and vehicle tracks.	% of soil cover replaced	Field observations	Decommissioning	Contractor and MWE	Quarterly	-	2,000,000
M4.	Flora	▪ Mark endangered tree species and avoid cutting ▪ Minimize vegetation clearance and protect water & soils from pollution ▪ Rehabilitate or stabilize all cleared areas using indigenous vegetation until handover of the site.	To prevent disturbance or loss of endangered plant species or communities due to survey activities	% of trees conserved and restored	Field surveys	Pre-construction and Decommissioning	Contractor /MWE	Quarterly	-	3,000,000
M5.	Land acquisition	▪ Prepared and sign MoUs/Consent forms with land owners before construction activities ▪ Compensation (where possible) to land owners as project affected persons.	The land-take would be permanent where the water intakes, office block, pump stations and reservoirs would be constructed and temporary along the pipeline network	% of RoW aquired % of PAPs compensated	Review of RAP implementation reports and field engagements with PAPs	Pre and Construction	MWE	Daily	Presented in the RAP	3,000,000
M6.	Water quantity and yield	▪ Implementation of a water source protection plan	To improve on the water	-Water level	Water quantity and	Construction	MWE	Lump sum	60,000,000	3,000,000

Ref. No	Affected Environment	Mitigation Measures	Objective to Address Impact	Indicators	Monitoring Activity	Project Phase	Responsibility	Freq.	Mitigation Cost (UGX)	Monitoring Budget (UGX)
		(WSPP)	quality from the water source	changes -% of water tests parameters that meet the water quality standards	quality monitoring					
M7.	Loss of vegetation cover and top soil	▪ After construction, there should be landscaping and re-vegetation. The premises will be planted with vegetation/grass and ornamental trees. ▪ The water source should be fenced off to reduce on going agricultural activities around the borehole to avoid pollution entering it especially when it rains heavily. ▪ Minimize vegetation clearance by clearly demarcating work areas. ▪ Provide environmental awareness training to all employees. ▪ Landscaping and re-vegetation after construction and fencing off all the sites.	To minimize on the loss of vegetation cover and top soils along the project sites	% of vegetation cover conserved % of vegetation cover restored	Review of reports, field verification and observation	Construction	Contractor	Daily	-	2,000,000
M8.	Increase susceptibility to soil erosion	▪ The sites will be hoarded off to intercept any eroded material and any soil material will remain within the site. ▪ The project proponent will also ensure that proper landscaping and vegetation	To reduce on incidences of soil erosion at project sites	Level of stability of the soil	Soil conservation reports and field observation/ verification	Construction	Contractor / MWE	Quarterly	-	2,000,000

Ref. No	Affected Environment	Mitigation Measures	Objective to Address Impact	Indicators	Monitoring Activity	Project Phase	Responsibility	Freq.	Mitigation Cost (UGX)	Monitoring Budget (UGX)
		restoration is carried out to further reduce the possibility of soil erosion. ▪ Use proper techniques for trenching and shoring ▪ Soil conservation measures								
M9.	Increased siltation of aquatic habitats	▪ Draining sites adequately and directing surface run off appropriately to avoid water logging of adjacent area	To reduce on the impact of siltation in the nearby seasonal aquatic habitats	Turbidity level of water	Water quality tests	Construction	Contractor	quarterly	-	covered
M10.	Incidences of communicable diseases	▪ Educating and sensitising the workforce on communicable diseases such as cholera, STDs and HIV/AIDS and provision of Condoms to the workforce.	To prevent cases of potential disease risks within the project area	Number of Incidents of communicable diseases reported	Review of Clinical records	Construction	Contractor / MWE	Daily	5,000,000	1,000,000
M11.	Air Quality	▪ Provision of adequate and appropriate personal protective equipment (PPE) and air quality monitoring. ▪ Dust suppression by water, observe 30km/hr and covering of construction materials in transit	To minimise dust nuisance and exhaust pollution	% of air parameters that meet standards	Air quality tests	Construction	Contractor	Monthly	6,000,000	1,000.000
M12.	Construction Material Sourcing	▪ Liaise with local authorities to only source materials from legally registered suppliers	To regulate and control the impact in the points of sourcing materials.	No of legally authorized material	Review of documents and field inspections	Construction and decomissioning	Contractor	quarterly	-2,000,000	2,000,000
M13.	Noise Levels	▪ Proper scheduling of work ▪ Provision of PPE, Equipment and vehicle servicing and noise barriers	To minimise noise disturbance to communities	% of sites with permissible noise levels	Noise measurement	Construction	Contractor	Monthly	6,000,000	1,000,000

Ref. No	Affected Environment	Mitigation Measures	Objective to Address Impact	Indicators	Monitoring Activity	Project Phase	Responsibility	Freq.	Mitigation Cost (UGX)	Monitoring Budget (UGX)
M14.	Occupation Safety & Health	▪ Inspect all equipment to ensure that they are in good working condition. ▪ Barrier tape and warning signs will be used, install safety signage, fence off the area. ▪ First aid services in place ▪ PPE usage enforced ▪ Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or accident	To ensure Health and Safety at the site / Premises	No of OSH incidents recorded and managed	Review of reports and field observations	construction	Contractor / MWE	Daily	4,000,000	1,000,000
M15.	Community Health	▪ Implement community health awareness and service provision ▪ Promptly notifying serious and severe incidents and accidents (no later than 24 hours or immediately after learning of the incident or accident	To prevent spread of diseases and occurrence negative incidents	No of health programs implemented and no of incidents recorded	Review of reports, incident tracking and field visits	Construction	Contractor	Quarterly	5,000,0000	2,000,000
M16.	Misinformation of the project	▪ Prepare a comprehensive Stakeholder Engagement Plan (SEP	To minimize the risk of misinformation due to failure to engage stakeholders	No of stakeholders engaged	Review of reports, minutes and field visits	Construction	Contractor	Monthly	5,000,000	3,000,000
M17.	Risk of GBV and violence against children (VAC)	▪ Implement GBV and child protection action plan and enforce codes of conduct for SEA, SH, GBV and VAC	To prevent GBV abd VAC cases on the project	No of GBV and VAC cases recorded and managed	Review of reports and field visits	Construction	Contractor and consultants	Monthly	4,000,000	3,000,000
M18.	Risk of delayed	Implement grievance	To mitigate	% of	Review o	construction	Contractor	Monthly	4,000,000	3,000,000

Ref. No	Affected Environment	Mitigation Measures	Objective to Address Impact	Indicators	Monitoring Activity	Project Phase	Responsibility	Freq.	Mitigation Cost (UGX)	Monitoring Budget (UGX)
	management of grievances for workers and community	management, mechanisms for workers and community	project induced grievances	grievances managed for workers and community	reports and field visits		and consultants			

Note:
External Monitor can be a lead Agency and or Authorities like NEMA, DNRO/DEO/DWO or a NEMA Certified Consultant whom the developer and Contractor will contact on matters arising like noise, biodiversity, air and water quality monitoring. Lead Agencies will make their own arrangements on inspections on site to ensure compliance with set guidelines and standards.

CONCLUSION

Kikoora RGC Piped Water System is being proposed by MWE/DWD for Kakindo Sub County in Kakumiro district. This is envisaged to bring an end to water stress and overreliance on a few low yielding boreholes within the project area of Kikoora Rural Growth Centre and neighbouring community. It is also envisaged that, the area experiences scarcity of safe clean water and high growing population. Further still, the project will also address the focal area of access to clean water as stipulated under the Uganda Vision 2040 and the NDP III. The project also contributes towards achieving SDG *(specifically SDG 6 on clean water and sanitation)*. Several beneficial impacts envisaged will include:

- Improved quality of water supplied to communities.
- Improved quantity of water supplied to communities.
- Provision of employment opportunities during construction and operation phases.
- Improved health and sanitation due to improved water quality and quantity.
- Improved local economies and induced development especially sourcing of raw materials for construction activities and tree seedling growing business boost during operation phase.
- Small scale irrigation farming especially in vegetables and flowers since most household heads are involved in subsistence agriculture.
- An increase in revenue for the sub county from water project collections.
- Initiate the move away from the status quo of rural women and children's perpetual carrying of water on their heads from unprotected and distant point water source and allow them to engage in income generating activities and to improve the image of the woman and children.
- Improved image of the Sub County and parishes in terms of providing good services to its people hence more funding from potential funders.

However, the ESIA findings indicate that direct impacts will be fairly compassionate and limited to the project area where construction works will be undertaken. Direct negative impacts will include:

- Soil erosion
- Destruction of vegetation and crops,
- Increased noise nuisance by construction works and equipment,
- Increased sediment loads into the downstream beyond water sources
- Improper disposal of generated waste
- Improper management of construction waste,
- Land loss and damage to property,
- Land pollution, waste and drainage problems,
- Landscape and land use impacts
- Loss of vegetation and soil degradation especially at the construction sites and trenching activities for the pipelines,
- Occupational health and safety risks for the workforce,
- Risk of accidents
- Social misdemeanour by construction workers (e.g., conflicts due to influx of labour in the project community such as increase in irresponsible activities that may increase HIV/AIDS due sexual relations between project workers and the local community; workers taking advantage of young girls in the community due to high poverty levels and vulnerability, teenage pregnancies and dropping out of school etc.; Violence Against Children such as potential use of child labour; sexual relationship with underage children, teenage pregnancies, school drop outs etc. Conflict in the community/families (social cohesion and disruption) due to project workers engaging in sexual relationships with married women in the community etc.

A RAP has been undertaken and elaborated to address all compensation issues that are anticipated and an EMMP has also been presented in the preceding Chapter to ensure positive impacts are enhanced while negative impacts are mitigated. Resettlement issues are not anticipated.

During this ESIA study, comprehensive stakeholder consultations were conducted with relevant stakeholders and MWE/DWD will liaise with them to ensure effective implementation of the proposed mitigation measures for the anticipated negative impacts as indicated in the ESMP. MWE/DWD should work closely with the local leaders and Local Government to ensure smooth implementation of the ESMP and if impacts not contemplated during this ESIA arise, the management of DWD should immediately address them in consultation with NEMA. If any other structures/ expansion not described in this report takes place, it will be considered separately and an ESIA Report/Project brief will be prepared by DWD or the Contractor and submitted to NEMA for approval before implementation.

The following mitigation measures should be considered as conditions of approval as they are regarded as being essential in so far as rendering potentially significant impacts acceptable. Implement the EMMP for all provided project phases with special attention being given on:

- Undertake Annual Environmental Audits and submit reports to NEMA.
- Conduct regular water quality tests and analysis for raw water to inform the treatment options.
- Maintaining good house-keeping through the duration of the construction phase.
- Screening unsightly aspects from public view including excavations (where practical), construction material storage areas, waste storage areas and ablutions.
- Erect fencing around construction sites to act as screens minimizing the effect of wind in generating dust emissions.
- The re-vegetation of all areas of natural vegetation with indigenous species that have been disturbed as a result of construction activities and maintain the 200m buffer zone.
- Designation of construction materials and fuel storage areas.
- Effective control of waste and containment of storm water especially during rainy season.
- Implement dust suppression measures (use of water) when appropriate.
- Train workers on issues of HIV/AIDS, social cohesion and disruption and Violence Against Children should not be permitted.
- Adhere to Occupational Health and Safety Act, 2006 provisions e.g. monitoring noise levels and provision of protective equipment to staff.
- At least 75 % (subject to availability) local labour from Kakumiro district should be used and 95% (subject to availability and skills levels) local contractors should be used.
- The Developer (DWD) monitors compliance together with stakeholder wide monitoring group comprising technical staff from local government institutions.
- Fencing is recommended in order to prevent contamination of the water source and for security of hydraulic structures and installations for the pump station.
- Prepare and implement a water source protection plan for the catchment area of the water sources.

Therefore, the proposed Kikoora RGC Water Supply System is environmentally and socially feasible for implementation provided the recommended mitigation and monitoring measures are implemented, and the proposed implementation arrangements are upheld.

10 REFERENCES

1. Akite, P (2008) Effects of anthropogenic disturbances on the diversity and composition of the butterfly fauna of sites in the Sango Bay and Iriiri areas, Uganda: implications for conservation, Afr. J. Ecol., 46 (Suppl. 1), 3–13
2. Detail Engineering Design Report for Kikoora RGC Water Supply and Sanitation System, March 2022.
3. GoU (1995). The Constitution of the Republic of Uganda.
4. IUCN (2015). The IUCN Red List of Threatened Species. Version 2015.1. www.iucnredlist.org.
5. Ministry of Water and Environment (2011). Environmental Impact Assessment Guidelines for water resources related projects in Uganda.
6. MWE (2018). Environmental and Social Management Framework for the Integrated Water Resources Management and Development Project (IWMDP-P163782), February 2018.
7. MWE (2018). Resettlement Policy Framework for the Irrigation Development and Climate Resilience Project, February 2019
8. NEMA (1997). Environment Impact Assessment Guidelines, 1997
9. NEMA (2020). The National Environment (Waste Management) Regulations, 2020
10. NEMA (2002). The National Environment (Noise) Regulations for Uganda.
11. NEMA (2019). The National Environment Act, No.5 of 2019.
12. NEMA (2020). Environment and Social Impact Assessment Regulations, 2020
13. Rodda, G. H., Campbell, E. W, Fritts, T. H. & Clark, C. S. (2007). The predictive power of visual searching. Herpetological Review, 36, 259–64. Russell, Dick. "Health Problem at the Health Care Industry." The Amicus Journal Winter 2000: 34-39.
14. Spawls, S., Howell, K. M. & Drewes, R. C (2006). Pocket guide to the Reptiles and Amphibians of East Africa. A & C Black, London.
15. Stevenson T. and Fanshawe J. (2002) Birds of East Africa. T & A D Poyser Ltd.
16. Taylor, R.G., and Howard, K.W.F., 1999a. The influence of tectonic setting on the hydrological characteristics of deeply weathered terrains: evidence from Uganda: Journal of Hydrology, v. 218, p. 44-71. Journal of Hydrology, v. 218, p. 44-71.
17. WB/IFC (2007). Environmental, Health, and Safety Guidelines for Water and Sanitation.
18. WB (2015). World Bank Safeguard Policies. Retrieved May 25, 2015, from Environmental and Social Safeguard Policies.
19. IFC. (2006). Performance Standard 4 Community Health, Safety and Security. Washington, D.C: World Bank Group.
20. IFC. (2012). IFC Performance Standards on Environmental and Social Sustainability. Washington, D. C: World Bank Group.

11ANNEXES

Annex I: NEMA Approved Letter for 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

13th May 2022

The Permanent Secretary,
Ministry of Water and Environment,
P.O Box 20026,
KAMPALA.
Email: ps@mwe.go.ug

Attn: Directorate of Water Development,
Rural Water Supply and Sanitation Department.
Email: nmalizah@yahoo.com

RE: APPROVAL OF SCOPING REPORT AND TERMS OF REFERENCE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE PIPED WATER SUPPLY AND SANITATION SYSTEM FOR KIKOORA RURAL GROWTH CENTRE IN KAKINDO SUB COUNTY, KAKUMIRO DISTRICT (TOR- EIA 8459)

Reference is made to your letter Ref. DM/164/11 and dated 11th April 2022; submitting the TORs in subject above to the Authority for consideration.

This Authority has finalised the review and grants **APPROVAL** of the TOR, subject to consideration of the guidance below during the conduct of the environmental and social impact study and the preparation of the Environmental and Social Impact Statement.

(i). Carry out comprehensive consultations with all the relevant key stakeholders including, the Kakumiro District Local Government, the Occupational Safety and Health Department (OSHD) in the Ministry of Gender, Labour and Social Development and the Local communities in the neighbourhood. The views of the stakeholders consulted should be well documented and appended to the ESIS.

(ii). Provide detailed environmental baseline information and data on the project area that may be impacted upon by the project activities; as well as, coloured photographs depicting the current status of the project area.

(iii). Design/Develop robust practical strategies to protect the integrity of the existing water bodies within the neighbourhood of the proposed project location. This should be clearly documented in the ESIA report.

(iv). Provide clear authentic copies of land ownership/ lease agreement documents.

(v). Include in the ESIA report, comprehensive analysis of alternatives/options to the selected project design, technology, location, among other aspects.

(vi). Indicate the actual (investment) cost; including a copy of a certificate of valuation issued by a qualified and certified valuer/quantity surveyor, in accordance with regulation 18(1) and Schedule 5(3f) of the National Environment (Environmental and Social Assessment) Regulations, 2020.

(vii). Consider any other critical environmental concerns that were not initially foreseen during the preparation of the Scoping Report and TOR, and include an evaluation of such concerns, in the ESIA report.

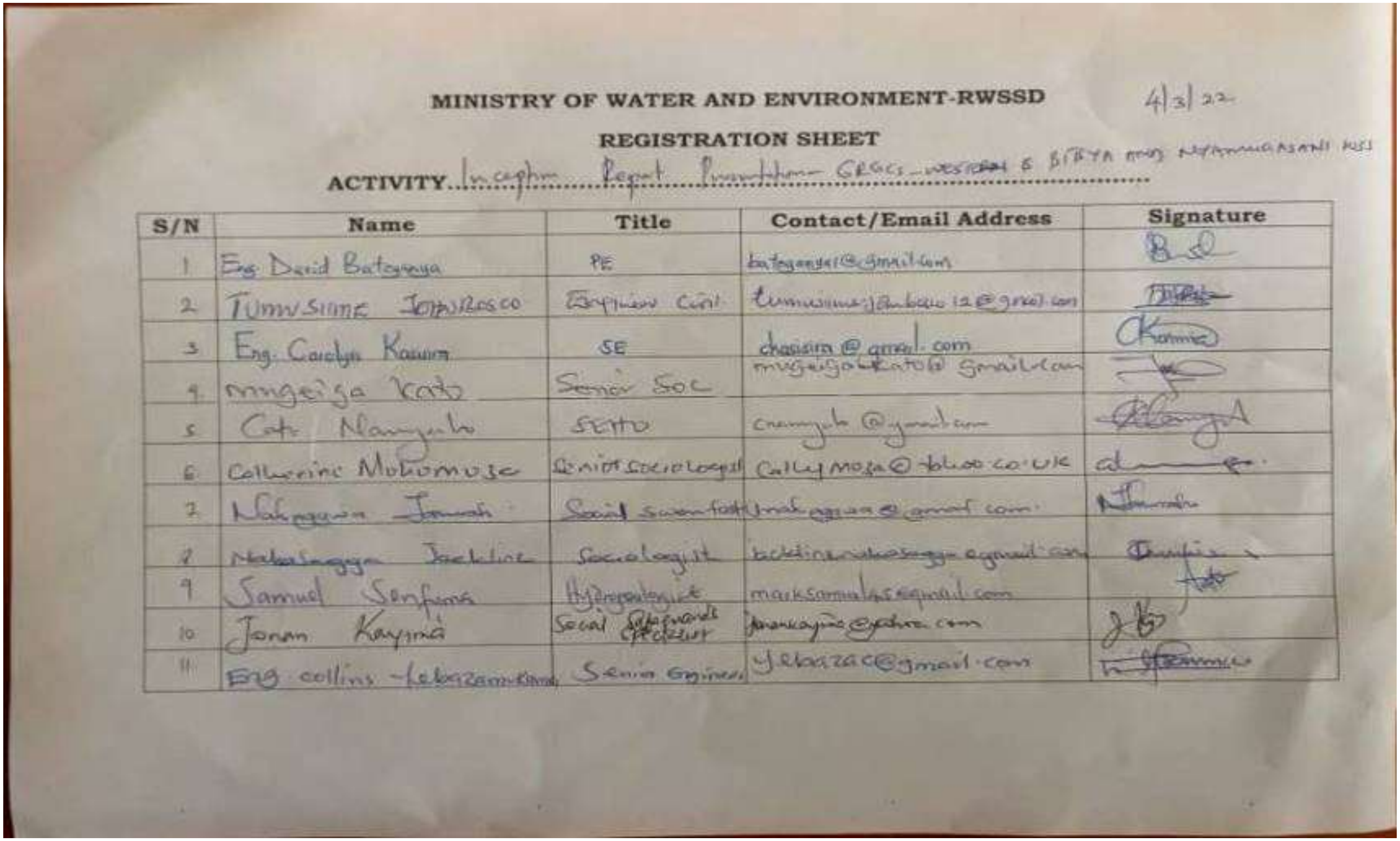
In accordance with regulation 49(2) of the National Environment (Environmental and Social Assessment) Regulations, 2020, provide evidence of payment of a non-refundable administration fee of thirty percent of the total ESIA fees payable upon submission of the ESIA report to this Authority.

This is, therefore, to recommend that you proceed with carrying out the ESIA for the proposed project. We look forward to your cooperation and receipt of a comprehensive ESIA reports, for our further action.

Please note that the approval of the TORs **DOES NOT** grant you permission to start implementing any of the proposed project activities, including construction works. This is not a Certificate of approval.

Waiswa Ayazika
FOR: EXECUTIVE DIRECTOR

Annex II: Stakeholders Consulted



MINISTRY OF WATER AND ENVIRONMENT-RWSSD 4/3/22

REGISTRATION SHEET

ACTIVITY Inception Report Presentation GRGCs_Western & Bitiya and Nyamugasani [illegible]

S/N	Name	Title	Contact/Email Address	Signature
1	Eng David Batega[illegible]	PE	bategeya[illegible]@gmail.com	
2	Tumusiime John Bosco	Engineer Civil	tumusiime[illegible]12@gmail.com	
3	Eng. Carolyn Kasum[illegible]	SE	chasum@gmail.com	
4	Mugeiga Kato	Senior Soc	mugeigakato@gmail.com	
5	Cate Nanyonjo	SEHO	cnanyonjo@gmail.com	
6	Catherine Mukomuze	Senior Sociologist	Cathymoza@yahoo.co.uk	
7	Nakaggwa Jonah	Social Safeguards	[illegible]@gmail.com	
8	Nakasagga Jackline	Sociologist	[illegible]@gmail.com	
9	Samuel Senfuma	Hydrogeologist	marksamuel[illegible]@gmail.com	
10	Jonan Kayima	Social Safeguards Specialist	jonankayima@yahoo.com	
11	Eng collins -[illegible]	Senior Engineer	[illegible]@gmail.com	

4/3/22

MINISTRY OF WATER AND ENVIRONMENT-RWSSD

REGISTRATION SHEET

ACTIVITY Inception Report Presentation - GRGC - WESTERN & BITSYA AND NYAMUGASANI, WSS

S/N	Name	Title	Contact/Email Address	Signature
1.	NAKAJUBI BRIDGET	SOCIOLOGIST	0786023754	[illegible]
2.	Eng Kenneth Musabe	Engineer - Bright Technical services	kmusabe@gmail.com 0772543346	[illegible]
3.	Brayan W MATOVU	SS + RS - GS	0701 66262 brayanmatovu@	[illegible]
4.	Alozius Gonza	Valuer BTC	0701478636 alozius@gmail.com	[illegible]
5	Dr. Eng. Alex Kahallire	Engineer Bright Tech. Services	0772435572 akahallire@gmail.com	[illegible]
6	Joseph Balinuddembe	Sociologist	0779597666 balinuddembe.jb@gmail.com	[illegible]
7	Edrida Musingizi	Principal SS		[illegible]
8.	Eng. OLWENY HAMU	AC - R&D	0772-453395 / holweny@yahoo.co.uk	[illegible]
9.	PIUS KAHANGIRWE	TL ESIA & WSPPs	0774636856 kpius@gmail.com	[illegible]
10.	Eng. Ronald Kateba	Principal Engineer	0704345485 / rondkateba@yahoo.com	[illegible]

STAKEHOLDER CONSULTATION AND ENGAGEMENT

NAME OF THE PROJECT: CONSULTANCY SERVICES FOR ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT (ESIA) AND WATER SOURCE PROTECTION PLAN FOR KIKOORA RGC PIPED WATER SUPPLY SYSTEM IN KAKINDO SUB COUNTY; KAKUMIRO DISTRICT.

Date: 23/03/2022

NO.	NAMES	DESIGNATION	CONTACT	SIGNATURE
1.	MAWEJJE ANDREW	CAO KAKUMIRO	mawejjeandrew@gmail.com	
2.	Nnamiyingo Mackline	Environmental officer	mackram@gmail.com 0775128257	
3.	Kityo Lydia	ADWO-Kakumiro	awootilydia@gmail.com 0785529080	
4.	Ndyabebwa Peter B.	C/P. LC III.	0782113829	
5.	BATTERWEA ROBERT	SAS/CAO KIKOORA	0775980440	
6.	BYONANEBYE DICKSON	PARISH CHIEF	0784023318	
7.	NDEBESA ANTHONY	KIKOORA S/C SPEAKER	0783030024	
8.				
9.				
10.				

STAKEHOLDER CONSULTATION AND ENGAGEMENT

NAME OF THE PROJECT: CONSULTANCY SERVICES FOR ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT (ESIA) AND WATER SOURCE PROTECTION PLAN FOR KIKOORA RGC PIPED WATER SUPPLY SYSTEM IN KAKINDO SUB COUNTY; KAKUMIRO DISTRICT.

Date: 23/03/2022

NO.	NAMES	DESIGNATION	CONTACT	SIGNATURE
1.	TUSUBIRA YAFESI		0704805472	
2.	ASINGURA JOHNSON		0782429413	
3.	MASASIRA ISAYA		0785808755	
4.	Peter Morris		0787555[illegible]	
5.	Steven Friday		0759490952	Friday
6.	KATO FRED		0789835193	
7.	Tulinawe Baguma		0789509174	Baguma
8.	Musingye Sabastian		0789539063	
9.				
10.				

STAKEHOLDER CONSULTATION AND ENGAGEMENT

NAME OF THE PROJECT: CONSULTANCY SERVICES FOR ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT (ESIA) AND WATER SOURCE PROTECTION PLAN FOR KIKOORA RGC PIPED WATER SUPPLY SYSTEM IN KAKINDO SUB COUNTY; KAKUMIRO DISTRICT.

Date: 23/03/2022

NO.	NAMES	DESIGNATION	CONTACT	SIGNATURE
1.	MR. BARONGO	Rutooma	077667369	
2.	WINI AGNESS	Rutooma	0705104819	
3.	NAMUKISA . J	Rutooma	0702127707	
4.	Iwesigye Jovania	Rutooma	0774813549	Iwesigye
5.	BYENKYA JOHN	Rutooma	0780609545	
6.	TUKOLEKI CLESSOTHAN			
7.	TUMWIKE JOJ			
8.	Barongo Gerald	Rutooma	0706338914	
9.	Byarugaba . C.	Rutooma		
10.	TUMA ISE	Rutooma	—	

1

REPUBLIC OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

Consultancy services for preparation of environmental and social impact assessment (ESIA), environmental and social project brief (EPB), resettlement action plan (RAP) and source protection plans (SPP) for (i) large solar powered piped water supply systems and sanitation facilities in Bugwara and Kabamba in Kagadi district, Kikoora and Mwitazinge in Kakumiro district, Kasese and Lwentulege in Rakai District and (ii) Bitsya and Nyamugasani water supply systems in Buhweju and Kasese districts respectively

STAKEHOLDER CONSULTATIONS - ATTENDANCE LIST PLACE: KAKUMIRO Date: 7th FEBRUARY 2022

REF	NAME	DESIGNATION	TELEPHONE NO / E-MAIL	SIGNATURE
1.	Kuuma Mohammad Ali	D/DISO	772909184	
2.	Matovu D	RDC	0701660077	
3.	Edward Musinguzi	Prine SDC MWE	0701675528	
4.	Tusiime T. Samuel	Senior Sociologist (TL Leader Bugwara)	0772560112	
5.	Pius Katabaazi Rwe...	Environmental Specialist/TL - BTS	0774663688	
6	Isingoma Julius	DWO - Kakumiro	0772-318663	
7	Nickson Ankunda	DCDO - Kakumiro	0752 [illegible]	

BRIGHT TECHNICAL SERVICES LTD
Civil Engineers and Project Managers

2

REPUBLIC OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

Consultancy services for preparation of environmental and social impact assessment (ESIA), environmental and social project brief (EPB), resettlement action plan (RAP) and source protection plans (SPP) for (i) large solar powered piped water supply systems and sanitation facilities in Bugwara and Kabamba in Kagadi district, Kikoora and Mwitazinge in Kakumiro district, Kasese and Lwentulege in Rakai District and (ii) Bitsya and Nyamugasani water supply systems in Buhweju and Kasese districts respectively

STAKEHOLDER CONSULTATIONS - ATTENDANCE LIST PLACE: KAKUMIRO Date: 7th FEBRUARY 2022

REF	NAME	DESIGNATION	TELEPHONE NO / E-MAIL	SIGNATURE
8	KAMUSIIME COTTEN	Eng. MWE-RWRC	[illegible]@gmail.com [illegible]	
9	Emmanuel Okumu	Environmental Health Offi	0701380323	
10	ARINAITWE MICH PAUL	Eng. MWE-RWRC	[illegible] 07[illegible]820681	
11	SABILA EVA	Social Scientist	[illegible]@gmail.com 0779[illegible]	
12	Mutuula Faith	Social Scientist	[illegible]@gmail.com 0751345656	
13	Nnaminyiggo Mackline	Environment Officer	[illegible]@gmail.com 0775123257	
14	Sonye Pious	Ag. District Planner	[illegible]@gmail.com 0774999153	
15	SAKWA DAVID	D[illegible]	Sakwa1975@gmail.com	

BRIGHT TECHNICAL SERVICES LTD
Civil Engineers and Project Managers

REPUBLIC OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

Consultancy services for preparation of environmental and social impact assessment (ESIA), environmental and social project brief (EPB), resettlement action plan (RAP) and source protection plans (SPP) for (i) large solar powered piped water supply systems and sanitation facilities in Bugwara and Kabamba in Kagadi district, Kikoora and Mwitazinge in Kakumiro district, Kasese and Lwentulege in Rakai District and (ii) Bitsya and Nyamugasani water supply systems in Buhweju and Kasese districts respectively

STAKEHOLDER CONSULTATIONS - ATTENDANCE LIST PLACE KAKUMIRO Date 7th FEBRUARY 2022

REF	NAME	DESIGNATION	TELEPHONE NO / E-MAIL	SIGNATURE
16	JORAM SSALI SEKITOLEKO	PBS for CAO	0772405470	
17	Cate Namyalo	SEHO / MWE	0778171504	
18	DAVID SSEMPALA	HABUKA / BTS	0702480993	
19	JONATHAN KAYUMA	SOCIALOGIST/BTS	0753603235	

BRIGHT TECHNICAL SERVICES LTD
Civil Engineers and Project Managers

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: KAKUMIRO RGC KIKOORA

VENUE: RUTOOMA VILLAGE DATE: 28/07/22

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	Sengendo David	M	DRIVER	|	0705978095		
2	Twesigye Jovania	F	Mutuze.	Rutooma	0774813549		
3	OMUHEREZA DIANA	F	MUTUZE	RUTOOMA	0787268496		
4	Justina Neno	F	Mutuze	Rutooma			
5	Kokusiima Diina	F	mutuze	Rutoomo	0760512827		
6	Tumwijuke George	M	MUTUZE	RUTOOMA	0777388032		
7	Niwaminda - Tofik	M	MUTUZE	RUTOOMA	0795263960		
8	MASASIRA ISAAYA	M	MUTUZE	RUTOOMA	0785908755		
9	Barongo Gerald	m	mutuze	Rutooma	0706338944		
10	BYALUHANGA.A	M	Mutuze	Rutooma	—		
11	BYENKYA JOHN	M	MUTUZE	Rutooma	0780609545		
12	Biikara Betty	F	mwikazi	Rutooma	0776673699		
13	Tusiimire Mary	F	Mutuze	Rutooma	0779252076		

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: KAKUMIRO RGC KIKOORA

VENUE: RUTOOMA VILLAGE DATE: 28/09/23

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	Ndyahebwa Peter	M	Kikoora	C/P. L.C III	0782113829/075..		[signature]
2	MUKAMUSONI OLIVAR	F	KIKOORA	KANSFARA	0754057048		[signature]
3	Nyaiceso Gladys	F	Mwitanzige S/C	P/chief	0777745088		[signature]
4	NDEBESA ANTHONY	M	RUH				[signature]
5	Mucungu Mary	F	Rutooma	Mutuze	0. —	—	
6	Kyalimpa Scolla	F	Rutooma	Mutuze	—	—	[signature]
7	Twesige Angella	F	Rutooma	Mutuze	—	—	[signature]
8	Mbabazi Cristen	F	Rutooma	Mutuze	—	—	[signature]
9	Kyalisima Savelina	F	Rutooma	Mutunze	—	—	—
10	AGABA SAIMON	M	Rutooma	Mutuuze	—	—	[signature]
11	Kiiza Desiteo	M	Rutooma	Mutuze	—		[signature]
12	Kosima B	M	Rutooma	Mutuze.	—		[signature]
13	Julius Kamugisha.	M.	Rutooma	Mutuze	. —		[signature]

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: KAKUMIRO RGC KIKOORA

VENUE: RUTOOMA VILLAGE DATE: 28/09/23

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	Tukyahirwebwa John	M	Rutooma.	Mutunze.	—		[signature]
2	Kosima B.	M	Rutooma	Mutuze	—		[signature]
3	Bureteya D.	M	Rutooma	Mutuze	—		—
4	Namanya John	M	Rutooma	Mutunze	0785157822		[signature]
5	BAMWISAG	M	Rutooma	Mutuze	—		BAMAUSA
6	Kabigumila Herbert	M	Rutooma	Mutuze	0771855361		—
7	Steven Friday	M	Rutooma	Mutuuze	0759490952		—
8	Mary Ahumbisibwe	F	Rutooma	Mutuze	. —	.	—
9	Katushabe Grace	F	Rutooma	Mutuze	0779175745		—
10	Kemigisha Hajara	F	Rutooma	Mutuze	—		—
11	Kisinguwire Allen	F	Rutooma	Mutuze	—		—
12	Tumusiime Fred	M	Rutooma	Mutuze	0740067556		—
13	Tusubira Yafesi	M	Rutooma	Mutuze	—		—

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: KIKOORA RGC KAKUMIRO

VENUE: Rutooma Village DATE: 28/09/2022

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	Gumusinza Richard	M	Rutooma	omutuze	0751856723		Gumusinza
2	Byaruna Vicent	M	Rutooma	mutuuze	0777986393		Byaruna
3	Mbonigaba Fidel	m	Rutooma	Omutuuze	0774757071		[signature]
4	Tukamushaba Judith	F	Rutooma	mutuze	0782659395		JUDITH
5	Balikuddembe Joseph	M	BIS	Senior Sociologist	0701559666		[signature]
6							
7							
8							
9							
10							
11							
12							
13							

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	Nyakato Gladys	F	MWITANZIGE S/C	P/CHIEF	0777743008	[illegible]@gmail.com	[signature]
2	BAHEMUKA ROBERT	M	Kikoora	SAS	0775980440	[illegible]@gmail.com	[signature]
3	MUKAMUSONI OLIVIA	F	KIKOORA	KANSTARA	0754057048		[signature]
4	NIAKACWA MOLLY	F	KIKOORA	COUNCILLOR	0705666872		N.M
5	AJuna musitafu	M	Kikoora B.	LCI C/Person	0777387526		[signature]
6	MBAJYA AHMED	M	KIKOORA B.	mutuze	0776010541	—	[signature]
7	NINSIIMA JENIFA	F	KIKOORA B	Mutuuze	0771810466	—	JENIFA
8	Chris Nagaba	M	Kikoora A	Mutuze (Person)	0761302622	[illegible]@gmail.com	[signature]
9	NIWAGABA ALEX	M	KIKOORA B	Consulting	0776910068	—	ALEX
10	Kusiima Balaam	M	KIKOORA B	Mutuze	0789334394		KUSIIMA
11	KAFEERO Joly	F	KIKOORA B	well fare	0774 49 28 57		[signature]
12	NGENDESA ANTHONY	M	KIKOORA A	S/C Speaker	0783030024		[signature]
13	HAMADA T	M	KIKOORA B	mutuze	0773421102		[signature]

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: Kakumiro RGC - Kikoora

VENUE: Kikoora A & B Villages DATE: 28/09/22

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	Ndyahebwa Peter	M.	Kikoora S/c.	C/Person LCII	0782113829		[signature]
2	Mujumanto Emmanuel	M	Kikoora A-A	Mutuze	0777474848		[signature]
3	Sebugyendo Innocent	M	Kikoora A	Mutuze	0785236839		[signature]
4	Aogno Kakomo	M	Kikoora A	Mutuze	0772031985		[signature]
5	Kabagambe Didas	M	Kikoora A.	mutuze	0740562325		[signature]
6	Deborah Mukisa	F	Sociologist	BTS	0703001107		[signature]
7	Baliraddembe Joseph	M	Senior Sociologist	BIS	0701859666		[signature]
8							
9							
10							
11							
12							
13							

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: Kakumiro RGC Kikoora

VENUE: Kikoora Subcounty DATE: 28th/09/22

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	NBERESA ANTHONY	M	KIKOORA	S/C SPEAKER	0783030024	—	[signature]
2	NSTOMUGABE ENOSI	M	KIKOORA	MEMBER COURT	0776695206	–	[signature]
3	BAHEMUKA ROBERT	M	KIKOORA	SAS	0775980440	–	[signature]
4	Kamuhanda Hamdu	M	Kikoora	V/CP L3	0773445528		[signature]
5	Kusiima Kurinooza	M	Nyamarunda	c/man LCI	0789221677	–	[signature]
6	Aluno Musitafo	M	Kikoora B.	C/Person LCI	0779389526		[signature]
7	MUKAMUSONI OLIVIA	F	KIKOORA	COUNCILLOR WOMEN	0754057048	–	[signature]
8	Asiimwe John Bosco	M	Kikoora	CISO	0784511168	–	[signature]
9	Semaganda David.	M.	BTS.	DRIVER	0704888095	—	[signature]
10	Nyakato Gladys	F	Nyamarunga	PIO,IOJ	0777743008	–	[signature]
11	Deborah Mukisa	F	BTC Sociologist	Sociologist	0703001107	[illegible]	[signature]
12	Baliraddembe Joseph	M	BTS	Senior Sociologist	0701859666		[signature]
13							

PROJECT CONSULTATION AND MEETING ATTENDANCE LIST

PROJECT NAME: ______________________________

VENUE: Sub-County Kikoora DATE: 30/07/2022

#	NAME	SEX (F/M)	ORGANIZATION	DESIGNATION	TEL CONTACT	EMAIL	SIGNATURE
1	AGABA IVAN	M	BUSINGE	TEACHER	0706681590		[signature]
2	TWEBAZE NARUSENSIO	M	BUSINGE	TEACHER	0787953164		[signature]
3	Byerunga John	m	Rutoma	Farmer	0780609545		[signature]
4	Barongo Gerald	m	Rutoome	C/person	0706338944		[signature]
5	KULEKA ALAAS	M	BUSINGE	C/PERSON	0784937642		[signature]
6	Baliraddembe Joseph	M	BIS	Senior Sociologist	0701859666		[signature]
7	Mukisa	F	BTS	Sociologist	0703001101		[signature]
8	MUGABO JACK				0778173915		[signature]
9	Byaruhanga	M	Businge		0786522742		[signature]
10							
11							
12							
13							

Annex III: Land Ownership Documents

Annex IV: General Layout, Layouts of the Transmission and Distribution System and Structural Drawings

Annex V: Chance Finds Procedure on Physical Cultural Resources Management

The Physical Cultural Resources Policy (PCRs) i.e. OP 4.11 should be triggered because of the excavation works that may encounter PCRs. To meet the requirements of this policy, a Chance Finds Procedure has been developed to indicate a real risk of causing undesirable adverse environmental and social effects on the physical and intangible cultural resources, and that more substantial planning may be required to adequately avoid, mitigate or manage potential effects. Chance find procedures will be used as follows:

i. Stop the construction activities in the area of the chance find;
ii. Delineate the discovered site or area;
iii. Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Directorate of Museums and Monuments (DMM) take over;
iv. Notify the site / supervisory Engineer who in turn will notify the responsible local authorities and the Directorate of Museums and Monuments under the Ministry of Tourism, Wildlife and Antiquities (within 24 hours or less);
v. The Directorate of Museums and Monuments would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the Directorate of Museums and Monuments (within 24 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
vi. Decisions on how to handle the finding shall be taken by the Directorate of Museums and Monuments. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
vii. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the DMM;
viii. Construction work could resume only after permission is given from the responsible local authorities and the Directorate of Museums and Monuments concerning safeguard of the heritage;
ix. These procedures must be referred to as standard provisions in construction contracts, when applicable. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed;
x. Construction work will resume only after authorization is given by the responsible local authorities and the National Museum concerning the safeguard of the heritage.
xi. Relevant findings will be recorded in World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

Annex VI: Grievance Redress Mechanism

There will be a necessity to resolve conflicts swiftly in order to expedite the project's planning and construction phase and for the smooth eventual operational activities. Therefore, a grievance redressing mechanism is essential for Recycling Facility. This procedure will address this need in detail. The objectives of the grievance process as explained in the subsequent chapter of these guidelines will be as follows:

- Provide affected people with avenues for making a complaint or resolving any dispute that may arise;
- Ensure that appropriate and mutually acceptable corrective actions are identified and implemented to address complaints;
- Verify that complaints are satisfied with outcomes of corrective actions;
- Avoid the need to resort to judicial proceedings.

Grievance management is an important step in community engagement. There had been and will be community grievances throughout the project's various development stages. It is expected that all such grievances be amicably resolved if the developer is to abide by the global and country specific Social Safeguard guidelines. In practice, in similar compensation and resettlement activities, many grievances arise from misunderstandings of the Project policy, or result from conflicts between neighbours, which can usually be solved through adequate mediation using customary rules or local administration at the lowest level. Most grievances can be settled with additional explanation efforts and some mediation using customary dispute settlement mechanisms.

The purpose of Grievance management shall be to provide opportunity for the aggrieved parties to resolve issues through arbitration and negotiation based on transparent and fair hearing. It will allow the parties in the dispute to arrive at a win -win solution. Final outcome thus be that the extra judicial systems will work smoothly and that number of disputes seeking interventions at the country judiciary will be made minimal. The functioning a proper grievance management mechanism is a requirement in view of the above. The overall management of grievances is the responsibility of the developer or/and the contractor. The Project, thus, will put in place an amicable, extra-judicial mechanism for managing grievances and disputes based on explanation and mediation by third parties. Procedures relevant to this amicable mechanism are detailed below. It will include three different levels:

- Registration by project of the complaint, grievance or dispute;
- Processing by project of the grievance or dispute until closure is established based on evidence that acceptable action was taken; and
- In the event where the complainant is not satisfied with action taken by project as a result of the complaint, an amicable mediation can be triggered involving a mediation committee independent from the Project.

Managing grievances needs a clear and transparent procedure well instituted within the management structure of the project. At minimum, such a procedure should consist of the following steps:

a) to receive the grievances,
b) to acknowledgement the receipt,
c) investigation and resolution,
d) Closeout and follow-up.

I. The need for maintain a Grievance Register

There should be Grievance Register which would record all the grievances, complaints and issues the

x

stakeholders would wish to bring to the attention of the Developer or the Contractor. It should be kept at a place where all will have easy access; preferably this should be placed at the office (allocated for the Grievance Committee (GC)). It should contain the date of the entry, name and contact details of the complainant; nature of grievance, Signature (on one side of the Register) and actions taken to address or reasons the grievance was not acted on, the signature of the GC and Complainant as to how the grievance was closed and date (on the other side of the Register.

II. Recording of the complaints into the Grievance Register

The following steps are to be followed when the complaints will be received: Receipt of complaint (a verbal or in written) will be received by the Community Liaison Officer or any other officer (a member of the Grievance committee).

- The complainant can obtain the assistance from a member of the grievance committee or the Site welfare officer to lodge such an entry in to the Grievance Register.
- The Officer Responsible or the GC member, who is at present, will communicate with the complaint in a language acceptable to the complainant.
- Since the site working is carried out in English Language, the Site welfare officer or the member of the Grievance committee may lodge the entry in English language
- After lodging the complaint in the register, the officer recorded such complain shall read to the complaint what is recorded and sign the entry made into the Grievance Register

III. Formation of a Grievance Committee

In Uganda at the local level, the village leaders and the LC (1) play a key role in managing disputes. The Parish level committees formed for the management of disputes is the lowest level of accepted forms of reconciliation board at which the complainants can have access to for justice if issues will not be resolved at the village level. However, in order to strengthen the village level reconciliation of disputes specially over the issues arising from the project related matters, appointing of a Grievance Committee has been considered a viable option according to the accepted practices. It is expected that grievances depending on the complexity and nature can be resolved either at the site level, at the grievance committee level or at the project developer's top management level or at the judiciary level. It means that if a complainant is not satisfied with the site level solution offered by the site manager or the project's administration manager, the matter can be taken up by the Grievance Committee (GC).

The constituency of the grievance committee and its role is explained in the following section. This GC is to be considered the vital body which prevents any grievances to be heard at higher levels. In parallel and where necessary, the GC holds meetings or other appropriate communication with the complainant, with the aim of reducing any tensions and preventing them from escalating. During closeout, the GC seeks to confirm that its actions have satisfied the complainant. During follow-up, the GC, with the assistance of the Site Construction Manager investigates the causes of grievances, where necessary, to ensure that the grievance does not recur.

The composition of Grievance Committee is depicted below:

a) Representative from area – 02 Members (preferably from each Sub County)
b) Representative of Women – 02 Members
c) Representative of the Local Government – 02 Community Development Officers
d) Representative from the developer – 01 Member
e) Representative from the contractor – 01 Member

Members of the Grievance will be provided training on conflict resolution and given more exposure on procedures of managing grievances.

IV. Performance Indicators in respect of the functioning of the Grievance Committee

Key interventions include:

- Setting up of a Functional Grievance Committee;
- Addressing employee's and affected persons (PAPs) grievances in all project phases.

V. Grievance Redress Procedure

The Grievance Redress Committee will receive a written grievance or complaint. Preferably these should be those, which the Reconciliatory Committee has failed to handle. This Committee will dispense grievances/complaints as described below;

Legal Redress

If the complainant feels dissatisfied with the administrative arbitration decision by the Grievance Redress Committee (GRC), the complainant will then seek legal redress in courts of law. If the complainant is not satisfied with the decision made above, he or she may lodge an appeal to the civil court.

VI. Proposed Process of Grievance Management

The ESMP recommends the following process, which should be adopted by the project support team:

a) Lodging Complaint

The Grievance Management Coordinator/Officer will receive complaint from the PAP in the local language and complete a Grievance Form, which will be signed by the leader of the Local Grievance Management Committee and the PAP/complainant. This will then be lodged in the Grievance Log/Register provided by the Grievance Management Coordinator/Officer.

b) Determining Corrective Action

If in their judgment, the grievance can be solved at this stage and the Grievance Management Coordinator/Officer and a representative of an NGO/CBO will determine a corrective action in consultation with the aggrieved person. A description of the action; the time frame in which the action is to take place; and the party responsible for implementing the action will be recorded in the grievance database.

Grievances will be resolved and status reported back to complainants within 30 days. If more time is required this will be communicated clearly and in advance to the aggrieved person. For cases that are not resolved within the stipulated time, detailed investigations will be undertaken and results discussed in the monthly meetings with affected persons. In some instances, it may be appropriate to appoint independent third parties to undertake the investigations.

c) Meeting the Complainant

The proposed corrective action and the time frame in which it is to be implemented will be discussed with the complainant within 30 days of receipt of the grievance. Written agreement to proceed with the corrective action will be sought from the complainant (e.g. by use of an appropriate consent form). If no agreement is reached, the above step will be re-visited.

d) Implementation of corrective Action

The Project or its Contractors/Operators within the agreed timeframe will undertake agreed corrective actions. The date of the completed action will be recorded in the grievance database.

e) Verification of the Corrective Action

To verify satisfaction, the aggrieved person will be approached by the Grievance Officer to verify that the corrective action has been implemented. A signature of the complainant will be obtained and recorded in the log and/or on the consent form. If the complainant is not satisfied with the outcome of the corrective action additional steps may be undertaken to reach agreement between the parties. If additional corrective action is not possible alternative avenues maybe pursued.

f) Action by Local leaders and Contractor(s).

If the Grievance Co-ordinator and NGO/CBO representative cannot solve the grievance, it will be referred to relevant parties such as local leaders, District Officers, NEMA, Valuer and MWE, for consultation and relevant feedback provided.

g) Action by Grievance Redress Committee (GRC).

If the complainant remains dissatisfied and a satisfactory resolution cannot be reached, the complaint will be handled by the Grievance Redress Committee. A dedicated Grievance Committee will be established to assess grievances that arise from disputes. This will include the following members: -

a. MWE Chair,
b. IWMDP Project Coordinator,
c. Resettlement Officer/Social Scientist Secretary,
d. Project's Environmental Focal Point,
e. The Chair of the local community (LC I Chairman),
f. A member of a recognized non-government organization, A Community Leader.

This committee must have a quorum of at least two thirds persons. Decisions will be reached by simple majority. The Grievance Committee should be constituted for as long as no more grievances are lodged. Once the Grievance Committee has determined its approach to the lodged grievance, this will be communicated to the Grievance officer, who will communicate this to the complainant. If satisfied, the complainant signs to acknowledge that the issue has been resolved satisfactorily. If the complainant is not satisfied however, the complainant notes the outstanding issues, which may be re-lodged with the Grievance Committee or the complainant may proceed with judicial proceedings. The effectiveness of the GRM will be evaluated during the periodical performance reporting and as part of the Environmental Audits.

The GRM should be assessed on the following parameters: -

a. Number of complaints:
b. Grievance issues by type and how they were resolved:
c. Total received, total justified,
d. Total resolved at various levels including the type of agreement reached,
e. Total referred to legal system/courts of law, including clarification on who initiated (local leaders, PAP or MWE) the referral and subject matter.

VII. Proposed Terms of Reference for the Grievance Management Coordinator/Officer

In line with MWE's resettlement policy framework, projects need to adopt appropriate measures that minimize the risks relating to constructing the water supply and sanitation project. Based on consultations with stakeholders in both districts, effective management of grievances strongly enhances the performance of projects through elimination of construction delays, proper expectation management and increasing community support for the project the current situation

suggests that community members incur high transaction costs to ensure that their grievances are handled.

Therefore, MWE will seek the services of a grievance management coordinator to support the existing framework in documenting, analysing and engaging stakeholders on how to manage project related grievances as a way of minimizing to delays in works related to unresolved grievances. The roles and responsibilities of the grievance management coordinator will include: -

a. to coordinate the work of the Grievance Committee, including calling and chairing scheduled meetings;
b. help train Community and Local Government staff engaged in grievance management for land and crops;
c. provide advice and assistance to such persons;
d. monitor progress of grievances;
e. inform Members of outcome of vote on whether or not to proceed to grievance;
f. act as primary Association contact with lawyers and liaise with legal counsel regarding on going grievance issues;
g. And report on informal disputes and grievances to MWE Project Implementation Unit on a regular basis.

Training and Qualifications: Minimum of a relevant university degree with 5 years' experience in grievance handling in rural communities with solid working knowledge of environment, resettlement and compensation issues in Uganda.

Annex VII: Water Quality Analysis Results

NATIONAL WATER AND SEWERAGE CORPORATION
CENTRAL LABORATORY-BUGOLOBI.
P.O.BOX 7053, KAMPALA E-mail: waterquality@nwsc.co.ug

CERTIFICATE OF ANALYSIS

CLIENT: Sumadhura Technologies Ltd

Serial No:ES /RF/2018/1249
Sampled by: Client's Staff

...te Sample received: 22/10/2018
Table of analytical results

Date of Report:26/10/2018

Parameters	Units	Village: Busigye Parish: Kikoora S/C: Kakyindo County: Bugangaizi District: Kakumiro DWD: 53725	National Standards For potable water
		K3595/2018	
Alkalinity:Total	mg/l	88.0	500
Bi-Carbonates	mg/l	160	500
Calcium:as Ca2+	mg/l	12.80	150
Chloride	mg/l	18.0	250
Colour(apparent)	PtCo	24	50
Electrical Conductivity(EC)	µs/cm	235	2500
Hardness:Total	mg/l	58.0	600
Fluoride	mg/l	0.14	1.5
Iron:Total	mg/l	0.032	0.300
Magnesium:as Mg2+	mg/l	6.20	100
Nitrate-N	mg/l	0.0	45
PH(Physical-Chemical)	-	6.67	5.5-9.5
Sulphates	mg/l	0	400
Total Dissolved Solids(TDS)	mg/l	164	1500
Total Suspended Solids (TSS)	mg/l	0	0.0
Turbidity	NTU	5.22	25

Remarks;
The water sample showed complying physiochemical characteristics as compared to the National Standards for potable water.

ANALYSED BY: Robinah Muhairwe

AUTHORISED BY:Manager- Central Laboratory Services.................

APPROVED BY:Senior Manager-, Water Quality Management Department.................

NB: The NWSC certificate of analysis by no means constitutes a permit to any person or undertaking to conduct business...

NATIONAL WATER & SEWERAGE CORPORATION ES P.O. Box 7053 Kampala, Uganda REF. NO. SIGN: DATE:

Annex VIII: RAP Executive Summary

E1. Introduction

The Integrated Water Management and Development Project (IWMDP-P163782) is a Seven (7) year Government of Uganda (GoU) Project estimated to cost US$313 million.

The IWMDP will support the Government of Uganda through the Ministry of Water and Environment (MWE) and the National Water and Sewerage Corporation (NWSC) in achieving the United Nation's Sustainable Development Goals (SDGs), including SDG #6, 'Ensure availability and sustainable management of water and sanitation for all.' It is aligned to Vision 2040, which aims at transforming Uganda into a modern and prosperous country. In addition, it will support the fulfilment of the Third National Development Plan (NDP III) goals and priority actions.

The IWMDP will be implemented by the MWE and NWSC – with the oversight of the Water and Environment Sector Working Group and relevant governing bodies (e.g., NWSC Board of Directors) and supported by existing decentralized regional structures and entities (including Local Governments, Water Management Zones, Umbrella Operators, NWSC town offices, etc.) and their partners to deliver desired results.

The IWMDP under the MWE has been under implementation since December 2019, as a successor to the Water Management and Development Project (WMDP-P123204) of 2012-2018 which is consistent with the World Bank Group (WBG) Country Partnership Framework (CPF) FY16-17.

The IWMDP builds and scales up the achievements of the WMDP, paying special attention to the vulnerable Northern and Mid- Western regions, refugee hosting communities, and areas with low Water Supply and Sanitation (WSS) coverage by creating an enabling analytical, infrastructural and institutional platform to improve water resource management, productivity and service delivery and to reduce vulnerability to water shocks. The IWMDP will consolidate the progress made in implementation of Integrated Water Resources Management (IWRM) over the years by MWE.

The design of the IWMDP was informed by lessons learned from the implementation of World Bank Funded Lake Victoria Environmental Management Project II (LVEMP II) and the Water Management and Development Project (WMDP). These projects financed major water-related investments in priority urban areas and various measures to improve IWRM planning and development. The World Bank has also supported rural sector through the Uganda Water Small Towns and Rural Growth Areas Project, which provided technical assistance (TA) and capacity building for the development of the water sector.

The IWMDP Development Objective is to improve access to water supply and sanitation services, strengthen capacity for integrated water resources management and enhance the operational performance of selected service providers. The IWMDP will also contribute to the achievement of National Development Plan III objectives, Vision 2040 and Sustainable Development Goals.

The IWMDP will achieve this PDO through focusing on three strategic areas: (i) strengthening WSS infrastructure and catchment management measures in targeted areas; (ii) supporting water-related institutions (NWSC, MWE, local government, and service providers) in their efforts to establish and improve operational efficiency and service quality in small towns and rural areas; and (iii) strengthening national and regional capacity to improve IWRM.

The IWMDP is comprised of four (4) components, namely: (1) WSS in Small Towns and RGCs and Support to Districts Hosting Refugees; (2) WSS in Large Towns and Support to a District Hosting Refugees; (3) Water Resources Management and; (4) Project Implementation and Sector Support.

The International Development Association (IDA) will provide Project financing in an amount equivalent to US$280 million, of which US$81.9 million will be used to finance the refugee and host community subcomponent. The US$81.9 million will be financed by the IDA 18 sub-window for refugee and host communities (US$25 million credit and US$25 million grant) and by national IDA (US$31.9 million). The GoU will be responsible for counterpart financing of US$8 million to cover a portion of investment and operating costs, the acquisition of land, and any compensation due to people affected by the Project.

The Kikoora RGC Water Supply and Sanitation Project falls under Subcomponent 1.1: Support to Small Towns and Rural Growth Centres. Subcomponent 1.1 includes carrying out of activities to improve WSS in selected Small Towns (STs) and Rural Growth Centres (RGCs) in the Recipient's territory, consisting of: (i) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies and supervision of construction activities; (ii) preparing and implementing sanitation plans in selected Small Towns; (iii) strengthening the capacity of the Umbrella Water Authorities in the areas of operational and financial management, including the establishment of a remote monitoring system for rural water systems; and (iv) carrying out of environmental and social management activities to protect water sources and sensitize communities.

Subcomponent 1.1 includes five subprojects benefitting 16 small towns which include but are not limited to Kikoora and Kasese RGCs in Rakai District, Bugwara and Kabamba RGCs in Kagadi District, Kikoora and Mwitanzige RGCs in Kakumiro District. This subcomponent will also support gravity fed or solar pumped piped water supply systems comprising of water source (spring, surface or borehole), storage tank and pipe distribution network feeding multifamily taps and/or household connections. Two specific gravity flow schemes have been identified to support rural communities in the districts of Kasese (Nyamugasani) and Buhweju (Bitsya). On sanitation, the subcomponent will finance on-site sanitation facilities, such as pour-flush toilets with a range of superstructures and septic tanks, targeting public spaces, schools and institutions.

Subcomponent 1.1 is expected to be executed by the MWE, Directorate of Water Development (DWD), Rural with its regional offices in close coordination with key stakeholders (local authorities and community organizations). With regards to service provision, currently there are three proposed arrangements (i) NWSC, (ii) Umbrella Organizations (UOs) and (iii) private operators contracted out through local governments. Based on existing sectoral trends, it is likely that for the most part, O&M of the systems will be transferred to NWSC; however, two or three small towns might be managed by UOs or private operators.

The MWE commissioned Bright Technical Services (BTS) to carry out the RAP to facilitate the acquisition of land for installation of permanent civil and electromechanical structures for the Kikoora RGC water supply and sanitation project.

This document presents the Resettlement Action Plan (RAP) for the Kikoora RGC Water Supply Supply and Sanitation Project. According to best practice, a project that will require land acquisition must prepare a RAP to guide these activities. This RAP shall be a living document throughout its implementation.

The Kikoora RGC Water Supply and Sanitation Project is expected to cover all centres within Kikoora RGC. The centres and the points of interest for the Kikoora RGC Water Supply and Sanitation Project implementation are: Kikoora A, Kikoora B, Rutooma, Nyamaligita, Betania, and Businge among others shown in Table below.

Table 1: List of Villages affected by the Kikoora RGC Water Supply System and Sanitation Project

Subcounty	Parish	Village
Kikoora	Kikoora	Kikoora A
		Kikoora B
		Businge
		Rutooma
	Nyamaligita	Nyamaligita
	Kigoma	Betania

E2. Institutional, Legal, and Policy Framework

The Kikoora RGC Water Supply and Sanitation Project is guided by both the applicable Ugandan laws and regulations related to land acquisition and involuntary resettlement as well as the applicable international standards.

Key Ugandan legislation and policies that will govern the Project include:

The Constitution of the Republic of Uganda

Water Act Cap, 152

Land Acquisition Act (1965)

The Land Act, Cap 227

The Land Regulations, 2004

The Roads Act, 2019

The Access Roads Act, CAP 350

Local Government Act (1997)

The key International RAP Implementation Standards and Guidelines (Applicable Standards) that guide this RAP and its implementation are:

The World Bank's safeguard policy on involuntary resettlement, OP 4.12

United Nations (UN) Basic Principles and Guidelines on Development-based Evictions and Displacement

Voluntary Guidelines on Responsible Governance of Tenure of Land, Forests, and Fisheries (VGGT)

Where national legislation falls short of meeting the conditions prescribed by the Applicable Standards the latter will apply. The gap-filling measures proposed by the Kikoora RGC Water Supply and Sanitation Project are also detailed.

E3. Stakeholder Engagement

The overall goal of stakeholder engagement is to establish an ongoing, accessible, and constructive dialogue with PAPs and other interested individuals and organisations, so that – in accordance with International Best Practice – their views and concerns can be considered in project decisions.

Stakeholder engagement is an inclusive process that should be conducted throughout the project life cycle, where properly planned and guided information is relayed to specific stakeholders to help in smooth implementation of a given project. This helps to communicate the purpose and objective of a given project. If executed well, it helps to support the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement is most effective when initiated at an early stage of the project development process, and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts.

The Kikoora RGC Water Supply and Sanitation Project has conducted a series of community sensitisation meetings, Focus Group discussions (FGs) Key Informant Interviews (KIIs) with PAPs to ensure strong participation and a comprehensive understanding of the entitlement framework. Comprehensive participation of displaced PAPs will be achieved using a variety of methods including smaller meetings to enhance participation levels.

Consultations were carried out with PAPs in the project affected areas of the Kikoora RGC Water Supply System during preparation of this RAP between 26th September and 30th September 2022.

Identified Stakeholders

Primary stakeholders for consultation and disclosure are directly affected stakeholders with the most to lose or gain from the Project. Secondary stakeholders are government agencies at the National, district, Sub county/Town Council and local level. Tertiary stakeholders include non-government organisations. In the project area, there is an agency called Umbrella water which operates a piped water system developed by World Vision for the community to mitigate the water demand challenge in the area.

Information Disclosure

Disclosure entails making information accessible to interested and affected parties. Communicating information in an understandable manner to the relevant and interested stakeholders is an important factor in the stakeholder engagement process. Specific measures will be undertaken to ensure that Project commitments -- and specifically, the compensation entitlement framework and grievance mechanism information -- is accessible to all relevant parties, including those with disabilities preventing them from reading the documentation. The steps taken to ensure accessibility include:

Development of a non-technical summary RAP version in both English and relevant local languages such as Luganda, Runyankore, Rutooro and Kinyarwanda.

Oral communication in relevant local languages such as Luganda, Runyankore, Rutooro and Kinyarwanda via community meetings and household-level meetings.

Supporting vulnerable or illiterate PAPs that require additional assistance to ensure comprehension of agreements and the sign-off process.

Information that has been or will be disclosed to stakeholders includes the following:

The affected assets and interest in the affected assets were disclosed and signed off by PAPs during the cadastral and asset surveys

Entitlement Cut-off Dates were disclosed to PAPs during one-on-one discussions as well as at community meetings

The Entitlement Matrix will be disclosed through community meetings

Expected Project impacts -- including loss of livelihood, economic displacement, migrant worker (construction worker) influx during the construction phase -- will be disclosed to stakeholders through community meetings as well as through district and Subcounty workshops targeting technical officials and elected leaders

The RAP will be disclosed on MWE's website and will be disclosed to stakeholders through district and Subcounty workshops and village-level community meetings

The compensation and resettlement packages -- including cash compensation, and resettlement assistance -- will be disclosed to individual PAPs and their spouses where relevant and their consent will be indicated via consent form sign-off

Project strip maps will be disclosed to individual PAPs through community meetings

The Livelihood Restoration Plan, including summarised matrices, will be disclosed to PAPs and local government administrative units through district and Subcounty community meetings and workshops

Vacate dates will be disclosed to individual PAPs at the household level through the issuance of notices to vacate the permanently acquired land after compensation payment

Key stakeholder concerns were: whether structures be compensated for in case the pipe is affecting them; the payments for service lines connection and options for household connections; hiring local labour during project construction phase; continuing use of land; fear of not receiving any compensation and; delayed and unfair compensation.

Consultation and Disclosure Phases

Stakeholder engagement is an ongoing process. It involves two major phases:

Phase I covered the RAP preparation. It focused on the following:

Creating Project and RAP process awareness

Stakeholder mobilization to participate in RAP activities including cadastral survey, asset survey, socio-economic surveys, and vulnerability assessments

Management of grievances and concerns

Phase I included three major stages:

Stage 1: Engagement with district and Subcounty leaders during reconnaissance surveys and awareness creation

Stage 2: Meetings with affected communities and PAPs for cadastral survey, asset survey, and socio-economic surveys

Stage 3: Focus Group (FG) discussions and Key Informant Interviews (KII) for livelihood surveys and vulnerability assessments

Management of grievances and concerns was an integral part of all stages.

A consultative approach was used in the stakeholder engagement process. Consultation was a two-way process involving information sharing between the RAP Team and stakeholders. The local leaders -- especially the LC1s -- helped mobilise PAHs. Consultations commenced at 10 AM or 2 PM Ugandan Time to enable participation of all interested groups including women and children.

Phase II shall cover the RAP implementation. It will focus on land and property compensation packages, grievance management, livelihood restoration program implementation, and clearing the acquired infrastructure sites after the expiry of the 6 months' notice to vacate period.

In order to mitigate gender-based violence, specific, deliberate approaches have been embedded in the Disclosure to PAPs and Compensation Agreement Sign-offs (Section **Error! Reference source not found.**) specifically requiring spousal consents and joint sign-offs and a grievance mechanism thoroughly addressing gender-related grievances (Section **Error! Reference source not found.**).

Engagements in Phase II will be a continuation of the engagements conducted in Phase I. The activities will be tailored to specific stakeholders including PAPs, and local leaders

Planned Stakeholder Engagements During RAP Implementation

Stakeholder engagements will be continuous throughout RAP implementation phase. More than one topic, described in Table below.

The RAP Implementation Consultant will be responsible for the overall execution of stakeholder engagement activities, and MWE is responsible for ensuring these engagements are carried out.

The teams shall work with local government Technical Officials and elected leaders to ensure seamless implementation of planned stakeholder engagement activities.

Table 2: Schedule of Planned Stakeholder Engagements

#	Topic	Stakeholder Group	Format	Lead	Date/ Frequency	Project Stage
1	Project Coordination Meetings	MWE, WB	Project Meetings	MWE	Bi Monthly	RAP Preparation and Implementation
2	RAP Disclosure	District Local Governments, Affected Communities	Debrief Workshop, Community Meetings	RAP Implementation Consultant & MWE	Monthly and Quarterly	RAP Implementation
3	Follow-up Surveys	Affected Communities	Field Surveys	RAP Implementation Consultant & MWE	Monthly and Quarterly, or as needed	RAP Implementation
4	Household Sign-off/ Valuation Disclosure	PAPs	Group Disclosures at Community Meetings Individual Disclosures	RAP Implementation Consultant & MWE	Regularly, after CGV approves Valuation Report	RAP Implementation

#	Topic	Stakeholder Group	Format	Lead	Date/ Frequency	Project Stage
5	Compensation Payment	District Local Governments, PAPs	Small Group PAP Consultations	RAP Implementation Consultant & MWE	Regularly, after CGV approves Valuation Report	RAP Implementation
6	Livelihood and Vulnerables Programs	PAPs	Community Meetings	RAP Implementation Consultant & MWE	Regularly, after completion of compensation payment	RAP Implementation

E4. Baseline Data Collection and Analysis

Socioeconomic surveys were conducted to define impacts and to provide a monitoring baseline following an initial desktop data review. Effective resettlement planning entails conducting a displaced persons census and an inventory of affected land and assets at the household, enterprise, and community levels.

The data was collected via a mixed-method approach incorporating both quantitative and qualitative assessments, as well as an assessment of available secondary resources. Quantitative surveys were conducted for all PAHs.

A total of 150 households were surveyed and identified by the RAP team as persons / institutions likely to be affected by the transmission line, distribution line, Reservoir and water source site. 22 PAPs of the 150 PAPs are unknown and people with multiple entries. A baseline survey was conducted on 55 PAPs which is 36.7% of the people affected. 100% of the survey being head of their households. The average size of the household of the surveyed population being 3.2 and a single household with the highest number being 14 people under the same roof. Perspectives of both genders were captured and represented where majority of the respondents were male at 89.1% and with female at 10.9%

Qualitative data was gathered to provide supporting details for the quantitative data collection surveys. Qualitative data collection was based on KIIs, FGs, and participatory methodologies including village transect walks.

Household socio-economic surveys was undertaken alongside the cadastral and asset surveys. The land and asset component measured and described fixed assets for each household including land holdings, land type, buildings, crops, and trees. This information was collected to inform compensation agreements and to assist in resettlement impact assessments.

A summary of the surveys completed is provided in the table below.

Table 3 Completed Baseline Surveys

Survey	Number of Surveys Completed	Timing

Survey	Number of Surveys Completed	Timing
Cadastral Survey	1506	26 September – 30 September 2022
Assets Survey	150	26 September – 30 September 2022
Socio-Economic Household Survey	55	26 September – 30 September 2022
Focus Group (FG) Discussions: held with women (housewives), male elders	1	26 September – 30 September 2022
Key Informant Interviews (KIIs)	1	26 September – 30 September 2022

Survey & Household Demographics

A total of 55 households were surveyed with the vast majority (99%) of the survey respondents being head of their households. The majority of the respondents were male at 89.1% and with female at 10.9%.

In Uganda, even though there are more female than male in terms of population, most of the land and property assets are owned by male. This could explain why there are more male respondents than female respondents. Whereas the male own land, women will mostly farm on the land. Women who owned land in the project area either had purchased it with their own money or were widows.

Water Sources

According to the RAP household surveys, Boreholes constitute 74.5% as the main water source for the surveyed population followed by piped water at 25.5%The nearest source of water being in a close range of less than a kilometer while the furthest being between 2-3km. And much as water is very close to people, 99% of the respondents indicated that they buy water and, on many occasions, its unavailable.

Forms of Sanitation

The overwhelming majority of survey participants (99%) have access to a pit latrine only, 1% use communal pit latrine, none in the project area has a flushing toilet.

The percentage of survey respondents with access to a flush toilet is aligned with the national rural averages according to the 2016 UDHS. Only 19% of Ugandan households use improved sanitation.

6 Number of PAPs/Transactions as per the Cadastral and Asset Survey contained in the Valuation Report. PAPs include affected households or institutions that might be having multiple entries in the valuation report because of holding multiple properties/parcels

Urban households are more likely than rural households to use improved sanitation (27% versus 16%). Eight in ten households use unimproved sanitation: 20% use a shared facility, 55% use an unimproved facility, and 7% have no facility.

The households without any form of sanitation and use neighbors or communal pit latrines is mainly due to the expenses and difficulty involved in the construction of sanitation facilities. Some of the soils in the project area are loose and often collapse making the difficult and more expensive.

Project Perceptions

The majority of households surveyed are very supportive of the Kikoora RGC Water Supply and Sanitation Project at 99.3%, 0.7% of the households are somewhat in support of the project

The very high support of the project implies that water is very much needed in the project and surrounding areas and that there will be minimal disturbances during the construction phase.

It's important to take note of the fact that even if the community is need of water and supportive of the Kikoora RGC Water Supply and Sanitation Project, they are not willing to have this water system handed over to the Umbrella Water due to their inability to offer timely support and who they accuse of overcharging consumers.

E5. Project Impacts Identification

Project Impact Minimisation Efforts

This RAP has been prepared based on the MWE approved Feasibility and Preliminary Design Reports of December 2021. During the RAP surveys, efforts have made to avoid physical displacements as much as possible by avoiding impacting public and institutional infrastructure structures as much as possible.

In addition, the Project water pipes (transmission and distribution pipes) are routed along the existing community access roads. The easement corridors for pipes have been proposed at 3 metres wide (1.5 meter on either side of the centerline). Furthermore, the sites for permanent land acquisition – borehole sites, access roads, and sanitation facility sites -- are of minimal land take or located on land parcels with minimal impacts on economic and livelihood activities of affected persons. For example, the borehole, reservoir, and sanitation facilities whose sites measure approximately 0.2224, 0.2224 and 0.0247 acres respectively.

Identifying Project Impacts

For the purposes of defining impacts, a distinction is drawn between households that are both physically and economically displaced and those that are only economically displaced, as follows:

Physical Displacement: Loss of shelter and assets resulting from land acquisition associated with a project that requires PAP to relocate.

Economic Displacement: Loss of income streams or livelihood means resulting from land acquisition or obstructed access to resources (land, water, or forest) resulting from the construction or operation of a project or its associated facilities. For example, economic displacement can result from loss of access to farmland and can occur without physical displacement occurring.

Another important distinction in defining impacts is between permanent land acquisition and permanent land restrictions, which are defined as follows:

Permanent land acquisition involves the project acquiring all land including land registration and title processing. This is the case for land required for the Water Source Sites, Reservoir Sites, Access Roads and Sanitation Facility Sites.

Permanent land restriction involves limitations imposed on the land under easement corridors for water pipes which prohibits building any structures or cultivating perennial crops and trees within the corridor. However, any existing PAH retains land use/ownership rights and cultivation of seasonal crops within the easement corridor, or any other land uses. Land use restrictions decrease land use potential which decreases the land value. It is this diminution (reduction in value) that is compensated.

Lastly, impacts have been disaggregated by land tenure status in accordance with Article 237 of the Constitution of the Republic of Uganda (1995) and land tenure systems found in the Project Area including:

Customary: Applicable to a specific area of land and characterized by local customary regulation which applies local customary regulation and management to individual and household ownership, use and occupation of, and transactions in, land. Providing for communal ownership and use of land in which land parcels may be recognized as subdivisions belonging to a person, a family, or a traditional institution. Land is considered as owned in perpetuity.

The PAHs by land tenure type is presented in the table below.

Table 4: PAH by Land Tenure Type

Land Tenure	No. of PAPs	Percentage
Customary	145	96.67%
Licensee	5	3.33%

Table 5: Project Impacts Based on Socio-economic and Asset Surveys

Impacts	Total
Total Land Affected (Permanent Acquisition & Restriction)	2.8435
Permanent Land Affected (Borehole Sites, Reservoir Sites, Access Roads, and Sanitation Facility Sites)	0.6502
Permanent Land Restriction (Easement for Transmission and Distribution Pipes)	2.1933
Total Number of Customary Landowners Affected	145
Permanent Land Affected (Borehole Sites, Reservoir Sites, Access Roads, and	0.6502

Impacts	Total
Sanitation Facility Sites) of Customary Landowners Affected	
Permanent Land Restriction (Easement for Transmission and Distribution Pipes) of Customary Landowners Affected	2.1933
Physically Displaced Households (PAHs)	-
Physically Displaced Persons (PAPs)	-
Number of Affected Residential House Structures	-
Number of other Affected Fixtures (i.e. fences)	15
Number of Affected Graves	-
Economically Displaced Households (PAHs)	-
Economically Displaced Persons (PAPs)	-
Number of Affected Crops and Trees	639
Number of Affected Commercial Structures	1
Number of Affected Public Institutional Properties	5

E6. Compensation Framework

Under the applicable standards, the Project Proponent MWE is required to compensate and/or assist physically or economically displaced PAPs.

Affected persons includes:

Those who have formal legal land or asset rights.

Those who do not have formal legal land or asset rights, but have a claim to land or assets that is recognized or recognizable under national law.

Those who have no recognizable legal right or claim to the land or assets they occupy or use.

Compensation for assets should be at full replacement value which includes:

Agricultural Land: The market value of land of equal productive use or potential -- which must be located in the vicinity of the affected land -- plus the cost of preparation to levels similar to or better than those of the affected land plus the cost of any registration and transfer taxes

Residential and Urban Land: The market value of land of equal size and use, with similar or improved public infrastructure facilities and services -- preferably located in the vicinity of the affected land -- plus the cost of any registration and transfer taxes

Perennial Crops and Trees: Equivalent to current market prices given the type, age, and productive value of the plants and/or trees, including lost future productivity

Household and Public Structures: The cost of building a new structure with an area and quality similar to or better than those of the affected structure, or the cost of repairing a partially affected structure, including labour and contractor fees and any registration and transfer taxes

In determining replacement costs, neither asset depreciation nor the value of salvage materials are taken into account.

Compensation Eligibility

PAHs are eligible for compensation and other assistance if they have a "legitimate interest" in Project Area "immoveable assets" that are in place (i.e. established, in the case of crops; or constructed, in the case of buildings and other structures) at the time of the Entitlement Cut-off Date.

"Legitimate interest" in household-level immoveable assets is usually held by a single member: the HoH. Through traditional and family practice, the HoH is typically the most senior male household member. In some instances, the legitimate interest may be held jointly, i.e. by the household head and his/her spouse, or with other extended family members. In accordance with the applicable standards, the compensation framework includes gender-specific components to ensure that documentation of ownership or occupancy and compensation payments will be issued in the names of both spouses and single heads of households as relevant.

Note that "legitimate interest" is not synonymous with ownership. Even those Project-affected persons/households/communities with no recognizable legal right or claim to assets they are occupying should be considered eligible for resettlement assistance.

Immoveable assets comprise:

Land

Perennial crops and trees fully or partly established at the Entitlement Cut-off Date

Buildings and Other Structures including residential houses, stores, kitchen blocks, latrines, wells, commercial structures and other structures such as animal pens and graves. These must have been fully or partly constructed.

Immoveable Assets that are planted (in the case of crops and trees) or constructed (in the case of buildings) after the Entitlement Cut-off Date are not included in compensation calculations.

Therefore, eligibility derives from association with the land, based on the results of the asset and socio-economic surveys. Categories of eligible persons will include --but not limited to -- the following:

Households whose fixtures (fences) are affected by the Project Permanent Land Restrictions (Easement for Transmission and Distribution Pipes)

Households that will be economically displaced, as they have assets or crops/trees to be affected by the Project, so will lose access to their means of production (including rights to unrestricted use of agricultural land or other natural resources);

Public institutions such as educational institutions, religious institutions and administrative centres affected by the Project Permanent Land acquisition (especially sanitation facility sites) and Permanent Land Restrictions (Easement for Transmission and Distribution Pipes) that will lose fences and crops and;

Households experiencing loss of, or restrictions of access to some or all of their common resources (for example fuel wood).

Entitlement Cut-off Date

The date of cadastral and asset surveys is the entitlement cut-off date. PAPs were informed of entitlement cut-off dates during the stakeholder consultations as well as during the PAH surveys. Each PAH was provided with a copy of the Asset Survey Form that was dated and signed off by the Valuer, PAP, and the Local Council Chairperson. Cadastral and asset surveys were carried out from 26 September –30 September 2022.

Entitlement Matrix and Payment Options

All entitlements associated with the defined eligibility are presented in the Entitlement Matrix below.

Table 6: Detailed Entitlement Matrix

Affected Asset or Right	Eligibility Considerations	Entitlements		
		Compensation	Allowances	Livelihood Restoration + Vulnerable Assistance
Loss of Fruit Trees and Perennial Crops	Crops in place at Entitlement Cut-off Date and identified during asset surveys.	Cash compensation at district rates based on size (height and maturity)	15% disturbance allowance based on cash compensation value. Salvaging permitted	Access to financial management training
Loss of Non-economic Trees and Bushes	Non-economic trees and bushes in place at Entitlement Cut-off Date declaration.	Cash compensation at district rates based on size (height and maturity). .	15% disturbance allowance based on cash compensation value. Salvaging permitted	Access to financial management training

Affected Asset or Right	Eligibility Considerations	Entitlements		
		Compensation	Allowances	Livelihood Restoration + Vulnerable Assistance
Loss of Seasonal or Annual Crops	Crops in place at Entitlement Cut-off Date declaration	Not eligible for cash compensation.	Harvesting permitted	Timing of Project aligned with harvesting seasons to ensure no loss of annual crops. However, if Project schedule impinges on PAPs ability to harvest, cash compensation at district rates based on size (height and maturity) + 15% disturbance allowance based on cash compensation value. The seasonal assets will be assessed and a valuation report prepared and approved accordingly
Permanent Loss of Land (Water Source Sites, Reservoir Sites, Access Roads, and Sanitation Facility Sites)	Customary Landowners (whose land is not encumbered with Kibanja interests) at Entitlement Cut-off Date	Non-vulnerable households: Cash compensation at 100% of full replacement value. Vulnerable households: In kind compensation with a standard plot size. Land Title Certificate or Certificate of Customary Ownership to HoH and spouse(s)	15% disturbance allowance based on cash compensation value.	Agricultural starter kit Access to financial management training
Permanent	Customary Landowners	Non-vulnerable	15% disturbance	Access to a number of

Affected Asset or Right	Eligibility Considerations	Entitlements		
		Compensation	Allowances	Livelihood Restoration + Vulnerable Assistance
Land Use Restrictions (Easement)	(whose land is not encumbered with Kibanja interests) at Entitlement Cut-off Date	households: Cash compensation at 100% land interest and 80 -100% diminution of full replacement value Vulnerable households: In kind compensation with a standard plot size. Land Title Certificate or Certificate of Customary Ownership to HoH and spouse(s)	allowance based on cash compensation value.	capacity-building programs. Access to financial management training
Loss of Other Structures	Other structures (fences etc.) at Entitlement Cut-off Date declaration.	Cash compensation at full replacement cost (based on size, level of completeness, construction materials, and finishes with no depreciation considered).	15% disturbance allowance on cash compensation. Salvaging permitted	Access to financial management training
Other Allowances	All affected households and entities		Harvesting permitted Salvaging permitted Support opening	Access to financial management training

Affected Asset or Right	Eligibility Considerations	Entitlements		
		Compensation	Allowances	Livelihood Restoration + Vulnerable Assistance
			bank accounts	
Vulnerable Persons	Identified Existing & Potentially Vulnerable Households	Eligible for in kind compensation for loss of land or dwellings.	Prioritisation for compensation and moving assistance.	Support: All vulnerables will be eligible for vulnerable support program (legal, psychological, educational, health support)

E7. Livelihood Restoration Plan

The Kikoora RGC Water Supply and Sanitation Project will act to restore the livelihoods and living standards of all displaced persons to levels equivalent to or better than those maintained at the time of physical or economic displacement.

Therefore, this Project LRP aims to restore and improve PAPs affected livelihoods. This RAP also takes a Sustainable Livelihoods approach, which presents a holistic method to livelihood restoration, bridging the relationship between capital assets (human, natural, financial, physical, and social) and the latest empirical evidence-based economic and international development research to achieve livelihood outcomes (well-being, income, food security, vulnerability/risk management, and sustainable use of natural resources).

Livelihood restoration encapsulates specific measures necessary to mitigate any harmful or negative Project impacts on PAPs economic assets or activities.

The LRP objectives are to:

Support affected people, households, and communities in overcoming the disruption generated by displacement and promote the establishment of inclusive and sustainable community livelihood systems.

Improve the quality of life of affected families by building their capacity in managing, cash compensation.

Meet the compensation commitments – and support the effective management of compensation commitments – as negotiated with affected households, such that they receive compensation and other assistance in a manner enabling them to create new income sources.

Ensure that displaced households can equally access and benefit from other community, district, and regional development programs and initiatives such as government programs and community development activities.

The LRP programs include:

Financial Management Support Program (FMSP)

Agricultural Starter Kits

E8. Vulnerable Persons

Vulnerables refers to those who may be more likely to be adversely affected by the Kikoora RGC Water Supply and Sanitation Project impacts and/or more limited than others in their ability to take advantage of a project's benefits.

In preparing this RAP, vulnerable PAPs have been identified and consulted. Assistance measures have been developed to prevent disproportionate impacts among such groups.

The completed socio-economic survey and vulnerability assessments indicate that the categories of Project-affected vulnerable persons include:

Elderly headed households with limited support. A household headed by an elderly person could have difficulty producing enough crops to feed the family. Elderly people may not necessarily be vulnerable, particularly if they live in extended family groups, but the Project will need to ensure their needs are appropriately met during physical relocation and re-establishment of houses and crops.

Widows. In Uganda, widows remain the most vulnerable members of society as they are often threatened by in-laws and without proper ownership documentation of the assets of their late husbands. The Project shall provide sufficient legal support to households headed by windows to ensure they are not disfranchised of their property and asset ownership rights.

Vulnerability Support Programs

Identified vulnerable households and individuals will be monitored and provided with the following assistance:

Assistance with understanding of agreements and signing and additional time and independent support to ensure their agreement is properly informed.

Assistance with collection of compensation and priority access to mitigation and development.

Legal assistance (if required) for establishing powers of attorney).

Transport assistance to designated Project meeting venues.

Increased number of monitoring visits.

E9. Cultural Heritage Protection

The Asset survey indicates that the Kikoora RGC Water Supply and Sanitation Project will not impact any graves, however, the activities of the Kikoora RGC Water Supply and Sanitation Project have the

potential to trigger OP 4.11 Physical Cultural Resources. During excavation works for Project infrastructure, there might be chance finds.

Any chance finds will be treated in line with the requirements of OP 4.11. The objective of OP 4.11 is to avoid, or mitigate, adverse impacts on cultural resources from World Bank Funded Development Projects

Chance Finds

The Project has developed a Chance Finds Procedure for when previously unknown cultural heritage is encountered during Project activities. This procedure will be included in all construction-related contracts for this Project.

All MWE and contractor personnel involved in Project construction shall be responsible for following the Chance Finds Procedure.

E10. Household Sign-offs and Moves

Where resettlement is confirmed and unavoidable, projects need to develop strategies for household sign-off and moves.

There are two key household sign-off phases:

Phase 1: Household Verification – This process involves households verifying that assets have been properly surveyed and the records fully reflect their interest in the asset.

Phase 2: Sign-off – Where households confirm the compensation as applied to their household are acceptable and they agree to allow the Project to proceed and take over ownership of the land for Project components that require permanent land acquisition.

Group Disclosure

Together with the RAP Implementation Consultant, MWE is responsible for overall RAP implementation. Once the RAP and the Valuation Report are approved, MWE shall undertake group disclosures with affected Project Area communities and their leaders. These shall take place in the Kakumiro District at the Sub-counties and all PAPs shall be invited to attend. Information on key RAP findings and impact mitigation measures for minimizing displacement will be shared at the meetings. Importantly, the group disclosure meetings will be held at a time that takes into consideration local context, ensuring that women and youth are able to attend.

PAPs will be informed of compensation procedures, modes of compensation, eligibility criteria, livelihood programs, vulnerable support programs, and the process for signing compensation agreements.

PAH Verification

Each household asset survey included sign off by the relevant LC1, BTS, and the Project affected head of household. A copy of the captured assets was handed to head of household to support a smooth verification process. This provided the PAH an opportunity to verify that all their assets have been

recorded properly and that they agree to use the recorded assets as the basis for their RAP entitlements. As part of the verification process, PAHs will be presented with:

Demographic information including name, ID number, recorded affected assets, contact information and photos.

Table for each main asset type (land, crops, structures) outlining survey date, survey code, and asset interest.

Record of grievances lodged by the PAH to help the Project assess any outstanding issues.

Photos of assets taken during the surveys.

Agreement with relevant signatures (LC1 chairperson, Area Land Committee Chairperson, MWE Officer, and the RAP Implementation Consultant, PAPs) that the household accepts the information on the form. The statement should include agreement to abide by any relevant land use restrictions (e.g. plant height restrictions above the easement).

Household verification will be undertaken by the head of household and spouse(s) to ensure they both agree to the survey findings and to protect the interests of the spouse(s). MWE (together with the RAP Implementation Consultant) to obtain PAP bank details or support PAHs in setting up accounts. A spousal consent and joint account shall be required where applicable.

Sign-off Process

Upon completion of the verification exercise, the RAP Implementation Consultant and MWE, shall disclose the individual compensation packages in one-on-one meeting with PAHs timed to not impact livelihoods as well as cultural or religious functions or duties. For the sign off process, the same information listed in Section 11.4 will be presented in the form of a household dossier.

PAPs who agree with the entitlements shall sign off on the compensation agreements. For couples, a spousal consent and joint account shall be required. The agreements shall be witnessed by an LC1 chairperson, Area Land Committee Chairperson, MWE Project Officer, and the RAP Implementation Consultant.

PAHs who disagree with the compensation package shall notify the RAP Implementation Disclosing Officer and register their concerns in the area designated for grievances on the disclosure document. PAHs are also free to provide additional information and register their grievance in accordance with the RAP's grievance mechanism.

E11. Grievance Mechanism

The Kikoora RGC Water Supply and Sanitation Project is required to propose and implement a grievance mechanism to receive concerns and grievances and facilitate their resolution.

The grievance mechanism's goal is to deploy a reliable and effective method for project stakeholders to voice and address land acquisition and resettlement-related concerns.

Grievance Management Committees (GMCs)

Prior to RAP implementation, GMCs shall be established and trained by the RAP Implementation Consultant in grievance handling with clear responsibilities including the following:

Facilitating access to information and attending to complaints that may be resolved by providing information

Providing a free and accessible method to PAPs to report their grievances and complaints as the established GMCs. In addition, any aggrieved stakeholder will be free to submit their grievance through their LC1 chairpersons.

Maintaining records of all grievances brought before the committee by PAPs

Establish a forum and a structure to report grievances with dignity

Providing a forum for resolving grievances and disputes at the lowest level

Providing access to a fair hearing and remedy

Verifying facts presented at grievance hearings using their community knowledge and experience and providing MWE with meeting minutes from each hearing

Providing access to negotiate and influence project decisions that may adversely affect them

Resolving disputes quickly before they escalate to unmanageable levels

Referring any unresolved grievances to higher levels for action and further follow up

Liaising with local leaders to ensure health, safety and security of the communities, workers and construction materials during the project implementation

The GMCs shall be established at four different levels as below:

Village GMC

Subcounty/Town Council GMC

District GMC

Ministry GMC

Grievance Mechanism Publicizing

The grievance mechanism shall be widely publicised within the Project Area through sensitization and community meetings.

The grievance mechanism shall be publicised as part of consultation and disclosure activities. It will be communicated verbally at community and public meetings and will also be included in all communication materials such as Subcounty noticeboards. Specific reference to the grievance mechanism shall be included in all compensation and sign-off agreements.

The grievance-handling steps are outlined below. Once received, all grievances will be responded to within a maximum of 30 days.

Table 7: Grievance-handling Steps

#	Step	Responsibility
1	Receive Grievances and Provide PAPS with a Grievance Acknowledgement Form	MWE, RAP Implementation Consultant, and GMCs
2	Grievance Registration and Acknowledgement	MWE, RAP Implementation Consultant, and GMCs
3	Grievance Sorting and Logging in database and tracking system	MWE, and RAP Implementation Consultant
4	Grievance Assignment	MWE
5	Grievance Processing and Feedback (30 days)	MWE, RAP Implementation Consultant, and GMCs
6	Corrective Actions, Grievance Follow Up and Closure	MWE

A grievance shall be submitted either verbally or in writing at the complaints and grievance desk which will be the secretariat for grievances management. The desk shall be at the Subcounty, town council, and Ministry. This desk will be assigned with the responsibility of receiving, registering, and screening, assessing and following up complaints and grievances to their conclusion. The desk will be hosted by the following officers who shall serve as Grievance Officer (GO) at different levels.

Table 8: Grievance Officers at Different Levels

No.	Grievance Committee Level	Responsibility/ Host office
1	Sub County/ Town Council	CDO Subcounty or Town Council
2	District	CDO District level
3	MWE	Principal Sociologist

Grievances may, in addition, be submitted through any of the following channels:

Letter to: The Permanent Secretary
Ministry of Water and Environment
Plot 3-7 Kabalega Crescent
P.O. Box 20026, Kampala

Email: mwe@mwe.go.ug

	Telephone: + 256 800 200 977
	Walk in to: MWE Offices GMC Offices at Subcounty HQs or District HQs
	Social Media: @min_waterUg
	Through stakeholder consultation and engagement meetings

Complainants identified as recognised vulnerable persons, per the Vulnerables Program, will be provided with adapted grievance procedures to ensure their interests are protected. These grievances will be handled with utmost importance and special considerations (document support and legal advice) will be upheld.

Grievance Database Management and Tracking

All received grievances shall be registered and logged into the grievance register for further management and tracking. An acknowledgement receipt shall be issued to the complainant. MWE shall keep written records of all complaints for effective grievance management.

All decisions reached at the different resolution levels shall be communicated to the complainant and other stakeholders by the Chairperson of the respective GMC. It will be the responsibility of the GO to deliver the communications. Evidence of communication of decisions to complainants shall be acknowledged by way of signing a dispatch form or acknowledgement of a file copy.

Agreed corrective action will be undertaken by the responsible agency/ part for example a Local government, MWE, contractor or authorized sub-contractors 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 agreement or an appeal will be lodged by the complainant.

As part of the broader community engagement process, MWE shall also report back periodically to communities and other stakeholder groups as to how the company has been responding to the grievances it has received (i.e. time to respond, percentage of closed/resolved cases, number of complaints monthly).

E12. Monitoring, Evaluation, and Reporting Framework

Monitoring Framework

Monitoring is an internal management function that measures RAP implementation progress and performance including key procedure progress such as compensation and resettlement. Specific consideration will be given to:

Monitoring the use of RAP inputs and outputs according to established cost and time schedules.

Any emerging social or economic difficulties encountered by PAPs during the compensation process

Compensation program compliance and completeness

Monitoring community consultation and grievance participation

Performance Monitoring

Performance monitoring is also an internal management function allowing MWE and the RAP Implementation Consultant to measure the results of the delivered inputs.

RAP performance monitoring will be integrated into the overall project management to ensure RAP activities are synchronized with all project implementation activities. Performance Monitoring Reports shall be prepared every month throughout the RAP implementation schedule.

Internal Monitoring Process

The Internal Monitoring Process includes establishing M&E systems and databases, ongoing monitoring, monthly reporting, and vulnerability assessments. Internal evaluation shall be based on the following criteria:

Project Effectiveness: Have the planned purpose, objectives, and results been achieved? Was the intervention logic correct? Were the resources applied appropriately in relation to the expected outcome? Were the means commensurate with the goal(s)?

Project Efficiency: Were resources (human, financial, material, time) used satisfactorily to achieve outcomes? What could be done differently to maximize impacts within acceptable and sustainable resource structures?

Project Impacts: To what extent has the program contributed toward its longer-term goals? Why or why not? What unanticipated positive and negative consequences did it have? To what extent has the Project achieved the central resettlement objective that affected communities and households have opportunities to improve their pre-Project livelihoods and living standard levels? Why or why not?

Results Sustainability: Are positive impacts resulting from the program continuing? Will they continue once the program has been completed? Why or why not?

The monthly internal monitoring process will entail the following:

To-date accomplishments.

Objectives attained and not attained during specific periods.

Problems and challenges encountered.

Suggestions for corrective actions.

MWE has the overall responsibility for conducting regular internal project implementation monitoring with tasks including the following:

Tracking RAP implementation progress.

Indicator measurements at appropriate intervals.

Implementation of a system to regularly respond to monitoring findings by adapting existing measures or modifying implementation processes.

This monitoring process will be used to analyse progress and change at regular intervals and shall be linked to the various RAP implementation activities.

Evaluation Framework

Evaluation considers resettlement program outcomes through an impact assessment of affected household income, living standards, and environmental issues. RAP implementation focus is on household baseline data compilation to enable comparison during evaluation missions.

Impact monitoring gauges RAP implementation and its effectiveness in meeting the affected population's needs. Impact monitoring for this project will be conducted by the MWE and RAP implementation consultant Team. It will provide MWE and the funders with an assessment of resettlement effects, verification of internal performance monitoring, and identification of any necessary RAP implementation adjustments. PAPs should be included in all impact monitoring phases.

Project-related land acquisition will be tracked against the population's pre-land acquisition baseline conditions. This baseline has already been established through cadastral surveys, assets surveys, land use assessments, and socio-economic surveys of the affected population and the Project-affected area.

This RAP has established objectively verifiable indicators for measuring resettlement impacts on the health and welfare of the affected population and the effectiveness of impact mitigation measures including livelihood restoration and community development initiatives.

Implementation

This RAP has established objective, verifiable indicators for measuring resettlement impacts on the health and welfare of the affected population and the effectiveness of impact mitigation measures including livelihood restoration and community development initiatives.

E13. Organisational Framework

MWE is responsible for RAP Implementation for the Kikoora RGC Water Supply and Sanitation Project and has committed to hire more staff that shall constitute a RAP Implementation Team.

The specific MWE roles and responsibilities during RAP Implementation phase include:

Lead RAP Implementation agency

Reviewing and approving the RAP and all other reports

Overall planning, co-ordination, and management of RAP implementation activities

Liaising and coordinating with all RAP participants and contributors

RAP activity budgeting

Compensation Payment, including resettlement assistance

Internal monitoring and evaluation

Stakeholder Engagement

PAP Verification

PAP disclosure and Compensation Agreement sign-offs

Grievance Management including preparation of supplementary valuation reports

Management of Livelihood Restoration Programs, Community Development Programs, and Vulnerability Assistance Programs including:

Implementation of Financial Management Support programs

Implementation of Construction Training

Implementation of LC1 Capacity-building Training

Provision of legal services to PAPs where necessary in the course of compensation payment

Internal monitoring and evaluation

Survey and Titling of acquired land for the water source and reservoir sites.

Other RAP Implementation Parties

Other government departments and agencies play different but complementary roles in land acquisition, compensation, resettlement, and livelihood restoration. Each government department and agency bear institutional responsibilities and mandates as indicated below:

Valuation: Office of the Chief Government Valuer

Compensation Payment: MWE

Livelihood Restoration: MWE, District and Local Governments of Kakumiro.

Grievance Mechanism: LCs, Local Governments, and Courts of Law.

Land Titling: Department of Surveys and Mapping, Department of Land Registration, and District Land Boards

The overall RAP implementation organizational structure is shown in the figure below.

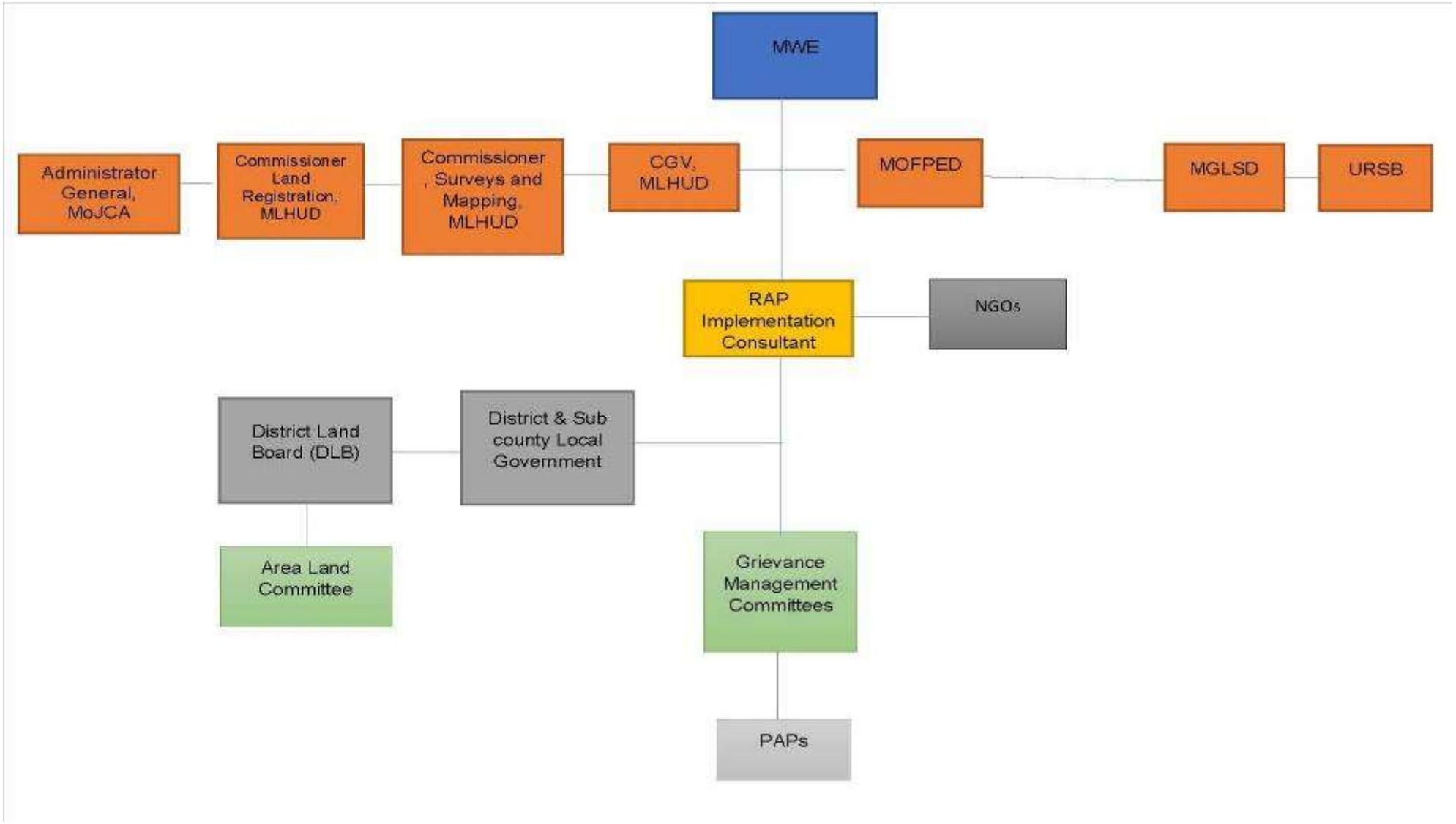


Figure 2: RAP Implementation Organizational Structure

E14. RAP Implementation Schedule, and Budget

MWE has committed that this RAP shall be implemented within a 12 months' period from October 2022 - September 2023. Project construction activities are expected to commence by the end of August 2023.

The overall **RAP Budget is estimated at UGX 83,521,487**

E15. Change Management

This RAP is a living document that will be periodically updated as the Project progresses. This RAP should be regarded as a key management tool and Project document to serve as the basis for any future sub project RAPs.

The construction contractor may require land for lay down areas, and camps. In addition, unintended damage to land, crops, and structures may occur. MWE shall ensure that this land and any impacted assets are compensated for in accordance with the provisions of this RA