TANA WATER WORKS DEVELOPMENT AGENCY (TWWDA)





ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED RUNYENJES WATER SUPPLY PROJECT

16TH MARCH 2024

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DECLARATION

Greenville Nexus International Ltd (Consultant) for Tana Water Works Development Agency (Client) do hereby certify that this Environmental and Social Impact Assessment (ESIA) Report was prepared based on the information provided by Key Informant Interviews and beneficiaries as well as data collected from other primary and secondary sources and on the best understanding and interpretation of the facts by the Biodiversity Experts and Environmental experts. It is issued without any prejudice.

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ACRONYMS

Abbreviation	Description
AIDS	Acquired Immune Deficiency Syndrome
BOD	Biological Oxygen Demand
CBD	Convention on Biological Diversity
CoK	Constitution of Kenya
DOSH	Directorate of Occupation Health and Safety
EHS	Environmental Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EMCA	Environmental Management and Coordination Act
EMP	Environmental Management Plan
HIV	Human Immuno-deficiency Virus
KYEWASCO	Kyeni Water and Sanitation Company
MAS	Modified Activated Sludge
MWSI	Ministry of Water, Sanitation and Infrastructure
NCA	National Construction Authority
NEMA	National Environment Management Authority
NEAP	National Environmental Action Plan
OHS	Occupational Health and Safety
OSHA	Occupational Safety and Health Act
PAP	Project Affect Persons
PPEs	Personal Protective Equipment
PRSP	Poverty Reduction Strategy Paper
RAP	Resettlement Action Plan
SDG	Sustainable Development Goals
SUP	Socially Uplifting Project
TOR	Terms of Reference
TWWDA	Tana Water Works Development Agency
WRA	Water Resources Authority
WSRB	Water Services Regulatory Board
WWDA	Water Works Development Agency
WWTP	Waste Water Treatment Plant

EXECUTIVE SUMMARY

Background

Tana Water Works Development Agency (TWWDA) is mandated to; Undertake the development, maintenance and management of the national public water works within its area of jurisdiction. In response to the pressing need for improved access to potable water in Runyenjes town and its environs, the Runyenjes Water Supply Project will help to address these challenges once it becomes operational. It is in this regard that Tana Water Works Development Agency is undertaking this study in line with its mandate endeavours to develop water works which will ensure adequate and safe water for the residents of Runyenjes, Embu County.

The proposed Runyenjes Water Supply lies in Runyenjes Sub County in Embu County and is expected to serve 25 sub locations. The source of water for this project is Thuci River approximately 12.2km inside Mt. Kenya Forest through the Irangi Station gate and approximately 135m upstream of the Ndamunge water project intake. The water supply system will consist of the following components;

- 1No. diversion weir and 2 intake chambers.
- Approximate 8.8km of main lines with varying sizes and pressure ratings
- A 15000M^3 full treatment works
- 2 No. 1000 M^3 RC storage tanks.
- 3 No. 225 M^3 masonry storage tanks.
- 5 No. 500 M^3 RC storage tanks.
- 2 No. 135 M3 masonry storage tanks
- 2 No. 50 M^3 masonry brake pressure tanks.

In the analysis of project alternatives, several key considerations were examined, including the project location, water treatment technology, land acquisition and resettlement impacts, material sourcing sites, and the proposed project option compared to the "No Project" alternative. The selection of the intake works site and water treatment works was based on factors such as adequate water flow, suitable topography, ease of access, and minimal land acquisition. Additionally, the project capacity was determined based on population projections, ensuring sufficient water supply for the target area.

Regarding resettlement issues, the project mainly utilizes public road reserves with minimal private land acquisition. Compensation for easements is required in some cases, but overall resettlement impacts are deemed minimal. The "No Project" alternative, while maintaining existing environmental conditions, would perpetuate challenges such as inadequate water access, non-revenue water losses, and limited opportunities for growth and development in the community.

Furthermore, exploring alternative sites for the project was considered, but it was determined that the selected site aligns best with project criteria and has existing infrastructure, minimizing potential impacts and streamlining the implementation process. Overall, the analysis underscores the importance of the proposed Runyenjes Water Supply Project in addressing critical water supply challenges while minimizing adverse environmental and social impacts

Baseline Environmental and Social Conditions

Project Location: The study area covers Runyenjes town and rural areas of Runyenjes and Kyeni Constituency, Embu County. The proposed intake works will be located along the Thuci River, with the treatment works at Munyutu within Kanja North Sub-Location.

Topography: The region exhibits a diversified relief area, ranging from plains to high raised hills. The proposed project area has rugged topography with small valleys and ridges, suitable for designing a gravity-fed water supply system.

Geology and Soils: The project area's geological composition is influenced by past volcanic activity from Mount Kenya, primarily consisting of quaternary volcanic rocks and deep soils.

Hydrology: Embu County has several major rivers, with Thuci River being the primary water source for Runyenjes town. The project aims to abstract water from the Thuci River, with various surface water abstractions already existing along the river.

Flora and Fauna: The project area covers forest areas and farmlands, with diverse vegetation and wildlife. Endangered and endemic species like the Irangi puddle frog inhabit the Irangi forest, which is the focus of a biodiversity management plan.

Climate: Runyenjes experiences a tropical climate with distinct rainfall patterns. The area receives bimodal rainfall, with long rains from March to May and short rains from October to December.

Population: Embu County had an estimated population of 641,769 persons by the end of 2022, with projected population growth over the years.

Health Facilities: The area has an extensive healthcare infrastructure, including hospitals, health centers, and dispensaries, providing healthcare services to the population.

Transport and Communication: The region is accessible via major highways, with a network of roads connecting various centers. Access to the proposed water treatment plant site is facilitated by existing roads.

Water Supply: Water supply in the area is managed by Kyeni Water and Sewerage Company and community water projects, utilizing surface water sources like the Thuci River.

Sanitation: The sanitation situation relies heavily on pit latrines, with limited access to flush toilets. Solid waste disposal methods are inadequate, leading to unconventional waste disposal practices.

Education: Runyenjes Sub County has a variety of educational institutions, including ECDE centers, primary schools, secondary schools, and tertiary institutions, serving learners at different levels.

Land-use and Development: The local economy is largely dependent on agriculture, with tea farming and subsistence crop production being predominant. Industrial activities are mainly centered around tea factories.

Legislative and regulatory framework

The activities of the proposed water supply project are regulated by several legal instruments and policies, the main ones being the EMCA (1999) and its subsidiary regulations, and the Water Act 2016 which sets the requirements and procedures for obtaining operating licenses and permits in regards to the proposed water works. In addition, specific sections of both national and international legal and institutional framework which will enable the proponent to be compliant with the law and attain the set standards are included.

National Regulatory Framework and Policies

Legislation	Summary	Relevance
Environmental Management and Coordination Act (EMCA), 1999	EMCA provides the legal framework for environmental management in Kenya, emphasizing the right to a clean environment and the requirement for Environmental Impact Assessment (EIA) studies for specified projects.	The proposed project falls under Medium Risk Projects, requiring an Environmental and Social Impact Assessment (ESIA) before implementation. Compliance with EMCA ensures adherence to environmental regulations.
Environmental (Impact Assessment and Audit) Regulations, 2003	These regulations stipulate procedures for EIA studies, including preparation,	The project's ESIA must comply with these regulations, ensuring thorough assessment and

	submission, and approval of reports.	reporting of environmental impacts.
Environmental Management and Coordination (Water Quality) Regulations, 2006	Regulates water resource management and pollution prevention, setting standards for effluent discharge and prohibiting pollution of water sources.	The project must adhere to water quality standards to prevent pollution of water resources during construction and operation phases.
Environmental Management and Coordination (Waste Management) Regulations, 2006	Provides guidelines for waste management, including handling, storage, transportation, treatment, and disposal of various waste streams.	Compliance with waste management regulations is necessary to ensure proper handling and disposal of construction-generated waste.
Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009	Regulates noise and vibration levels to prevent disturbances and ensure a healthy environment, particularly during construction activities.	Compliance with noise and vibration regulations is crucial to mitigate disruptions and maintain a safe working environment.
Environmental Management and Coordination (Air Quality) Regulations, 2014	Specifies air quality standards and emission limits to protect human health and the environment from air pollution.	Adherence to air quality regulations is necessary to minimize emissions from construction activities and protect air quality.
Water Act 2016	Governs water management, including abstraction, use, and pollution prevention, requiring permits for water-related activities.	The project must obtain permits from the Water Resources Authority (WRA) and comply with water management regulations to prevent pollution and ensure sustainable water use.
Climate Change Act 2016	Addresses climate change challenges, emphasizing emission reduction, resilience-building, and community engagement.	Compliance with the Climate Change Act ensures alignment with national climate goals,

		promoting resilience and sustainability.
National Land Commission Act. No. 5 of 2012	Regulates management of public land, requiring evaluation based on land capability, resource mapping, and conservation efforts.	Protection of sensitive habitats and compliance with land use regulations are essential to preserve public land and ecosystems.
Public Health (Drainage and Latrine) Rules	Mandates provision of proper latrine facilities for workers during construction, ensuring public health and sanitation.	Construction sites must provide adequate sanitation facilities to promote worker health and hygiene.
County Governments Act, 2012	Guides spatial development and public participation in county planning, requiring public hearings and adherence to development frameworks.	The project must align with county spatial development frameworks and engage in public participation processes.
Physical Planning Act, 2019	Governs land planning and development approvals, requiring compliance with local authority regulations and issuance of certificates of compliance.	The project must obtain approvals from local authorities and comply with land use regulations to ensure responsible development.
Urban Areas and Cities (Amendment) Act, 2019	Establishes governance and management structures for urban areas, emphasizing integrated development planning and resident participation.	The project should integrate with urban development plans and consider resident input to address water supply challenges.
Employment Act, 2007	Regulates employment practices, including age restrictions and protection against discrimination and harassment.	Compliance with employment regulations ensures fair treatment of workers and prevents exploitation.
Work Injury Benefits Act (WIBA)	Provides compensation for work-related injuries, outlining	Compliance with WIBA ensures provision of compensation and promotes workplace safety.

	employer responsibilities for health and safety.	
Occupational Safety and Health Act, 2007	Ensures safety, health, and welfare of workers at workplaces, requiring registration and compliance with safety standards.	Compliance with OSHA promotes a safe working environment and prevents accidents.
Environment and Land Court Act, 2012	Establishes the Environment and Land Court to hear disputes related to land and environmental matters, providing a legal avenue for resolution.	The court provides recourse for land and environmental disputes, ensuring legal compliance and resolution of conflicts.
Penal Code, Cap 63	Criminalizes activities that endanger public health or pollute water and air, imposing penalties for violations.	Compliance with the Penal Code is essential to prevent environmental pollution and protect public health.

AfDB Operational Safeguards

Environmental and Social Operational Safeguard	Summary	Relevance to Runyenjes Water Project
OS1: Assessment and Management of Environmental and Social Risk and Impact	Conduct comprehensive assessment of environmental and social risks and impacts throughout project stages.	The project adhered to ESA standards, engaging stakeholders and developing a comprehensive ESIA report and management plan.
OS2: Land Acquisition, Restrictions on Access to Land, and	Recognizes adverse impacts of land acquisition and resettlement, aims to	A comprehensive RAP will be implemented to mitigate adverse effects on land and

Involuntary Resettlement	minimize and mitigate these impacts.	livelihoods, aligning with OS2 provisions.
OS3: Habitat and Biodiversity Conservation, and Sustainable Management of Living Natural Resources	Focuses on biodiversity conservation and sustainable resource management.	Biodiversity study and management plan for the project area align with OS3 requirements, ensuring conservation of natural habitats.
OS4: Resources Efficiency and Pollution Prevention and Management	Aims to address pollution and resource consumption throughout project lifecycle.	The project's ESIA evaluated potential pollutant discharges and impacts, with mitigation measures outlined in the ESMP to ensure compliance with OS4.
OS5: Labour and Working Conditions	Aims to protect workers' rights, promote safety, and prevent forced labor.	The project will prioritize workers' rights, safety, and fair treatment, with measures in place to prevent forced and child labor, aligning with OS5 provisions.

Institutional Framework

Institutional Framework	Responsibilities	Relevance to Runyenjes Water Project
County Environment Committee	Prepares County environment action plans for environmental management at the County level.	The project adheres to the County environment action plan for Embu County as stipulated by the County Environment Committee.
County Government of Embu	Undertakes devolved environmental functions including control of air and noise pollution, waste management, and issuance of development approvals.	The project shall comply with regulations and approvals issued by the County Government of Embu for environmental management and development.

National Environment Management Authority (NEMA)	Exercises supervision over environmental matters and approves projects before implementation. Sets environmental quality standards and participates in project reviews and audits.	NEMA approval is required for the Runyenjes Water Project, and ongoing participation is necessary for compliance with environmental standards and regulations.
Water Resource Authority (WRA)	Regulates water resources, including allocation, conservation, and quality management. Issues water permits, enforces permit conditions, and coordinates Integrated Water Resource Management (IWRM).	Consultation with WRA is essential for water abstraction from Thuci River, requiring a permit with conditions to protect biodiversity. Compliance with WRA regulations ensures proper management and conservation of water resources.

National and International Policies and Agreements

Policy/Convention	Description	Relevance to Runyenjes Water Project
National Biodiversity Strategy, 2007	Aims to conserve Kenya's biodiversity and sustainably use its components, while ensuring fair and equitable sharing of benefits and enhancing cooperation nationally and internationally.	The project must reinstate the environment to its original state during construction to reverse biodiversity loss and maintain biological resources sustainably. Works within Irangi forest should be taken with utmost care to the biodiversity

Sustainable Development Goals (SDGs)	Provide a framework for global development, including universal access to safe drinking water and sanitation, protection and restoration of water-related ecosystems, and international cooperation in water and sanitation activities.	The project contributes to achieving SDG 6 by providing safe drinking water, protecting water-related ecosystems, and supporting international cooperation in water management.
National Gender and Equality Commission Act 2011	Aims to mainstream gender concerns in national development to improve social, legal, economic, and cultural conditions for women, men, girls, and boys.	The Act guides project implementation, particularly in recruitment, to ensure gender equality and combat discrimination.
United Nations Framework Convention on Climate Change (UNFCCC)	Mandates parties to consider climate change in policies and actions, encouraging mitigation measures and sustainable practices.	The project aims to minimize adverse climate change effects and enhance positive impacts through sustainable water management and conservation practices.
United Nations Convention on Biological Diversity (CBD)	Aims to conserve biodiversity, promote sustainable use, and ensure fair benefit-sharing, requiring environmental impact assessment and mitigation measures for projects affecting biodiversity.	The project must implement mitigation measures outlined in the Environmental and Social Management Plan to minimize negative impacts on biodiversity in the Irangi forest area

Stakeholder Consultations

The study adopted a participatory and collaborative approach to ensure active participation of all the key stakeholders. As such, discussions were held with

community members within the project area and relevant key stakeholders with the assistance and coordination of the proponent and the local administration. Public Participation meetings were held on various dates as outlines in the table below. During the field investigations, the Consultants held discussions and interviews with various stakeholders with the view of gathering their views on various aspects regarding the proposed rehabilitation project and incorporating them in the ESIA report.

Date of Meeting	Sampled Area	Meeting Venue	Participants Involved	No. of Participants
13th, February 2024	Municipality and the entire Sub County	Runyenjes Town Hall	Public Administration PAPs Representatives fron County government and WSPs Village representatives	
5th September, 2023	Mwenendega, Jeruri, kigangari, kagumori, Rugusha,Gatinda, Gicakiri, Gachuki, Mbogori and Kigaa	Kigaa Market, Chief's Office	Chief Runyenjes East location Proponent representatives Sub-County Water Officer Runyenjes Village Elders Residents	TOTAL:82 Male:47 Female:35
6th September,2023	Gikuuri	Gikuuri Chiefs office	Chief Runyenjes East Location Assistant Chief Gikuuri Sub location Proponent representatives Sub-County Water	TOTAL:28 Male:11 Female:17

			Officer Runyenjes Village Elders Residents	
	Mbiruri	**Mbiruri Assistant Chief's Office**	• Chief Runyenjes East Location • Assistant Chief Mbiruri Sub location • Proponent representatives • Sub-County Water Officer Runyenjes • Residents	**TOTAL:9** Male: 4 Female:5
	Gitare	**Gitare Tea Buying Centre**	• Chief Runyenjes East Location • Assistant Chief Gitare Sub location	**TOTAL:12** **Male:11** **Female:1**

Category of stakeholder	Stakeholder consulted
Project Proponent	• TWWDA staff
Embu County Government	• County Executive (Ministry of Environ, Water and Natural Resources) • KYEWASCO
Public Administration	• County Commissioner, Embu County • DCC Embu East • ACCs • Chiefs
General public	• Community barazas

Category of stakeholder	Stakeholder consulted
Key Ministries and related agencies	• Tana Water Works Development Agency • Water Resources Management Authority • Public Health & Sanitation • Lands office • Ministry of lands • Directorate of Occupational Health and Safety Services

	Comment	Response/Mitigation Measure
Clearing Vegetation	Vegetation within and around the project site work area will be destroyed	Reinstatement of the project sites to their original state Limit site clearance to pipeline route
Interference with Individual Property	Residents stated that any interference with individual property should be compensated	✓ The proposed pipeline route would utilize road reserves. In case of any interference with individual property valuation would be done and compensation carried out accordingly.
Occupational, Health and Safety	Animals and human beings could fall into the trenches and be injured There might be some incidences of work-related injury to human beings	No excavated areas/trenches should be left open. Backfilling should be done immediately. Workers be provided with PPE. Communities be sensitized before commencement of work on issues to do with safety.

		Put up signage to show construction work is going on

Environmental and Social Impacts

The anticipated environmental and social impacts as a result of the proposed project implementation have been screened in this report through the analysis of impacts on soil environment, air environment, physical environment and the society. The key positive impacts that will be realised upon the project implementation include the following:

- Improved Health; Runyenjes water supply project shall deliver portable water to the residents of Runyenjes and its environs. This means that the water shall be free of contaminants and this shall lead to improved public health outcomes as a result of reduction in waterborne diseases especially amongst children.
- Economic benefits; during the entire cycle of the proposed water supply project, consultants, casual labourers; both skilled and unskilled shall be hired and therefore they will earn some income from the project. Upon the successful completion and commissioning of Runyenjes water supply project, the area water service provider (KYEWASCO) shall be handed the project by TWWDA, and therefore they will generate revenue from sale of the resource. Additionally, reduced healthcare expenses that would be incurred in treating waterborne diseases and increased productivity from a healthy population will contribute to economic growth and poverty alleviation.
- Reduced Mortality and Morbidity; Access to safe and good quality of water can significantly reduce incidences of water related illnesses, leading to lower mortality rates and decreased healthcare costs resulting from treating waterborne diseases.
- Promotion of hygiene & sanitation; availability of potable water is a driver of better hygiene practices such as hand washing, which is critical for preventing the spread of diseases.
- Boost to education; with availability and easy access to potable water that the proposed water supply project is aimed at achieving, more children will have

their attendance and performance in school improving since the chances of falling ill shall be minimal. This will lead to better educational outcomes and a brighter future.

- Environmental Protection: Providing potable water through sustainable water management practices can help protect natural water sources and ecosystems. It promotes responsible water use and conservation efforts, contributing to environmental sustainability.

Adverse Impacts and Mitigation Measures

Table 1 presents the anticipated adverse impacts of the project and the proposed mitigation measures aimed at preventing and reducing adverse environmental impacts.

Table 0-1 Anticipated Negative Impacts and Proposed Mitigation Measures

Potential Impact	Mitigation and Enhancement Measures
Planning phase	
Loss of Land and Land Use	RAP Exercise • Land acquisition for the water treatment plant and storage tanks site in recognition of necessary legal procedures • Identification of the affected private land owners where wayleave would be required, consultations and compensation for loss of land use prior to commencement of construction activities • In cases where the way leaves fall in agricultural land, adequate time frame will be provided to the affected to enable them remove their crops prior to acquisition.
Construction phase	
Employment opportunities	• Continuous consultations with local communities to resolve emerging issues of concern • Ensure gender equity in employment opportunities • Priority of employment opportunities to be given to the local residents to enhance ownership of the project
Soil Erosion	• Soils excavated during laying of water pipes should immediately be used for back-filling and should not be left exposed to wind or water during rainy season

Potential Impact	Mitigation and Enhancement Measures
	• The cleared sites will be re-vegetated to improve soil cover and minimize soil erosion and also improve on aesthetics of the project area
Solid Waste Disposal	• Sensitization of workers on environmental protection and safety • Provision of waste collection facilities for the temporary storage of solid wastes prior to disposal at an appropriate and designated location • Waste segregation prior to disposal via a registered waste handler • Recycle where necessary
Drainage and Hydrology	• Excavated soils should not be left exposed to prevent drainage interference • Excavated soil should be used for back filling and landscaping
Air Pollution (Dust, Fuel and NCGs emissions)	• Sensitization of workers on environmental protection and safety • Control speed of construction vehicles • Water should be sprayed during the construction phase on dusty excavated areas • Provision of dust masks to workers for use when working in dusty conditions • Use of serviceable vehicles and machinery to avoid excessive smoke emission
Noise and Vibrations	• Even though most excavation activities maybe done manually, the contractor will be expected to use serviceable site equipment, machinery and vehicles with low noise emission • Machines not in use will always be switched off. • Construction works to be done during the day
Occupational Health and Safety concerns	• Appropriate safety signage to show on-going construction works will be erected on site

Potential Impact	Mitigation and Enhancement Measures
	• No children will be employed in the undertaking of the site works. Provision of an Identification Card will be a requirement to all workers on site. • Well-equipped first aid kits will be provided at working sites • All construction workers to be provided with appropriate personal protective equipment for related work • Adequate road signs to warn pedestrians and motorists of construction activities shall be provided at appropriate points • Construction vehicles shall not exceed maximum speed limit of 30km per hour within residential areas. • Ensuring that construction work is conducted by trained workers with strict adherence to specific safety standards
Loss of Vegetation	• Vegetation loss during site clearance should be mitigated through landscaping and restoration of sites to their original state.
Water pollution	• The contractor will be conscious of any other existing infrastructure such as water pipes and communication infrastructure which maybe using the road reserve during excavations
Visual Impact	• Ensure the sites are restored to their original state through backfilling and landscaping.
Operation Phase	
Employment of local labour	• Ensure gender equity in employment opportunities • Priority of employment opportunities to be given to the local residents to enhance ownership of the project • Continuous consultations with local communities to resolve emerging issues of concern
Solid Waste Generation	• Proper waste disposal of solid wastes generated during maintenance activities. • The wastes should be collected and disposed appropriately using a registered waste handler

Potential Impact	Mitigation and Enhancement Measures
Soil Contamination	• The Proponent to ensure that cases of potential overflow of sewer from man holes are immediately addressed when they arise without delay.
Occupational Health and Safety Hazards	• Workers conducting maintenance works must be provided with proper personal protective equipment related to their activities.
Decommissioning Phase	
Solid Waste management	• Collect, segregate and dispose wastes responsibly • Use of licensed waste handlers
Air pollution (Dust and fuel emissions)	• Control speed of construction vehicles • Water should be sprayed during the construction phase on dusty excavated areas • Provision of dust masks to workers for use when working in dusty conditions • Use of serviceable vehicles and machinery to avoid excessive smoke emission
Noise and Vibrations	• Even though most decommissioning activities maybe done manually, the contractor will be expected to use serviceable site equipment, machinery and vehicles with low noise emission • Machines not in use will always be switched off. • Decommissioning works to be done during the day
Visual Impact	• Rehabilitate/restore the site to its original state

Environmental and Social Management Plan

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
Planning Phase						
Human (Local community Contractor workers)	Conflicts related to loss of Land and Land Use	High	• Prepare a Resettlement Action Plan (RAP) for purposes of compensation of assets and crops where land will be acquired particularly for wayleave purposes • Prepare a Grievance Redress Mechanism (GRM)	TWWDA Consultant Team	• Minutes of PAPs consultation meetings • Comprehensive RAP Report • Grievance Redress Mechanism	250,000
	Risk of conflicts during workforce recruitment (discriminatio	Medium	• Priority of employment to be given to the local people	TWWDA Contractor Resident Engineer	• Staff records • Records of grievances	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	n, child labour engagement etc)		• Contractor to ensure equal opportunities in labour engagements for both men and women • Contractor to adhere to the requirements of the Employment Act, Section 38 by keeping records of all workers engaged indicating date of employment, name, national ID number, age, sex, hours of work and wages paid • Establishment of a Grievance Redress Mechanism (GRM)			
	Potential risk of insecurity due to influx of job seekers	Medium	Contractor to develop a Labour Influx Management Plan to manage influx of workers	TWWDA Contactors	Availability of a Labour Influx Mgt Plan and the project GRM Public sensitisation minutes	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	Risks during construction of the Contractor' campsites	Medium	• Risk assessment for proposed campsite sites' which must be approved by the client • Proper housekeeping measures to manage stock of materials • Campsite not to be located in a highly inhabited site • The campsite to be equipped with fire extinguishers • Campsites must be well fenced and appropriate safety signages displayed in strategic locations • Enforcement of speed limit of 20kph for vehicles within the campsite	TWWDA Resident Engineer Contractor	Risk Assessment Report Accident reports	2,000,000
Animals, plants and biodiversity	Loss of natural vegetation during	Low	• Vegetation clearance to be limited to the minimum required place • Revegetation after construction	TWWDA Resident Engineer Contractor	Restored site	30,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	campsite construction					
Construction Phase						
Human	Disruption of road users' movement on the road due to road closure or diversion during pipes laying activities	Medium	• The client to seek necessary permits from authorities • Use of safety signage to guide road users to alternative routes on sections that may experience disruption	TWWDA Contractor	• Permits • Availability of safety signage in affected road sections	N/A
	Occupational health and safety risks	High	• Contractor to hire a qualified safety officer to ensure adherence with safety requirements in a workplace • Conducting training	TWWDA Contractor Resident Engineer	• Availability of PPEs and first aid kits • Availability of safety signage in	1,500,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Provision of adequate PPEs to all workers e.g safety shoes, helmets, gloves, overalls, dust masks etc • Display of appropriate safety signage to enhance awareness creation on the potential hazards of the project • Provision and display of emergency contacts in appropriate areas • Safety induction of new workers • Provision of a well-stocked first aid kit at all active sites and regular training of workers on basic first aid procedures • All Contractor to acquire WIBA Insurance for all workers as per Work Injury Benefits Act, 2007		appropriate areas • Records of Tool box talks • Attendance list	
	Dust pollution	Low	• Vehicles and site trucks should be driven under the recommended speed of 40Km/h	TWWDA Contractor	Adequate PPEs to workers	350,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			within public areas such as schools, and markets • Sprinkle water on degraded access routes to reduce dust emission during transportation of materials to project sites • Earth moving be done under dump conditions as much as possible to prevent emission of dust into the air, • Similarly, piled materials (sand and aggregate) should be maintained dump to prevent dust emissions • Provision of dust masks to workers working in dusty environs	Resident Engineer	Records of traffic accidents involving site vehicles	
	Noise pollution due to use of heavy machinery and earth	Low	• Discouraging hooting within public places or reserved places • Proper servicing of vehicles	TWWDA Contractor Resident Engineer	Vehicle maintenance records	50,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	moving equipment		• Monitor noise levels at sensitive receptors (residential areas, schools, hospitals) • Use of hearing protective gears e.g. ear muffs and ear plugs by workers working in noisy environments			
	Risk of gender-based violence/harassment/abuse	Low	• All cases of GBV to be reported, investigated and resolved • Sensitisation of workers on issues of GBV	Contractor Resident Engineer	GBV Reports Training Reports	100,000
	Public health risk; spread of HIV/AIDS, STDs and other communicable diseases	Medium	• Worker's sensitization on HIV/ AIDs and other STDs • Provision of condoms to workers • Distribution of HIV & AIDS awareness materials in collaboration with NACC	Contractor Resident Engineer	Records of toolbox talks	250,000
	Conflicts amongst workers and	Low	• All Contractor to have a GRM for workers • Sensitization on project GRM	TWWDA Contractor	Training reports	250,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	local communities		• Reporting on all grievances	Resident Engineer	Grievance reports	
	Fire risks	Medium	• Provision of firefighting appliances in offices, stores, site vehicles • Regular training on fire risk reduction to workers during tool box talks	Contractor Resident Engineer	• Availability of firefighting appliances • Records of tool box talks	200,000
	Poor hygiene and sanitation	High	• Provision of clean drinking water and sanitation facilities to workers at the work place • Provision of mobile toilets and water for sanitation purposes	Contractor Resident Engineer	Availability of clean drinking water and sanitation services on site	50,000
	Labour engagement risks	Medium	• Contractor to ensure equal opportunities in labour engagements for both men and women	Contractor Resident Engineer	Staff records (M/F)	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Timely payments to workers to be made in line with agreements			
Environment (Land, Biodiversity/ plants & animals, Water)	Interruption of existing infrastructure such as roads and internet cables	Medium	• Involvement of all parties utilising the road reserve to ensure minimum destruction during construction phase	TWWDA Contractor Resident Engineer	Copies of agreements	30,000
	Solid waste generation	High	• A site waste management plan should be prepared by the contractor prior to commencement of construction works • Proper solid waste receptacles and storage containers should be provided • Arrangements should be made for the regular collection of litter and for its disposal with the County Government • Ensure that the solid waste collection, segregation, and disposal system is	• TWWDA • Contractor Resident Engineer	Availability of a solid waste management plan	150,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			functioning properly at all times during the construction phase; • Recycle and re-use wastes where possible such as scraps metal.			
	Interference with physical setting • Blockage of natural drainage system at valley crossing; • Excavation for creation of access routes and	Medium	• The structures to be developed should be aesthetically acceptable to blend in with the surrounding; • The proponent shall as much as possible complete the works in such a way that natural aesthetics shall be retained at the locations • Restoration shall be undertaken to ensure that the original setting is as much as possible retained	• TWWDA • Contractor • Resident Engineer	Restored/ rehabilitated sites	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	related structures.					
	Water quality Impacts	High	• Isolate solid wastes disrupted from the works during excavations for safe disposal. The wastes should be collected and disposed in approved sites. • Earth moving and excavations for the construction are carried out considering safety of the river and surface drainage. Control siltation of rivers and other surface drains • Ensure spilt oil does not discharge into water sources • Provide oil spill containment including concrete platform for servicing of construction equipment and holding of scrap oil drums.	TWWDA Contractor Resident Engineer	Water quality tests	30,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	Drainage and Hydrology disruption	High	• Excavated channels to follow contours to avoid interference with surface drains • Where necessary, the drains to be directed along the construction line towards existing drainage systems to cater for storm water during the rains. • Utilise excavated soil to level excavated ground where necessary and cover the pipelines • Construction materials and other debris (lime, cement and fresh concrete.) should be handled carefully to prevent them from finding their way into the nearby water sources	Contractor Resident Engineer	Clear drainage	N/A
	Soil Erosion	Medium	• Re-plant the indigenous vegetation as much as practical once work is completed. • Limit vegetation clearance unless where unavoidable circumstances appear;	Contractor Resident Engineer	• Rehabilitated sites	30,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Contain excavated soils so that they will not find their way into nearby water sources; • Cement mixing should be done in a designated area away at a safe distance from storm water drains; • Spilled cement or concrete should be collected and disposed away from natural water ways or storm water drainage • Sensitise workers and enable them to properly handle concrete spillages or waste cement; • Re-vegetation of exposed areas around the site should be carried out rapidly in order to mitigate against erosion of soil through surface water runoff and wind erosion.		• Incidents of soil erosion reported	
	Impact on natural vegetation	Medium	• Cutting of trees to be restricted to the wayleave area only	TWWDA Contractor	• Records of number of trees cut	500,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Issuance of tree seedlings to PAPs and local community to compensate for the trees cut and increase forest cover	Resident Engineer	• No. of tree seedlings issued to PAPs and local community	
	Contamination of the soil, air and water by waste generated during construction works	Medium	• A site waste management plan to be prepared by the contractor prior to commencement of construction works • Practicing 3Rs of waste management: reduce, reuse, recycle of materials • Recycling of all E-waste	Contractor Resident Engineer	• Re-use/ recycling documents • Contracts with licensed waste handlers	250,000
	Impacts on air quality from vehicle exhaust emissions	Low	• Drivers shall not leave vehicles idling so that exhaust emissions are lowered • Contractor to ensure that all machinery and equipment used on site are well maintained	Contractor Resident Engineer	• No vehicle idling on site	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			and in good working conditions to ensure minimum emissions are produced		• Vehicle maintenance records	
Operation Phase						
Environment	Risk of encroachment and construction of structures on the water easement corridor and wayleaves	High	• Mapping and installation of beacons which illustrate the width of the pipeline reserve • Regular patrol of the pipeline corridor for encroachment • Prosecution of encroachers as required by County By-Laws on way leaves and road reserves maintenance. • Conduct public sensitization programs on way leave protection	TWWDA EWASCO	• Well maintained wayleave	To be part of operational costs
	Risk of water pipeline bursts leading to water wastages	High	• Regular check, repair and maintenance of the water pipeline	EWASCO	Percentage of Non-Revenue Water	To be part of operational costs

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	(increased non-revenue water)		• Activate a community watch group for information sharing on the status of the water line • Implement a leak detection and repair program (including records of past leaks and unaccounted- for water to identify potential problem areas)			
	Risk of Illegal connection to the water pipeline	High	• Constant inspection by EWASCO officials and installation of leak and burst detectors at designated areas along the pipeline. • Conduct public sensitization programs on importance not interfering with the water pipeline and the need to seek official water connection from the area WSP, EWASCO	EWASCO	Non-Revenue Water	To be part of operational costs
	Water Discharges during	Medium	• Initiate sensitization programmes on best practices on solid waste management right from the source, sorting, transportation and disposal	• EWASCO • Contractor	Minutes of sensitisation meetings	To be part of operational costs

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	flushing/cleaning of pipes to remove sediments					
	Risk of vandalism of the infrastructure	High	• Put in place proper security measures to guard the infrastructure and reduce cases of vandalism • Regular sensitisation of local community on importance of protection of the water infrastructure • Activate a community watch group for information sharing on the status of the water supply line	• TWWDA • EWASCO	Sensitisation Meetings and minutes	To be part of operational costs
Decommissioning Phase						

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
Human	Occupational health and safety risks	High	• Provide the correct PPE for the workers when conducting the demolition activities; • Conduct training on health and safety procedures to the workers prior to commencement of demolition • Provision of adequate PPEs to all workers e.g safety shoes, helmets, gloves, overalls, dust masks etc • Display of appropriate safety signage to enhance awareness creation on the potential hazards involved during decommissioning • Provision and display of emergency contacts in appropriate areas • Provision of a well-stocked first aid kit at all active sites and regular training of workers on basic first aid procedures	• TWWDA • Contractor • EWASCO	• Availability of PPEs and first aid kits • Availability of safety signage in appropriate areas • Records of Tool box talks • Attendance list	To be determined during development of a decommissioning plan

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Acquisition of WIBA Insurance for all workers as per Work Injury Benefits Act, 2007			
	Loss of jobs and income	High	• Notify the employees in advance on the Project closure date and adequately compensate them; • Dismissal procedures to be compliant with Employment Act, 2007; • Provide counselling & alternative skills for alternative activities; • Employer should find alternative means of livelihood for the staff who were employed at the water supply project where possible.	• TWWDA	Notice to employees	N/A
	Dust pollution	Low	• Speed control of site vehicles to a max of 40kph • Water should be sprayed on dusty excavated areas	• TWWDA • Contract or	• Adequate PPEs to workers • Records of traffic	To be determined during developme nt of a

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Provision of dust masks to workers for use when working in dusty conditions • Use of serviceable vehicles and machinery to avoid excessive smoke emission		accidents involving site vehicles	decommissioning plan
	Noise pollution due to use of heavy machinery and earth moving equipment	Low	• Schedule noisy activities during the day time period • Use silencers on machines where possible; • Ensure machinery is well maintained to reduce noise emitted	• TWWDA • Contractor	NEMA license	To be determined during development of a decommissioning plan
	Risk of gender-based violence/harassment/abuse	Low	Sensitisation of workers on issues of GBV	• Contractor	GBV Reports • Training Reports	To be determined during development of a

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
						decommissioning plan
	Public health risk; spread of HIV/AIDS, STDs and other communicable diseases	Medium	• Worker's sensitization on HIV/ AIDs and other STDs • Provision of condoms to workers • Distribution of HIV & AIDS awareness materials in collaboration with NACC	• Contractor	• Records of toolbox talks	To be determined during development of a decommissioning plan
	Conflicts amongst workers and local communities	Low	• All Contractor to have a GRM for workers • Sensitization on project GRM • Reporting on all grievances	• TWWDA • Contractor	Training reports • Grievance reports	To be determined during development of a decommissioning plan
Environment (Soil, air and water)	Solid waste generation	Low	• Disposal of solid waste in compliance with EMCA 2006 Waste Management Regulations;	• TWWDA • Contractor	License of the waste handler	To be determined during developme

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Segregation of waste to encourage reuse and recycling; • Engagement of a registered waste handler	• EWASCO	Waste recycling plan	nt of a decommissioning plan
	Contamination of the soil, air and water by waste generated during decommissioning works	Medium	Collect, segregate and dispose wastes generated responsibly by engaging a registered waste handler	• TWWDA • Contractor	Contracts with licensed waste handlers	To be determined during development of a decommissioning plan
	Site restoration and rehabilitation impacts during decommissioning activities	Medium	Rehabilitate/restore the site to its original state	• TWWDA • Contractor	Restored/ rehabilitated sites	To be determined during development of a decommissioning plan

ESMP Implementation arrangements

Entity	Roles and Responsibilities in ESMMP Implementation
Tana Water Works Development Agency (TWWDA)	• To ensure that all project operations are conducted in accordance with their internal environmental policies and in accordance with the ESMMP • Ensure that all authorizations/Approvals/Licenses required for project implementation are obtained; • Request the contractor operates on the basis of valid Authorizations/approvals/licenses for the activities to be implemented; • Ensure that the EMP is an integral part of the contract document with the Contractor and that the contractor will be responsible for its implementation; • Establish institutional linkages with relevant parties in the project implementation as needed, or designate a representative for that purpose; • Ensure that the various project activities comply with the mitigation measures proposed in the Environmental Management and Monitoring Program (ESMMP); • Make regular inspections to all the different activities with regard to social aspects, health, safety and environment and check for any non-conformity with the ESMMP attributable to the Contractor and identify the steps taken for its correction
National Environmental Management Authority (NEMA)	Regulatory function • Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programmes and projects. • Identify projects and programmes or types of projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under this Act; • Monitor and assess activities, including activities being carried out by relevant lead agencies, in order to ensure that the environment is not degraded by such activities

Entity	Roles and Responsibilities in ESMMP Implementation
Kyeni Water and Sanitation Company	• Operate and maintain the water supply system in a manner that will reduce non-revenue water • Carry out effluent quality analysis in collaboration with other government lead agencies • Ensure treated wastewater and sludge for re-use/disposal meets accepted health standards • Conduct regular monitoring and inspection to ensure facilities are not interfered with • Ensure that effluent discharged from industries into the sewage system is treated and meets effluent discharge quality standards
Contractor	• Prepare own ESMP implementation plan as well as a health and safety plan within 30 days of signing of the contract. • Operate on the basis of valid Licenses/Approvals/Authorizations for the activities to be implemented; • Prevent or minimize the occurrence of accidents which might cause damage to the environment and be able to respond positively to an accident if it occurs; • Ensure compliance to working procedures and environmental requirements and health and safety established in the contract with the Proponent; • Minimize environmental damage, waste control, avoid pollution, prevent loss or damage on natural resources and minimize the effects on the users and occupants of surrounding lands and the public; • Provide Personal Protective Equipment (PPE) to workers which are appropriate to the tasks to be performed and ensure that it is used; • Manage the complaints process on the elements that fall within its jurisdiction, or refer complaints to the Proponent, so that they can receive treatment/appropriate response;
Supervising Consultant/ Resident Engineer	• To ensure that the ESMMP is up to-date and is being used by the contractor. • Conduct periodic audits of the ESMMP to ensure that its performance is as expected

Entity	Roles and Responsibilities in ESMMP Implementation
Embu County Government	• The relevant departmental officers in the above county government will be called upon where necessary during Project implementation to provide the necessary permits and advisory services to the project implementers
Directorate of Occupational Safety and Health Services (DOSHS)	• To register the project site as a work station and subsequent enforcement of relevant provisions in occupational safety and health in line with Occupational Safety and Health Act, 2007.
Water Resource Authority (WRA)	• Monitor and enforce conditions attached to water permits and water use; • Regulate and protect water resources quality from adverse impacts; • Regulate and protect water resources from adverse impacts; • Regulate water infrastructure, use and effluent discharge; • Work with the beneficiary communities to manage and protect water catchments; • Establish water resources monitoring networks

In summary, the implementation of the proposed Water Supply Project holds numerous benefits. It will substantially increase the availability of clean water to Runyenjes town and the surrounding areas, leading to a marked improvement in public health by reducing water-related ailments. Additionally, communities will benefit from reduced time and effort spent fetching water, allowing for more productive economic activities and thereby enhancing overall quality of life. Furthermore, the project will create employment opportunities and facilitate skills transfer within the local population, contributing to the broader socio-economic well-being of the community. While negative environmental impacts are primarily associated with the construction phase, the proposed mitigation measures are comprehensive and will be closely monitored and evaluated throughout the project implementation.

The consultant recommends licensing of the proposed Runyenjes Water Supply Project as a step towards increased access to clean drinking water which to a large extent contributes towards achieving Vision 2030. The Proponent should meet the conditions to which NEMA may set during issuance of license.

1. CHAPTER ONE: INTRODUCTION

1.1. Background Information

The Government of the Republic of Kenya (GoK) has strategically integrated its National Water Policy to encompass the objective of attaining universal access, reaching 100% coverage, to secure water and comprehensive sanitation facilities for the entirety of the nation's populace by the year 2030. In pursuit of this goal, the GoK has executed an extensive sectoral reform initiative since 2002, with the primary aim of synergizing the governance of both Water Resources Management and Water Supply and Sanitation (WSS) across the entirety of the nation's expanse. This reformative project has been galvanized by the enactment of the Water Act (2016) a legislative framework designed to harmonize the administration of Water Resources Management and Water Supply and Sanitation Services.

Notably, in August 2010, Kenya instituted a novel Constitution, within which a pivotal benchmark is elucidated under Chapter IV - Bill of Rights, specifically in article 43(1) (b) and (d). This constitutional provision establishes that every individual holds the entitlement to enjoy reasonably adequate standards of sanitation, as well as access to abundant quantities of clean and safe water. The Project specific purpose for the Runyenjes Water Supply is to improve the access, quality, availability and sustainability of water supply services in Runyenjes and its neighbouring towns located in Embu County. The Project is to be implemented by Tana Water Works Development Agency (TWWDA). The Agency is among the Nine Water Works Development Agencies established through a Legal Notice No.28 of 26th April, 2019 in line with the Water Act 2016.The Agency's mandate is to ensure development of public water works to ensure access to quality water and sanitation services. The agency's geographical area of jurisdiction is Kirinyaga, Nyeri, Meru, Embu and Tharaka Nithi counties covering an area of 17,189.7Km^2 with a population of 3,917,065 people (Kenya Housing and Population census 2019).

In order to stimulate economic growth and end perennial water problem in Runyenjes Town, the TWWDA has plans to implement the proposed Runyenjes water supply project. Further support through capacity building and institutional strengthening will consolidate the gains in the water provision sector thereby bringing about improvement and sustainable infrastructure development in the area. Furthermore, the proposed Runyenjes Water Supply Project aims to fulfil the requirements of the national and international Environmental legislations, as outlined in the Environmental Management and Coordination Act (EMCA) 1999, and the AfDB Integrated Safeguards Systems 2023 which necessitates the undertaking of an Environmental and Social Impact Assessment for projects of such nature. In compliance with this obligation, TWWDA through the consultant team has

developed an Environmental and Social Impact Assessment (ESIA) Project Report, in anticipation of the project's execution, as per the guidelines provided.

1.2. Objectives and Scope of the Project

This ESIA has been conducted in compliance with the Environmental Impact Assessment Regulation as outlined under the Gazette Notice No. 56 of 2003 revised in 2009 established under the Environmental Management and Coordination Act (EMCA), 1999 of Kenya and the AfDB Integrated Safeguards System 2013. The Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives:

- To identify all potential significant environmental and social impacts of the proposed Project and recommend measures for mitigation of the negative impacts and measures to enhance the positive impacts.
- To assess and predict the potential impacts during site preparation, construction and operational phases of the project.
- To verify compliance with environmental regulations.
- To generate baseline data for monitoring and evaluation of how well the mitigation measures will be implemented during the project cycle.
- To allow for public participation.
- To give an Environmental and Social Management Plan to mitigate the identified impacts so as to ensure sustainability of the proposed Project.
- To recommend cost effective measures to be implemented to mitigate against the expected impacts

1.3. Significance of the Project

The Runyenjes water supply project holds immense significance as it promises to deliver portable water and thus improve the quality of life of the residents of Runyenjes.

1.4. Approach and Methodology

The study adopted a participatory and collaborative approach to ensure active participation of all the key stakeholders. As such, discussions were held with community members within the project area and relevant key stakeholders with the assistance and coordination of the proponent and the local administration.

The ESIA study was carried out using the methodology described in EMCA, 1999 and Environmental (Impact Assessment and Audit) Regulations 2003. The following study procedures were used in the study.

1.4.1. Environmental Screening

The screening process helped narrow down to the most critical issues requiring attention during the environmental impact assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects.

1.4.2. Desk Review

The consultant reviewed the baseline information on the project area, project design documents and relevant government legislations and guidelines which are presented in Section 3 of this Report among others.

1.4.3. Site Assessment

Field investigations were undertaken from February 2024 to March 2024 for data collection and community consultations. Public consultations in form of key informant interviews and public *barazas* were conducted with communities living within the vicinity of the project area. The minutes and lists of attendees at the consultations are provided in the appendices of this report.

Key Stakeholder Consultations were done with various key stakeholders who included Embu County Government officials, public administration, key government ministries and public and private institutions within the project area. A comprehensive list of all the consulted stakeholders is attached in the appendices.

1.4.4. Data Analysis and Reporting

The consultants have used their past experience and knowledge to analyse the data from the desk studies and site assessments in order to determine the potential impacts of the proposed water supply project, the severity of effects arising from these impacts and how the adverse impacts can be best mitigated and positive impacts enhanced.

This analysis provides the framework for the recommendations on corrective actions and remedial measures and provides the basis for the formulation of the environmental and social management plan which forms part of this report.

1.5. ESIA Report Outline

This report follows the format prescribed in the Legal Notice No. 101 of 13th June 2003 which deals with the Environmental (Impact Assessment and Audit) Regulations.

- Chapter One outlines the background and procedure to the ESIA study process

- Chapter Two provides a description of the project
- Chapter Three provides a description of the project baseline environment
- Chapter Four reviews relevant policies, legal, regulatory and administrative frameworks governing water and sewerage sub sector in Kenya
- Chapter Five provides an analysis of project alternatives
- Chapter Six reports on the outcome of stakeholders' consultations and public participation
- Chapter Seven analyses potential impacts of the proposed water supply project
- Chapter Eight outlines the proposed mitigation and enhancement measures for the proposed project
- Chapter Nine presents the Environmental and Social Management and Monitoring Plan (ESMMP)
- Chapter Ten provides the Conclusion and Recommendations of the ESIA Study
- Annexures

2. CHAPTER TWO: PROJECT DESCRIPTION

The proposed Runyenjes Water Supply lies in Runyenjes Sub County in Embu County and is expected to serve 25 sub locations. The source of water for this project is Thuci River approximately 12.2km inside Mt. Kenya Forest through the Irangi Station gate and approximately 135m upstream of the Ndamunge water project intake. The water supply system will consist of the following components;

- Diversion weir and intake chambers.
- Approximate 8.8km of main lines with varying sizes and pressure ratings
- A 15000 M^3 full treatment works
- No.-1000 M^3 RC storage tanks.
- No.-225 M^3 masonry storage tanks.
- No. – 500M^3 RC storage tanks.
- 2 No.-135M^3 masonry storage tanks
- 2-50M^3 masonry brake pressure tanks.

2.1. Proposed Project Designs

The proposed project will comprise of the following:

2.1.1. Water Source (Intake)

An intake comprising of a weir across the river and an intake chamber have been proposed with a capacity of 15000M^3/day. The proposed source of water is Thuci River and the point is marked by the GPS coordinates **37M 326808 E 9969613** in Runyenjes Sub County, Embu County. The intake will be located approximately 14km inside Mt. Kenya Forest through the Irangi Station gate and will be upstream of the Ndamunge water project intake. Diversion weir body: A reinforced concrete weir across the river has been proposed to dam the water, set and raise the static head of the water and direct the water into the intake chamber. A reinforced concrete intake chamber has been proposed with two chambers i.e., collecting chamber and gate valve chamber.

The intake site is rocky which will provide a good foundation for the intake. The elevation of the top of the weir is 2274.83 masl which is sufficient to move the water by gravity to the proposed water treatment works facility.

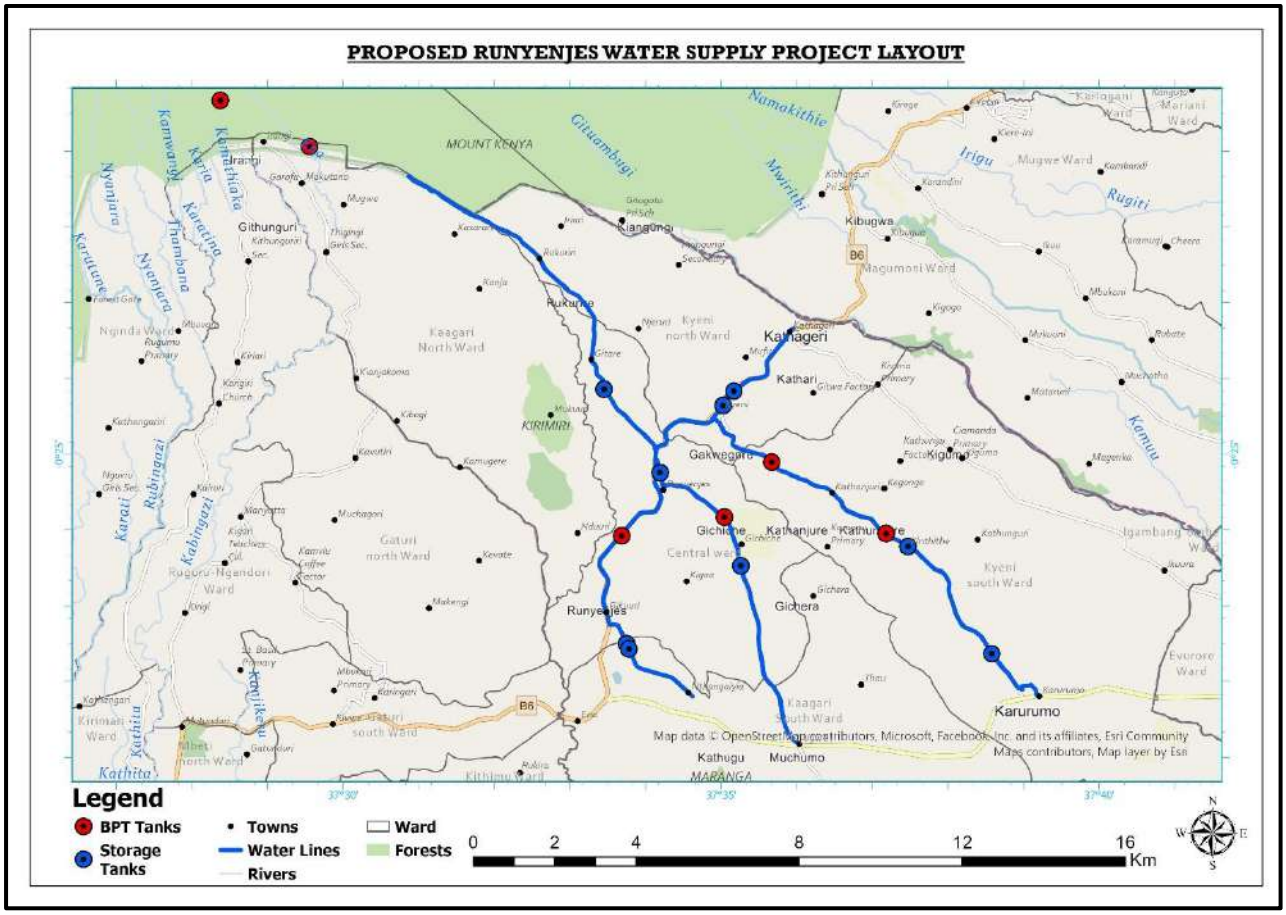


Figure 2-1: The proposed Project Layout



Figure 2-2: Proposed intake site at River Thuci

2.1.2. Raw Water Gravity Main Pipeline

The water from the intake will be transmitted to the treatment works site through a raw water gravity main. From new Intake Works at River Thuci the raw water will traverse the dense indigenous Mt. Kenya Forest to the proposed water treatment Works facility. The line will be approximately 14 km. The conveyance line will across an undulating terrain with steep slopes within the forest. HDPE pipes of up to PN 20 will be considered in such areas and appropriate number of air valves and washout will be factored.

2.1.3. Water Treatment Facility

The water from the intake will be transmitted to the water treatment facility which will be located at the edge of Mount Kenya Forest (Irangi) next to St. Joseph Munyutu Primary School and will have a capacity to treat water up to 15000M³/day. The components of the proposed water treatment works shall include:

- Inlet Structure with robust flow measurement devices,
- Stilling Well
- 2 Nr. Flocculation Basins
- 4 Nr. Horizontal Flow Sedimentation Tanks
- 8 Nr. Rapid Sand Filters
- Chemical Storage and Dosing Building
- Administration Building
- 1,000 M³ capacity clear water tank
- Chlorine Storage and Dosing Building
- 150 M³ Elevated Backwash Tank
- Staff Houses
- Onsite Ancillary Works



Figure 2-3:Proposed water treatment site near Munyutu Primary School

2.1.4. Transmission Lines

The proposed project will have the following lines:

Table 2-1: Mainlines and distribution lines

Name of Pipeline	Total Length(m)	Maximum Design Discharge (m^3/s)	Area Served/Termination point	Pipe Size and Material
Raw Water Gravity Main	14000	0.17361	Treatment Works	450mm HDPE
Treated Water Main	3800	0.16667	Rukuriri	450mm HDPE
	3920	0.0983	Gitare tank	400mm HDPE
Ugweri Main line	2200	0.08843	Tee off to Gikuuri	400mm HDPE
	3760	0.05134	Gichiche storage tank	315mm HDPE
	4680	0.02518	Ugweri town	250mm HDPE
				160mm HDPE
Gikuuri main line	2800	0.03706	Gikuuri town	315mm HDPE
	3050		Nthagaiya	250mm HDPE
				225mm HDPE
				160mm HDPE
Kathageri Mainline	4440	0.0439	Kyeni tank	400mm HDPE
	2500	0.01013	Mufu	280mm HDPE
			Kathageri	160 mm HDPE

Karurumo Mainline	2100	0.02789	Kathanjuri tank	280mm HDPE
	3760	0.02411	Kathunguri tank	250mm HDPE
			Kariru	
			Karurumo tank	225mm HDPE
				160mm HDPE

2.1.5. Main Storage Tank

The main storage tank will be at Gitare market which is approximately 10km from the proposed treatment works site. This tank will act as a BPT and a storage tank. Other storage tanks along the line include;

- Rukuriri storage tank – 500 M^3
- Gikuuri storage tank – 500 M^3
- Nthagaiya storage tank – 500 M^3
- Gichiche storage tank –225 M^3
- Ugweri storage tank –500 M^3
- Kar 1 storage tank – 135 M^3
- Kathanjuri storage tank – 135 M^3
- Karurumo storage tank – 500 M^3
- Kyeni storage tank – 225 M^3
- Mufu storage tank – 225 M^3

2.1.6. Brake Pressure Tanks.

Two 50M^3 break pressure tanks have been proposed for the raw water gravity main. The design prefers the brake pressure tanks over the pressure reducing valves (PRVs) for pressure reduction.

The brake pressure tanks will be located in such a way that the pressure is reduced as required and the terrain downstream provides sufficient pressure to transmit water to the desired points downstream. The BPTs have been designed to reduce pressures by 32m to 200m depending on the pipeline profile.

2.1.7. Appurtenances.

Air valves will be provided along the pipeline to protect the system from trapped air or from collapse due to vacuum. The following was considered in locating and designing the air valves;

- Located at all notable high points along pipeline.
- Where the pipeline section is flat and long, air valves are to be installed at approximately 600 m intervals.
- Double orifice air valves were selected in sections where air lock and vacuum are likely to occur otherwise single orifice air valves were selected.
- The air valves were equipped with isolation valves for easy removal and repair.
- Selected air valve size was 50mm and 80mm diameter depending on the size of the main pipe.

The following will be considered in locating and designing the washouts:

- Washouts will be provided at selected notable low points in the pipeline for flushing sediments from the system.
- Provision will be made for an open drain or drain pipe to lead the water from the washout to a suitable discharge point nearby.
- The ends of supply pipelines will be provided with washouts as long as they are sloping towards the end.
- A gate valve will be located on the wash out pipeline as appropriate.
- 50mm and 80mm washout size will be selected depending on the size of the main pipeline
- Spill chambers will be provided for the washout out flow

Section valves have been provided for in the design to facilitate operation and maintenance of the system including managing water rationing. Sections valves shall be located in the following positions:

- At the branching point i.e., at the start of every distribution line.
- Before and or after major structures such as the intake and water tanks.
- 2-3 km apart along the pipeline.

Rectangular or square masonry valve chambers have been designed to house the section valves, air valves and washout valves. Some of the considerations made in the design of the chambers include;

- The internal dimension of at least 1200mm x 1200mm and a height dependent on the site conditions. This will allow adequate space for operation.
- Only steel pipe fittings inside the chamber have been selected.

- Lockable chambers cover to avoid vandalism and ensure proper management of the facility.
- Step iron/access ladders to be installed on the inside of the chamber wall to facilitate access of the facilities inside.

2.1.8. Anchor and Thrust Blocks.

Class 20 mass or reinforced concrete anchor blocks will be designed at the points where pipe changes direction and size, at horizontal and vertical bends, at the blank ends, at off takes, on steep slopes (>1:6), at the valve's sections and any other points where surges or water hammer effects are expected to occur. The anchor and thrust blocks have been designed to be able to withstand at least 1.5 times the nominal working pressure.

Table 2-2: Details of water supply Systems

Activity	Proposed Scope of Works
Intake Works	New Reinforced Concrete Run-off Weir Intake on the Thuci Rivers for New Munyutu Treatment Works
Raw Water Mains	New ND 450mm, 14Km long HDPE PN20 Raw Water Gravity Main to New Munyutu Treatment Works
Treatment Works	New Munyutu Water Treatment Works, Full Conventional Treatment Works of gross capacity 15,000m³/d.
Transmission Mains	DN 150 - 450mm HDPE mains, Total Length 38Km
Storage Tanks	10 Nr Reinforced Concrete Water Storage Tank • 500m³capacity tanks at Rukuriri, Gikuuri, Nthagaiya, Ugweri & Karurumo • 225m³ capacity tanks at Gichiche, Kyeni & Mufu • 135m³ Capacity tanks Kar 1 & Kathanjuri

2.2. Proposed Project Activities

The activities related to the proposed Runyenjes Water Supply Project with the construction of a weir at River Thuci have been classified into four distinct phases of project implementation: the planning phase, construction phase, operation phase, and decommissioning phase. Each of these phases has its specific set of activities and considerations, which will be discussed in detail in the following subsections of the report.

2.2.1. Pre-construction Phase Activities

The main activities during the pre-construction phase include:

- Resource mobilization.
- Conducting specific studies: feasibility studies, Hydrological Assesment, Design development, Environmental and Social Impact Assessment (ESIA), and Resettlement Action Plan (RAP).
- Acquisition of necessary permits.
- Tendering services.
- Site handover.
- Handover of drawing and water work plans and site layout to the contractor.

2.2.2. Construction Phase Activities

The construction phase entails the following activities:

1. **Site Preparation:**

- Clearing the construction site of any obstacles, debris, or vegetation.
- Excavating trenches for laying sewer pipes and installing other infrastructure.

2. **Weir and Water Intake Construction:**

- Creating space and river way blockage
- Excavating foundations for the weir structure.
- Constructing the weir and intake structures according to the approved design specifications.
- Installation of gates, screens, and other appurtenances for water control and intake.

3. **Pipeline Installation:**

- Vegetation clearance along the surveyed lines
- Excavating trenches according to the approved design specifications.
- Laying pipes carefully, ensuring proper alignment, slope, and joint connections.

- Backfilling the trenches with suitable material and compacting it to provide support and stability to the pipes.

4. Construction of the Tanks

- Clearance the construction site of any obstacles, debris, or vegetation. Ensure the site is properly leveled and compacted to provide a stable foundation for the tanks.
- Excavation of the area according to the approved design specifications for the tanks. Ensure proper dimensions and alignment of the excavation to accommodate the concrete tank structure.
- Foundation Preparation by compacting the soil and laying a suitable base material such as gravel or crushed stone to provide a stable and level surface for the tank base.
- Construction of formwork using timber or steel to create the shape of the concrete tanks. The formwork shall be strong, rigid, and properly aligned to ensure the tanks are constructed to the desired dimensions.
- Reinforcement Installation: within the formwork to reinforce the concrete structure will be installed to provide additional strength and stability to the tanks. The rebar layout should follow the specified design requirements.
- Concrete will be poured into the formwork, ensuring it is properly compacted and consolidated to eliminate voids and air pockets. Concrete mix with the appropriate strength and durability characteristics for the intended use of the tanks shall be considered.
- Curing of the concrete will be done to ensure it gains strength over time by maintaining adequate moisture and temperature conditions.
- Once the concrete has sufficiently cured, the formwork shall be removed to reveal the finished tank structure.
- Finishing and Sealing: of concrete tanks as required shall be done by smoothing any rough edges or imperfections.
- Installation of the necessary accessories such as inlet and outlet pipes, fittings, valves, and access hatches shall be done according to the tank design and specifications.

5. Machinery and Equipment:

A variety of machinery and equipment will be required to ensure efficient construction, operation, and maintenance. Some of these machinery and equipment include but not limited to:

- Dozer
- Poker vibrator

- Concrete mixer
- Excavator
- Backhoes
- Truck/Tipper
- Plain Roller
- Modern Survey Equipment
- Fusion Machines for HDPE Pipes
- Welding Machines

6. **Construction Workforce:**

Indicative workforce projections have been estimated from the design analysis. The EPC Contractor will prepare a more detailed workforce numbers and workforce management plans based on the commitments set out in this ESIA report. The construction workforce will comprise approximately 200 personnel. Construction jobs will comprise:

- Management – Site Resident Engineer, Supervisor, Foreman, Site Planner.
- Skilled – Quantity Surveyor, Safety Health and Environment Consultant, Welder, Site Operators
- Semi-Skilled – Electrician, Mechanic, First Aider
- Unskilled – General Labourer, Guards, Drivers

Depending on the activities at campsites, and materials stored at the place, the campsite might have low, medium to high impacts on social and natural environment of the area that needs proper assessment and mitigation measure put in place. The campsites will be decommissioned after construction phase of the project is completed

2.2.3. Operation Phase Activities

Upon the completion of the construction phase, the Runyenjes Water Supply project will be fully operational, ready to provide dependable water infrastructure. The responsibility for managing and operating the newly built water supply system will be entrusted to KYEWASCO, in alignment with the regulations outlined in the Water Act 2016 and the guidelines established by WASREB. To ensure that the water supply system complies with local, national, and international environmental sustainability standards and adheres to best practices, continuous monitoring will be conducted. Regular assessments and scientific tests will be carried out to confirm that the system maintains the required standards and effectively fulfils its intended purpose. Additionally, these periodic evaluations will ensure that the water supply system remains up-to-date with the latest advancements in water and sanitation infrastructure technology.

2.2.4. Decommissioning Phase Activities

The decommissioning phase of the project may be required under certain circumstances, including a change in project goals or government policies. Activities during this phase include:

- Preparation of a Decommissioning Plan.
- Demolition of affected structures.
- Sale of non-reusable materials to licensed scrap metal dealers.
- Landscaping efforts to restore affected land to its natural state.

2.2.5. Materials Required

1. **Construction Materials:**

- Concrete: for tanks, structures, and foundations.
- Steel: for reinforcement bars, pipes, and fittings.
- Bricks or blocks: for building structures and walls.
- Aggregate: for concrete mixtures and road construction.
- Cement: for binding materials in concrete.
- Timber or formwork: for temporary structures and support during construction.
- Steel and HDPE Pipes: for water distribution networks.
- Valves, fittings, and connectors: for controlling water flow and distribution.

2. **Electrical Materials:**

- Wiring and cables: for electrical connections and installations.
- Electrical panels and distribution boards: for controlling and distributing electricity.
- Lighting fixtures: for illuminating facilities and infrastructure.

3. **Mechanical Materials:**

- Pumps: for pumping water from sources and distribution.
- Motors: for driving pumps and other equipment.
- Filters and screens: for water treatment and purification.
- Mechanical parts and components: for equipment and machinery.

4. **Chemicals:**

- Water treatment chemicals: for disinfection, filtration, and purification.
- Cleaning chemicals: for maintaining equipment and facilities.
- Lubricants: for machinery and moving parts maintenance.

5. **Safety Equipment:**

- Personal protective equipment (PPE): for workers' safety.
- Safety signs and barriers: for hazard identification and prevention.
- Fire extinguishers and firefighting equipment: for fire safety.

Transportation of these materials shall be via trucks and pick ups which shall be availed by the selected contractor. The access to the forest is restricted and the routes shall be as prescribed by the Kenya Forest Service. There is an existing road created for development of forest resources within the Irangi forest to the proposed intake and there shall be no vegetation clearance to pave way for passages.

2.2.6. Resources Required

Electricity: Electricity will be required to power various equipment and facilities, including pumps, motors, lighting, and electrical systems. The flow however from the intake to the treatment works is expected to be via gravity. Alternative energy sources such as solar power may also be considered for powering certain components of the water supply project, especially in remote or off-grid areas.

Water: Water will be required for construction purposes, such as mixing concrete, dust suppression, and cleaning equipment. The water will be sourced from the existing water sources in areas off the river for construction including piped water from KYEWASCO. The water from river Thuci will be directly pumped to area of use in areas within the intake to support the intake works. In areas with far reach of sources shall be supplied with water bowsers provided by the selected contractor.

3. CHAPTER THREE: DESCRIPTION OF ENVIRONMENTAL AND SOCIAL BASELINE ENVIRONMENT

3.1. Project Location

The study area covers Runyenjes town and other rural areas of Runyenjes and Kyeni Constituency, Embu County. The area lies at an altitude of 1495.62 m (4906.89 ft) and lays on the wind-wide side of Mt. Kenya and about 25 km from Embu town along the Nairobi -Meru-Isiolo Road. The proposed intake works will be located along the Thuci River at GPS Coordinates Longitude 37.445080° E, Latitude 00.275618°S and altitude 2,248m ASL in Kanja North Sub-Location, Kagaari North East Location, of Runyenjes Ward. The intake comprises of a 10m long reinforced concrete weir. The treatment works are proposed at Munyutu within Kanja North Sub-Location. The project intends to supply water to the following administrative locations in Embu County:Runyenjes West Location, Runyenjes East Location, Kagaari Southwest Location, Kagaari Southeast Location, Kagaari Northeast Location, Kyeni South Location, Kyeni Northwest Location, A location map is given in the figure below.

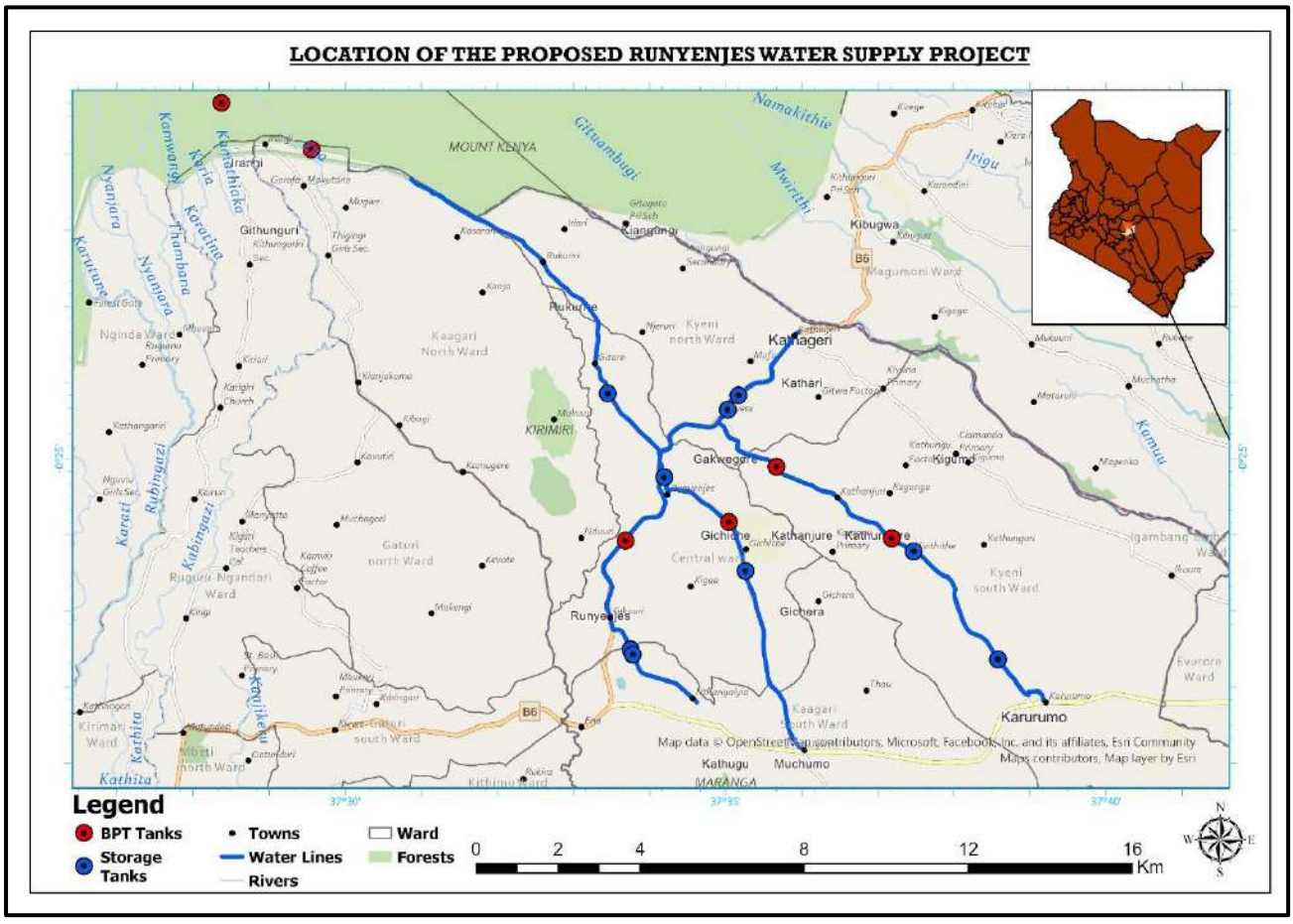


Figure 3-1: Map showing the proposed project area

3.2. Topography

Runyenjes falls within a diversified relief area in Embu extending from an elevation of approximately 700 meters above sea level along the Tana River bed to a high altitude of 5200 meters at the peak of Mount Kenya's in the North-west. The terrain presents a mix of geographical features, encompassing expansive plains including the Mwea fields and high raised hills such as the Ki valleys appearing at the floor of Mount Kenya. The proposed Runyenjes water supply project is situated within an environment characterized by rugged topography. The land is characterized with an intricate arrangement of small valleys and ridges, collectively contributing to the intricate network of stream tributaries and springs within the River Thuci basin. The topography of the region forms the basis of designing the location of the the proposed treatment plant to allow a conventional water supply system flowing using gravity

The general topography of the project area is characterized by gentle slopes which turn to steep slopes along the alignment of Ena River that passes on the western side of the town. The town is situated at an altitude of approximately 1500 meters above sea level.

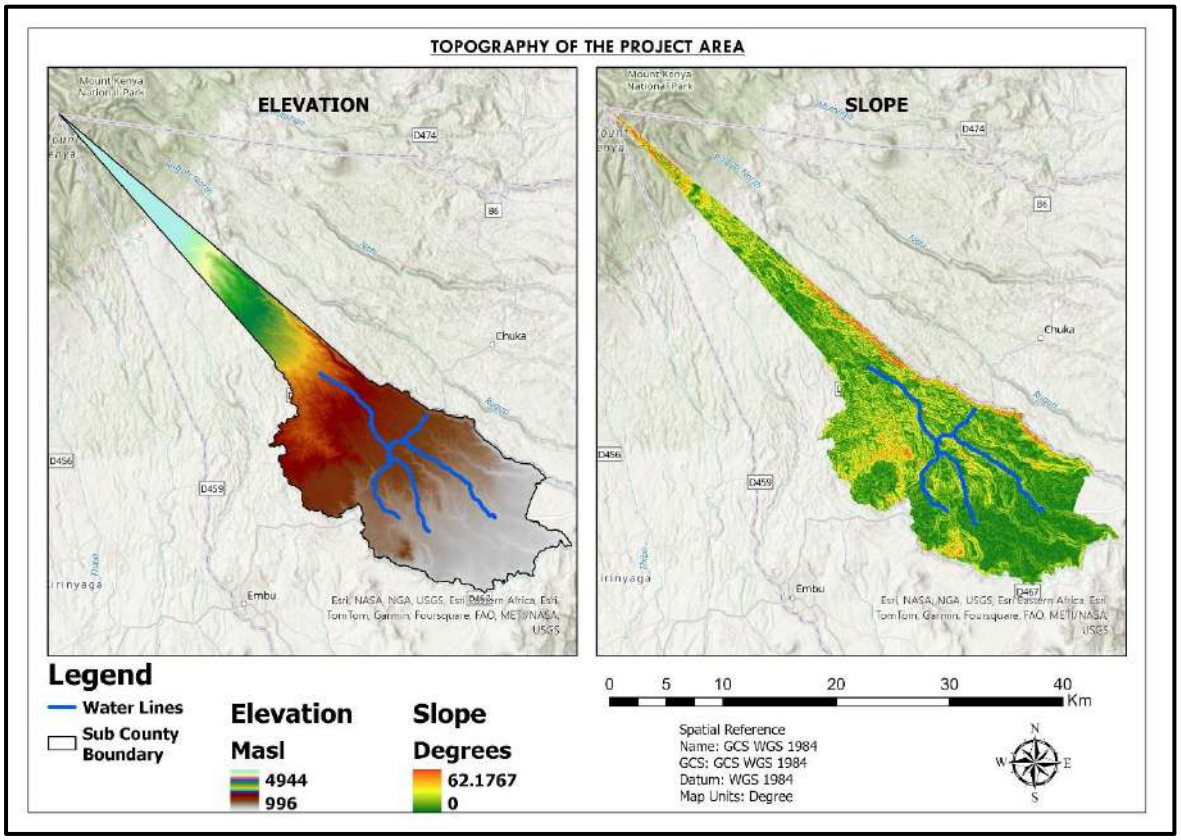


Figure 3-2: Topography of the Project area

3.3. Geology and Soils

The geological composition the project area in Runyenjes is heavily influenced by past volcanic activity from Mount Kenya. The area primarily consists of the Precambrian Basement System, covered by volcanic rocks and sediments from Mount Kenya's eruptions. Over time, erosion has shaped the landscape, resulting in unique soil formations found in the valleys of rivers.

The predominant geological features are quaternary volcanic rocks, overlaid with deep soils ranging from dark brown to greyish brown. Specifically, the area features Kenytes, a type of lava formed during Mount Kenya's volcanic activity. These Kenytes rest on the sub-Miocene pen planation, directly contacting weathered Basement System rocks, with no intermediate volcanic formations present.

3.4. Hydrology

Embu County as a whole is comprised of a network of six major rivers: Thuci, Tana, Kii, Rupingazi, Thiba, and Ena - each contributing to the region's surface water resources. Among these, the river Thuci stands out as the primary water source for Runyenjes town. Mt Kenya forest stands out as a gazetted water within the region with all these rivers and numerous springs emanating from it. The surface water sources have been vital in provision of water for domestic and agricultural use.

Community and government driven water projects have enhanced water accessibility by providing piped water to local communities, with some projects drawing water from river sections within the forest. Some of the water supply schemes within the Runyenjes include: Kyeni Water Supply and Sewerage Company and Ngagaka Water and Sanitation Company. Notably, community water schemes play a pivotal role by offering raw water access to areas not serviced by official water service providers. These schemes ingeniously draw water from upstream points, thereby facilitating gravity-fed systems.

A detailed hydrological survey was conducted by the client (annex 1). According to the hydrological survey report and data from WRA – TBA basin area office indicates that there are 16 No. authorizations/ permits issued for surface water abstractions/ storage within the Thuchi sub-catchment. 4No. of these abstractors are located along independent tributaries of the Thuchi River and shall not be impacted by the proposed activities on Thuchi River. 11(No.) of these abstractors are located along the main Thuchi River and downstream of the proposed intake and include:

1. Kamarandi Irrigation Community Based Organization
2. Tana Water Services Board (Embu-Mbeere Water Supply)
3. Rukuriri Tea Factory Co. Ltd
4. Kigumo Njuri Self Help Group

5. Kangai Sky Limit Self Help Group
6. Patrick Kiringa Mugeru
7. Kavando Water Project
8. Kanyuambora Irrigation Project Self Help Group
9. Kiambindu Bidii Self Help Group
10. Ndamunge Water Project CBO
11. Green Paradise Project Now

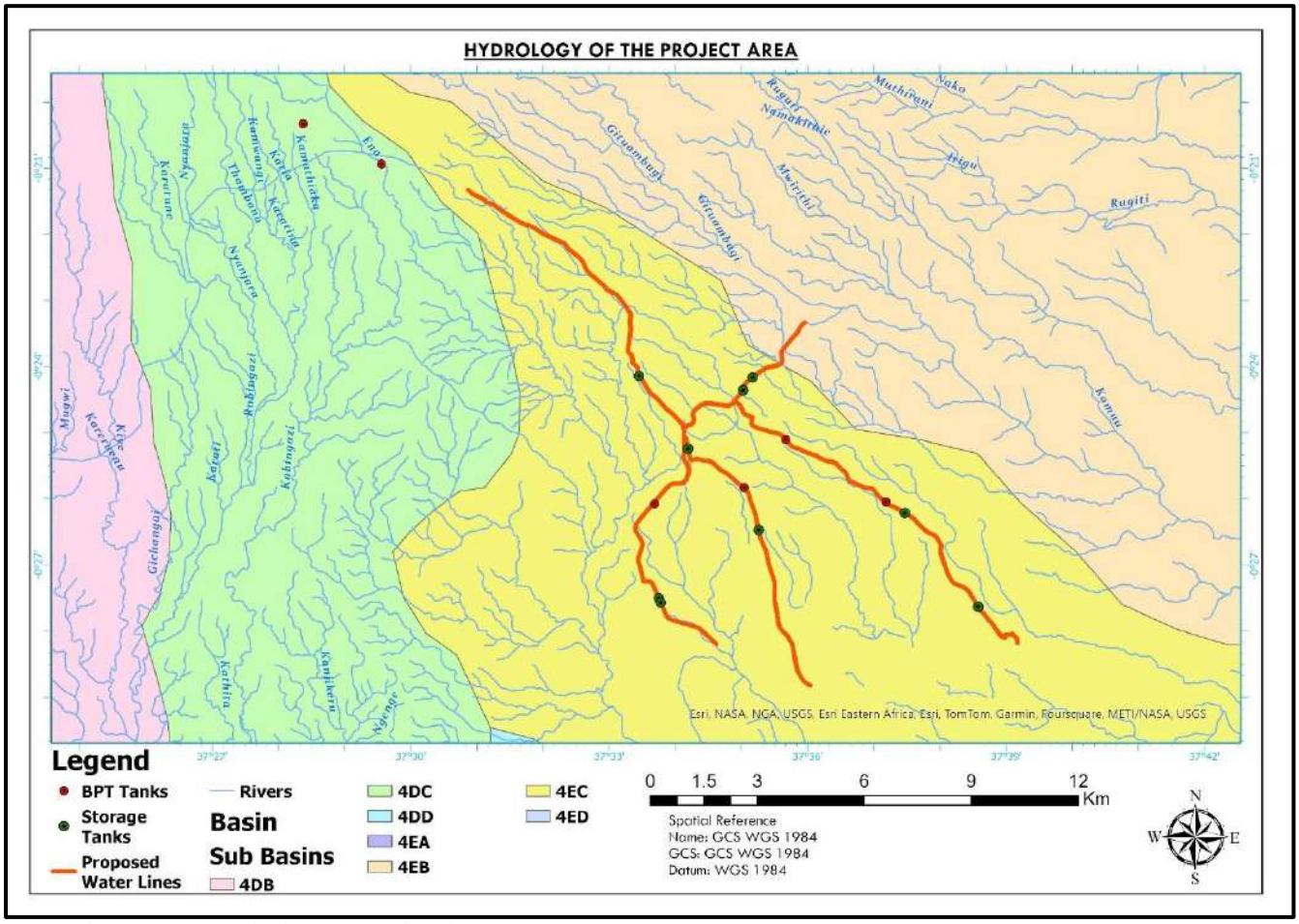


Figure 3-3: Hydrology Map for the project area

The proposed intake site is ungauged, analysis of the hydrology of the intake was based on an evaluation of the flow measurements at an RGS operated by WRA on the Thuchi River which is 61.31 km downstream of the proposed intake. Details of the RGS station are shown in Table below and the location is shown in Figure below.

Table 3-1: Details for RGS 4EB07

RGS	4EB07
River	Thuchi
Catchment Area (km²)	296.970
Latitude	00.36194°S

Longitude	37.87139°E
Start	01/10/1956
End	31/12/2021

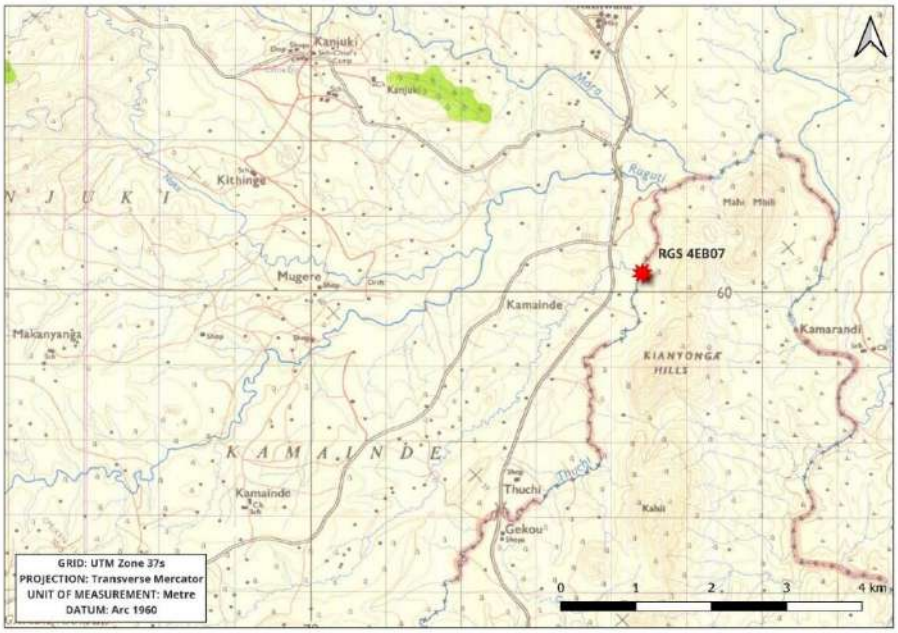


Figure 3-4: Location of RGSs on SoK Toposheets 135/1(Muranga)

The WRA RGS 4EB07 located along the Thuchi River has daily discharge data for 65 years from the year 1956 to 2021. However, several data gaps exist especially between 14/05/1997 – 27/10/2000 and 01/05/2007 – 31/08/2021.

The hydrograph below has been drawn using naturalized flows for the entire timeframe for the station.

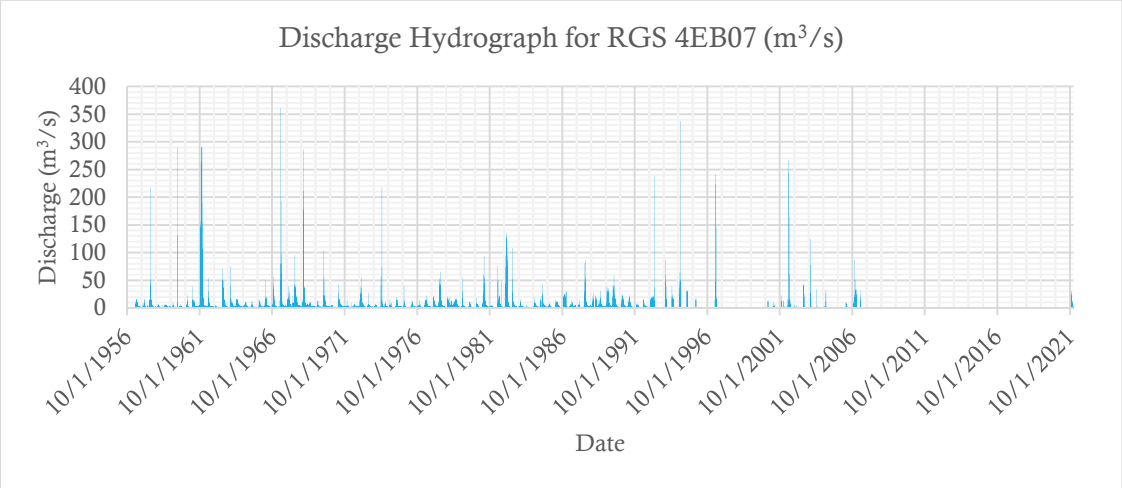


Figure 3-5: Discharge hydrograph for Thuchi River at WRA RGS 4EB07

The WRA RGS 4EB07 located along the Thuchi River has discharge data for 65 years from the year 1956 to 2021. The Flow Duration Curve (FDC) below for the station has been drawn using naturalized flows for the entire timeframe.

From the FDC below for the station 4EB07 along the Thuchi River, the flood flows, normal flows and reserve flows values were established as below:

Table 3-2: Reserve, Normal and Flood Flow Values

Station	Reserve (Q_{95}) in m^3/s	Normal (Q_{80}) in m^3/s	Flood (Q_{50}) in m^3/s
4EB07	0.0359	0.690	1.9146

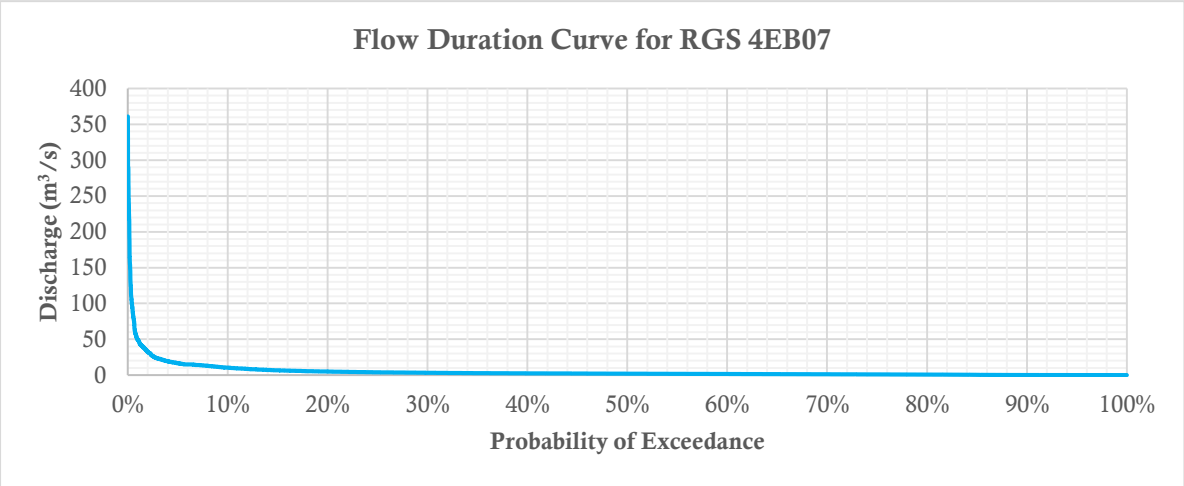


Figure 3-6: **Flow Duration Curve for Thuchi River at 4EB07**

Table 3-3 Surface Water Permit Categories and the Amounts abstracted along Thuchi River (source – hydrological survey report)

Category	Public	Domestic	Livestock	Subsistence Irrigation	Commercial Irrigation	Industrial/ Commercial	Others
A	0.00	0.00	0.00	16.00	0.00	0.00	0.00
B	0.00	2,358.63	440.00	7,430.00	8,526.00	0.00	288.00
C	0.00	0.00	0.00	565.40	14,256.00	0.00	0.00
D	0.00	0.00	0.00	0.00	0.00	0.00	140,745.00
Total (m^3/day)	0.00	2,358.63	440.00	8,011.40	22,782.00	0.00	141,033.00

With the extensive small-holder farming activities along the Thuchi River riparian, it is expected that during the dry season, small scale illegal abstractions may take place for irrigation purposes.

The project proponent currently has 3(No.) valid permits for water abstraction within the sub-basins 4EC and 4EB of the Tana Basin Area which are:

Application Ref. No	Quantity of Water	Water Use Purpose
• WRMA/40/KRG/4EC/170/S	392 m3/day	Public
• WRMA/TC/07793	392 m3/day	Public
• WRMA/TC/07791/8	392 m3/day	Public

The applicant wishes to abstract **15,000m³/day** from the river for a public water supply. The bulk of this water is expected to be abstracted from the river's normal flow with any deficits being served by flood volume allocations.

Further aspects of the hydrological baseline including hydrochemistry, average discharge volumes and flow duration analysis can be found on annex 1 of this report.



Figure 3-7: Proposed intake site along River Thuci

3.5. Flora and Fauna

The area where project activities are carried out covers both forest area and farmlands. In the farmlands, most natural vegetation has been cleared to pave way for farming. The natural vegetation is either a fence, within homesteads or along the river. Some of the natural species include: *Anthocleista grandiflora*, *Casearia battiscombei*, *Commiphora eminii*, *Cordia abyssinica*, *Croton macrostachyus*, *Croton megalocarpus*, *Ehretia cymosa*, *Ficus sur*, and *Myrianthus holstii.* Agroforestry trees include: mangoes, avocadoes and macadamia. The area is extensively farmed with tea on the steep slopes and subsistence farming at the valley near the river. Some of the crops farmed are: maize, beans, kales and bananas. The vegetation in the proposed project site consists of both indigenous and exotic species. The forest is a highland forest with high species diversity both planted and natural. It is a well-

managed forest with minimal disturbance and canopy closure of about 70%. The forest has a thick underground covered with shrubs and herbs including: *Clerodendrum johnstonii*, *Cyperus immensus*, *Cythea manniala*, *Eregorostis*, *Hypoestes aristata*, *Oplismenus bumanii*, *Pipers capense*, *Pteridium aquillinum*, *Rhus pinato* and *Solanum incanum*. The trees in the forest not only vary in species but also in height and frequency of occurrence.

Several animals are known to occur in Irangi forest including; Elephants, Buffalloes, Antelopes, hyrax, monkeys. Near-endemic mammals include Jackson's mongoose, Abbot's duiker, sun squirrel, and the eastern tree hyrax. Irangi forest is the host of endangered and endemic type of frog called *Phrynobatrachus irangi* or the **Irangi puddle frog.** Phrynobatrachus irangi is the largest puddle frog in East Africa. It is labeled in the IUCN Red list as an endangered species and is threatened to habitat loss. The loss and destruction of the habitat where this frog lives is blamed largely on the community through their robust agricultural and forestry practices within and around the forest.

Other strictly endemic reptile and amphibian species, such as Tilbury's chameleon, Müller's leaf chameleon, Mount Kenya hornless chameleon, and Ashe's bush viper. Other animals in the forest includes some bird species such as Aberdare cisticola, Abbotts's starling, and Kenrick's starling.

River Thuchi has different species of fish depending on the part of the river and these include: Mastacembelus Victoria, Alestes nurse, Tilapia zilli and Clarias angullaris. Cat fish (Clarias angullaris) is found in the forest and are only harvested in January.

Due to project activities taking place in the forest, the client developed a Biodiversity Management Plan annexed here in this report as Annex 2. The report provides a baseline for flora and fauna as well as other ecosystem services.



Figure 3-8: Vegetation in section of Irangi forest near the proposed intake

3.6. Climate

Runyenjes experience a tropical climate marked by distinct rainfall patterns. The area experiences bimodal rainfall, with long rains spanning from March to May and short rains from October to December, peaking in November. These patterns are primarily shaped by the region's geography and altitude in relation to Mt. Kenya Forest Ecosystem and the equator. The geographic diversity causes varying climate characteristics: higher altitudes zones around the forest receive substantial rainfall, while lower regions of Embu County exhibit semi-arid characteristics. Notably, annual rainfall ranges between 1,250-2,500mm in the eastern slope of Mt. Kenya and decreases to 400-1,000mm, averaging 700mm, in the lower parts the subcounty. Daily precipitation data obtained from WORLDCLIM satellite imagery data shows precipitation within the watershed is bimodal with the long rains occurring in the months of March to May and the short rains from October to December. The average monthly precipitation variability across watershed varies between lows of 0 mm and highs of 362mm. The spatial variability within the watershed indicates the central region receives most of the precipitation, while the lower (south-eastern) side receives the least precipitation.

With an interplay between highland and lowland characteristics. The area experiences temperatures ranging from 14°C to 30°C in the highlands, fostering crops like tea and coffee. Conversely, the nearby lowlands exhibit a broader temperature spectrum, spanning 22°C to 36°C, nurturing crops like cowpeas, tobacco, and bananas. The interplay between elevation and temperature lends the lowlands distinct agricultural potential. Temperature dynamics shift with the seasons, echoing the land's natural course. Monthly minimum temperatures indicate the upper (north-western) part of the watershed receives the lowest temperatures. The months of June to August appear to record the lowest temperatures overall. Monthly maximum temperature indicates the lower (south-eastern) part of the sub-catchment records the highest temperatures. The months of January to March appear to record the highest temperatures overall.

3.7. Population

Embu county had an estimated population of 641,769 persons by the end of 2022. The administrative capital of the County is Embu town which was formerly the Eastern Province headquarters. The County covers a total area of 2,818 square kilometers and is divided into four constituencies, namely: Runyenjes, Manyatta, Mbeere South and Mbeere North. The County major towns are Embu, Runyenjes, Kiritiri, Siakago, Manyatta, Ishiara, Kiajokoma, Kanyuambora and Karaba. Embu East Sub County was the most populated subcounty in Embu as per the 2019 Census report as shown on the table below:

			Growth rate 1.1%			
Area	Household	Total persons 2019	2022	Initial Year 2023	Future Year 2033	Ultimate 2043
Kanja North	1148	3752	3877.183	3919.832	4372.995	4878.548
Kanja South	1064	3493	3609.542	3649.247	4071.128	4541.782
Mukuuri	722	2414	2494.541	2521.981	2813.542	3138.81
Nduuri	742	2519	2603.045	2631.678	2935.921	3275.336
Gichera	6379	6379	6591.831	6664.341	7434.791	8294.311
Kiringa	5119	5119	5289.792	5347.98	5966.248	6655.993
Kawanjara	4687	4687	4843.379	4896.656	5462.748	6094.284
Maranga	2385	2385	2411.235	2437.759	2719.583	3033.988
Nthagaiya	6827	6827	7054.778	7132.381	7956.94	8876.825
Gichiche	5378	5378	5557.433	5618.565	6268.115	6992.759
Kigaa	4635	4635	4789.644	4842.33	5402.141	6026.671
Mwenendega	3353	3353	3464.871	3502.984	3907.957	4359.747
Gikuuri	5655	5655	5843.675	5907.956	6590.962	7352.929
Gitare	3439	3439	3553.74	3592.831	4008.19	4471.569
Mbiruri	3239	3239	3347.067	3383.885	3775.088	4211.518
Mufu	1640	5375	5554.333	5615.431	6264.619	6988.858
Njeruri	930	3125	3229.264	3264.785	3642.22	4063.289
Rukuriri	886	2960	3058.758	3092.405	3449.911	3848.748
Kariru	1474	4991	5157.521	5214.254	5817.063	6489.561
Karurumo	1851	5802	5995.58	6061.531	6762.292	7544.066
Kasafari	437	1512	1562.447	1579.634	1762.252	1965.982
Kathunguri	621	2004	2070.862	2093.642	2335.683	2605.706
Total population	54,772	89043	92,014	93,026	103,781	115,778

Table 3-4: Population and Projection

Taking a 1.1% population growth rate for human population the projected population in year 2043 (ultimate design year) using the formula below:

$P = Po (1 + r) n$

Where P = population in n years. n = Projection Period.

Po= Current Population.

r = annual population growth rate

3.8. Health Facilities

Embu County has extensive healthcare infrastructure, overseen by a collaborative effort involving the Government, Religious Organizations, Community-Based Organizations, and Private Individuals. This network comprises County Referral Hospitals, Sub- County Hospitals, Health Centres, Dispensaries, Medical Clinics, and various privately-owned healthcare facilities. Notable among these facilities is Runyenjes sub-county hospitals. The intended service area is adequately served by an array of healthcare establishments, primarily consisting of dispensaries, health centres, and clinics. The subsequent table below presents an overview of these healthcare facilities, utilizing data sourced from the Embu County Integrated Plan for the years 2023-2027.

Table 3-5: Distribution of various categories of Public Health facilities source CIDP Embu 2023-2028

Sub-County	Level 1 2 (Dispensary	Level 3 (Health Centre)	Level 4 (Hospitals)	Level 5 (Teaching & Referral)	Total
Runyenjes	20	3	2	0	25

3.9. Transport and Communication

Runyenjes Sub County is accessible to Embu the county headquarters via the Nairobi - Meru Highway (B6). This highway is the main access route for the County and the larger Meru region. There are other roads that form the bulk of accessibility in the County. The roads are Embu-Ishiara Road C92.There are minor earth /gravel access roads within the region. Bitumen roads are limited to Ishiara, Kathwana- Chiakariga Road (mate road) and (D471)1.2km to Kibugua. The road in which the proposed water infrastructure is to be constructed include: Nairobi- Meru Highway(B6). Transport system within the entire project area is good and many centres are linked by all-weather gravel roads as well as tarmac roads. Access to the proposed WWTP site is 4Km from Runyenjes town.

3.10. Water Supply

Water supply in Embu East is done by Kyeni Water and Sewerage Company (KYEWASCO) and through community water projects as described below

3.10.1. Kyeni Water and Sewerage Company (KYEWASCO)

Kyeni Water and Sewerage Company is one of the Water Service Providers contracted by Tana Water Services Board- TWSB (currently known as Tana Water Works Development Agency (TWWDA) as an agent to provide water and sanitation services in Kyeni and Kagaari Divisions, Runyenjes town and its environs in Embu East Sub County with systems in:

- ✓ River Thuci Intakes

KYEWASCO has 2 intakes at River Thuci. The first intake has a capacity of 4860m³/day. The intake serves the people of Kyeni South (Kathanjuri and Karurumo), Kagaari South (Gichiche, Ugweri) and Runyenjes Central (Runyenjes Town). The second intake is not operational.

- ✓ River Ciangomo Intake

KYEWASCO has an intake at River Ciangomo whose capacity is 730m³/day. The project serves the people Kavururi, Iriari, Gatumbi, Kiangungi and Kivare (Kyeni North Wards)

- ✓ River Ena Intake

KYEWASCO has an intake at River Ena whose capacity is 1152m³/day. The project serves the people of Gichegeni, Rukuriri, Ndumbiri and Njeruri (Kyeni North Wards) Distribution System of water from the intakes is by gravity and water is distributed through pipes raging from 315mm, 280mm, 200mm, 160mm up to 20mm diameter with a distance of over 300 km long and a total coverage area of about 171 Km² with an area population of about 90,468 But those served with water are about 32,376 people.

The existing storage tanks within the supply area that is served by KYEWASCO are as listed below:

- TWSB/KYWSC/KYEWS/06/WR/01-90M³ masonry tank
- TWSB/KYWSC/KYEWS/06/WR/02 – 05-90M³ masonry tanks
- TWSB/KYWSC/KYEWS/06/WR/06-135M³ masonry tank
- TWSB/KYWSC/KYEWS/06/WR/07 – 08 (Gathageri Tanks)-225M³ masonry tanks
- TWSB/KYWSC/KYEWS/06/WR/09-225M³ masonry tank
- TWSB/KYWSC/KYEWS/06/WR/10 – 16-90M³ masonry tanks
- TWSB/KYWSC/KYEWS/06/WR/17 – 19-90M³ masonry tanks

- SA/Gichiche/Ugweri Tanks-150M³ masonry tanks
- Ciamanda/Karungu Tanks-100M³ masonry tanks
- Muganjuki/Gichera BPT-25M³ masonry tanks

3.10.2. Community Water Projects

The following community water projects exist in the proposed project area:

- **Kyeni Kagari Gaturi Irrigation Project**

Kyeni Kagaari Gaturi Irrigation project is a Community Based Organization whose intake lies at River Thuci. The purpose of the project is to provide water for agricultural production and has 640 connections. The project provides 7645M³/day of water. The project operates in three phases as followed:

- **Phase 1-** Operates up to Kawanjara-Ishiara road
- **Phase 2-** proposed to lie between Kawanjara – Ishiara and Embu-Meru roads. The phase however, is yet to be implemented
- **Phase 3-** This phase is yet to be implemented. However, the phase targets to operate above Embu-Meru Road

- **Ndamunge Water Project**

Ndamunge Water Project is a community project whose intake lies at Thuci River. The project supplies 1904M³/day of water and has 1505 connections. The company started water supply in two phases. Phase 1 started in 2009 while phase 2 started in 2012.

- **Phase 1-** This phase operates from Githuci to Thuci and serves part of Runyenjes roads at the upper side.
- **Phase 2-** This line aims to supply water to upper part of Kagaari. The line however is not in use.

3.10.3. Ngagaka Water and Sanitation Company Ltd

Ngagaka Water and Sanitation Company Ltd is WSP whose source of water lies at River Thambana. The project has 8354 active connections and 2835 inactive connections. The project produces 3330M³/day of water.

3.10.4. Kigaa Self Help Water project

Kigaa Self Help Water Project is a community project whose source of water is River Thuci and its tributary River Kithuci. The project has 2 intakes and currently has 725 connections. The project produces 757M³/day of water.

Table 3-6: Summary of Existing water systems

Description	Runyenjes Area of Supply
General Details	
Area of Supply (Current area of supply as per KYEWASCO's Service Provision Agreement)	Current supply area – 171 Km^2 i.e. 36% coverage in Runyenjes Town and its environs
Community Water Supply Schemes • **Kyeni Kagari Gaturi Irrigation Project** • **Ndamunge Water Project** • **Ngagaka Water and Sanitation Company** • **Kigaa Self Help Water project**	The local community schemes have a total of 11,224 active connections with supply of raw water with total abstractions of 13,636m^3/day from Rivers Thuci and Thambana. -Local Community Projects construct run-of-the river intakes on rivers from Mt. Kenya Forest. The raw water is supplied to domestic and institutional customers for domestic consumption and irrigation. --The Community Projects are characterized by gravity transmission systems parallel to KYEWASCO'S supply network in the urban areas and extend to rural areas not served by KYEWASCO.
Existing Water Supply Network	
Intake Works	• **River Thuci Intake** • **River Ciangomo Intake** • **River Ena Intake**
Abstractions	**River Thuci Intake -** 4860m^3/day **River Ciangomo Intake - 7**30m^3/day **River Ena Intake -** 1152m^3/day
Raw Water Mains	Range 160mm-315mm
Water Treatment	Partial chlorination, currently no Treatment
Water Supply Volumes	32,376 people served
Non-Revenue Water (NRW)	Approx.42%
Water Supply Pipe Network	300km long

Description	Runyenjes Area of Supply
Water Storage	Total 26 tanks Tanks currently utilized 17

3.11. Sanitation

The sanitation situation in Runyenjes Town and its surrounding areas is primarily reliant on pit latrines for human waste disposal, as outlined in the Runyenjes Township Local Physical Development Plan. The quality of these pit latrines varies among families due to differences in economic status. A field visit revealed that many people opt for pit latrines because they lack sufficient water for a flush toilet system. In the sub-county, approximately 80 percent of households use pit latrines, while 40 percent utilize flush toilets, with the latter being more common in urban centers (County Government of Embu 2023). Bio-digesters are primarily used in these urban areas as well. Notably, there is no designated facility for solid waste disposal and management throughout the sub-county. Consequently, unconventional methods of waste disposal, such as dumping garbage in rivers, streams, and the use of bush toilets, are prevalent. Moreover, access to piped water is limited to specific parts of the town where households are connected to the main water supply.

3.12. Education

Runyenjes Sub County is characterized with a variety of educational institutions serving learners at different stages of their educational journey, from early childhood to tertiary level. At the foundational stage, Early Childhood Development Education (ECDE) centers play a vital role in offering crucial early learning opportunities to children, typically starting at the age of four. These centers are managed by the county government and various community and religious organizations.

The current enrolment recorded according to the Embu County Development Plan for primary school is approximately 6250, while that for secondary stands at 9669. The enrolment for tertiary institutions was at 274. The community has taken advantage of the free primary education as envisaged by the high enrolment. The Education Institutions enroll children from ECDE centers at an average age of four years. The transition from primary to secondary school is 70%. Some of the Secondary Schools include Kyeni Girls High School, Kegonge Boys High School which are highly populated.

Schools	Number	Enrollment Totals
Primary Schools	40	6250

Secondary Schools	42	9669
Tertiary Institutions	9	274

These schools are a mix of public and private ownership, managed by the county education board, individuals, and religious organizations. For secondary education, the majority of schools are publicly owned. Notable secondary schools in Runyenjes Moreover, Runyenjes Sub County has various vocational training institutions which play a crucial role in providing quality education and skill development opportunities, thereby contributing to the intellectual and socio-economic progress of the local population

3.13. Land-use and Development

Runyenjes and the surrounding area in Embu County face economic vulnerability, primarily due to various factors such as decreasing farm sizes, declining land productivity, dependence on rain-fed agriculture, and the impacts of rainfall variability and climate change. The main industrial activities in the region are centred around tea factories, which are considered beneficiaries of development projects. There are also various medium and small- sized commercial enterprises like shops, restaurants, and bars in local shopping centres. However, the project does not anticipate the establishment of additional industries during its lifespan. The project design considers the water demands of these industrial and commercial establishments.

The livelihoods of the local population revolve around agricultural activities, with a significant portion engaged in tea farming and subsistence crop production. However, income levels are often low due to fluctuating market prices and poor agricultural practices, resulting in a middle to low standard of living. The local farming systems are characterized by smallholder farms that are intensively managed and include a mix of crops, trees, and livestock. Subsistence crops like maize, beans, yams, cassava, millet, sorghum, and bananas are cultivated alongside cash crops such as tea, coffee, cotton, and macadamia nuts. Livestock farming involves cattle, goats, sheep, and poultry (County Government of Embu 2023).The primary means of livelihood in the project area encompass food crop production, cash crop production, livestock farming, and agro-forestry. The provision of water in the region aims to address the basic human need for reliable and adequate domestic water supply, as well as to ensure sufficient water for livestock, which are integral to the livelihoods of the local population.

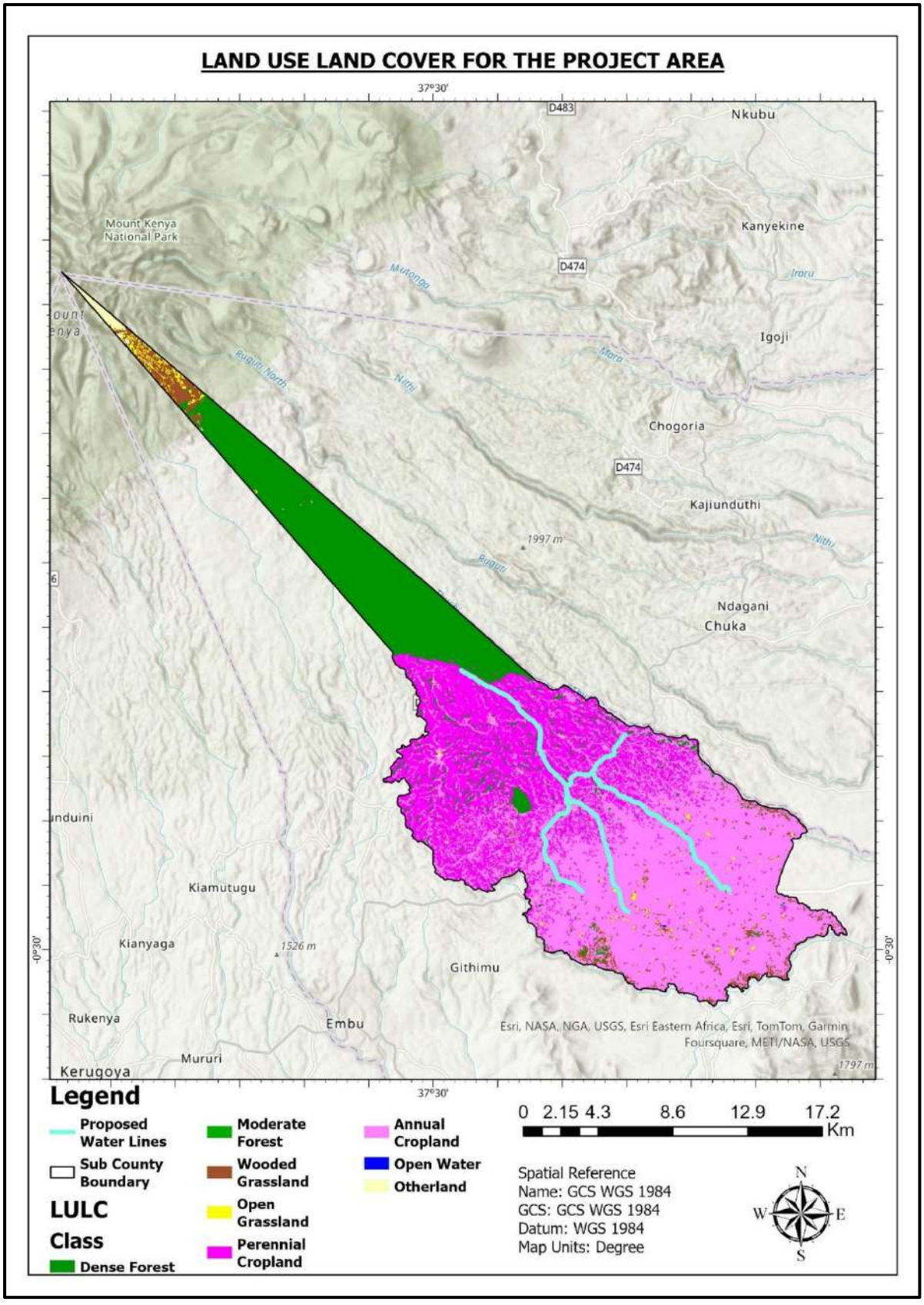


Figure 3-9: Land Use Land Cover for the project area

3.14. Sensitive Receptors

Sensitive receptors for the proposed Runyenjes Water Supply Project were identified based on their proximity to the proposed water supply infrastructure within the sub-county. These receptors encompass various populations that could potentially be affected by the project's construction and operational activities. The following table outlines the categorized receptors:

Table 3-7: Categories of Sensitive Receptors for the Runyenjes Water Supply Project

Category	Description
Residential Areas	Kathanjuri, Rukuriri, Kyeni, Kagaari, Runyenjes municipality, Mbiruri, Gikuuri, Kathageri, Nthangaiya,
Educational Facilities	CCM Kiaragana Primary School, Kagaari primary School, Kyeni Girls High School, St Catherine Nthangaiya, Kiamutugu Primary School, Karurumo Primary, Kagaari Primary, Gatondo Secondary School, Kibingo Primary School
Healthcare Facilities	Karurumo Health Center, Kagwathi Dispensary, Kavutiri Health Center, Kibingo Clinic, Kiambatha Health Center
Community Facilities and Industries	St Francis Nthangaiya Catholic, Salvation Army Kyeni, Salvation Army Gikuuri, Kagumo Mosque, Rukuriri Tea Factory, Karaba Market, Kiamutugu Social Hall, Kaguma Community Center, KCC Runyenjes
Environmental Habitats	Irangi Forest, Nyayo Tea Zone,
Water Sources	River Thuci, River Ena



Figure 3-10: Core Impact Areas

4. CHAPTER FOUR: INSTITUTIONAL POLICY AND LEGAL FRAMEWORK

The activities of the proposed water supply project are regulated by several legal instruments and policies, the main ones being the EMCA, which sets the requirements and procedures for obtaining operating licenses and permits. This chapter highlights the specific sections of both national and international legal and institutional framework which will enable the proponent to be compliant with the law and attain the set standards.

4.1. National Legislative and Regulatory Framework

In Kenya, several Acts of Parliament work together, regulating and guiding environmental management. One specific law dealing with all developments in Kenya is the Environmental Management and Co-ordination Act (EMCA) of 1999. Other regulations do not refer specifically to water and sanitation development projects but, due to their implications, affect such developments at various stages in various ways. These are presented below:

4.1.1. The Constitution of Kenya

The constitution of Kenya provides for sound management and sustainable development of all of Kenya's projects, both public and private investments. It also calls for the duty given to the Project proponent to cooperate with State organs and other persons to protect and conserve the environment as mentioned in Part II.

4.1.2. Environmental Management and Coordination Act (EMCA), 1999

The EMCA 1999 and The Environmental management and Co-ordination (Amendment) Act, 2015 provide the main legal and institutional framework under which the environment in general is to be managed. EMCA is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the High Court if this right has been, is likely to be or is being contravened. Section 58 of the Act makes it a mandatory requirement for an EIA study to be carried out by proponents intending to implement projects specified in the Second Schedule of the Act. Such projects have a potential of causing significant impacts on the environment. Similarly, section 68 of the same Act requires operators of existing projects or undertakings to carry out Environmental Audits (EA) in order to determine the level of conformance with statements made during the EIA study. The proponent is required to submit the EIA and EA reports to NEMA for review and necessary action.

Relevance

This project has been categorized under Medium Risk Projects in the Second Schedule of the Environmental Management and Coordination (Amendment) Act 2015, which requires for the project to be subjected to an ESIA prior to its implementation.

The following regulations under EMCA are also relevant to the proposed project;

1. **Environmental (Impact Assessment and Audit Regulations) 2003 and (Amendment) Regulations, 2016**

The EIA and Audit Regulations state in Regulation 3 that "the regulations should apply to all policies, plans, programs, projects and activities specified in Part IV, Part V and the Second Schedule of the Act. Part II of the Regulations indicates the procedures to be taken during preparation, submission and approval of the full study report

Relevance

This report has been compiled in compliance with the above regulations. TWWDA will also be expected to carry out Environmental audit of the project during the construction stage and annually after the completion of the project. The project is expected to get clearance from NEMA before commencement.

2. **The Environmental Management and Co-ordination (Water Quality) Regulations, 2006.**

The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells and other water sources). It is an offence under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment.

Relevance

The proponent TWWDA shall ensure that during both the construction and operation phases of the Project, all relevant water resources are not polluted from both liquid and solid wastes as per the standards in the regulation. The intake and the untreated trunk line are passing through the Irangi forest managed by Kenya Forestry Services (KFS). The proponent must ensure that the requirements of catchment protection are followed while doing the abstraction.

3. The Environmental Management and Co-ordination (Waste Management) Regulations, 2006

This regulation was published in the Kenya Gazette Supplement No. 69, Legislative Supplement No. 37, and Legal Notice No. 121 of 29th September, 2006. The regulations provide details on management (handling, storage, transportation, treatment and disposal) of various waste streams including:

- Domestic waste;
- Industrial waste;
- Hazardous and toxic waste;
- Pesticides and toxic substances;
- Biomedical wastes; and
- Radioactive waste

Regulation No. 4 (1) makes it an offence for any person to dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle. Regulation 5 (1) provides categories of cleaner production methods that should be adopted by waste generators in order to minimize the amount of waste generated and they include:

- ✓ Improvement of production process through:
  - Conserving raw materials and energy;
  - Eliminating the use of toxic raw materials and wastes; and
  - Reducing toxic emissions and wastes.
- ✓ Monitoring the product cycle from beginning to end by
  - Identifying and eliminating potential negative impacts of the product;
  - Enabling the recovery and re-use of the product where possible, and
  - Reclamation and recycling; and
  - Incorporating environmental concerns in the design and disposal of a product.

Regulation 6 requires waste generators to segregate waste by separating hazardous waste from non-hazardous waste for appropriate disposal. Regulation 15 prohibits any industry from discharging or disposing of any untreated waste in any state into the environment. Regulation 17 (1) makes it an offence for any person to engage in any activity likely to generate any hazardous waste without a valid Environmental Impact Assessment license issued by NEMA.

Relevance

The proposed project, during construction phase will generate wastes such as soil debris, cement bags, plastic containers, vehicles spare parts, stripped off vegetation

and any other waste which will need to be disposed as per the guidelines in the regulations.

4. **The Environmental Management and Coordination Act (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009**

These regulations were published as legal Notice No. 61 being a subsidiary legislation to the Environmental Management and Co-ordination Act, 1999. The regulations provide information on the following:

- Prohibition of excessive noise and vibration beyond defined thresholds;
- Provisions relating to noise from certain sources;
- Provisions relating to licensing procedures for certain activities with a potential of emitting excessive noise and/or vibrations; and
- Noise and excessive vibrations mapping.

According to regulation 3 (1), no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.

Regulation 4 prohibits any person to (a) make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; or (b) cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source.

Relevance

Noise and vibrations are expected during the construction phase of the project when the excavation is on-going. The contractor/sub-contractor for civil works will be required to ensure compliance with the above regulations in order to promote a healthy and safe working environment throughout the construction phase. This shall include regular inspection and maintenance of equipment and prohibition of unnecessary hooting of vehicles.

5. **Environmental Management and Coordination (Air Quality) Regulations, 2014**

These Regulations cover air quality standards that are requisite to protect human health and allow an adequate margin of safety. These Regulations specify priority air pollutants, mobile and stationary sources as well as stipulates emission standards.

Relevance

The emissions generated from construction activities (such as running vehicle, excavators and equipment engines) have the potential of polluting the immediate atmospheric environment. Vegetation clearing, earthworks and bulk delivery of

construction material, if unmanaged may result in generation of dust. Thus, need for strict adherence to these Regulations and standards therein in preventing possible pollutants and managing sources.

4.1.3. Water Act 2016

The Water Act No. 43 of 2016 was assented to on 20th September 2016 and repealed the Water Act 2002. The enactment of this law aimed at aligning national water management and water services provision with the requirements of the Constitution of Kenya 2010 particularly on the clauses devolving water and sanitation services to the county governments. The Water Act 2016 provides for the management, conservation, use and control of water resources and for acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services.

Section 11. (l) states that the establishment of the Water Resources Authority (WRA) whose function in section 12 (d) include; to receive water permit applications for water abstraction, water use and recharge and determine, issue, vary water permits; and enforce the conditions of those permits.

Section 143 of the Act makes it an offence to obstruct, interfere with, divert or obstruct water from any watercourse or any water resource, or negligently allow any such obstruction, interference, diversion or abstraction. It also prohibits anyone to throw or convey or cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive or unwholesome matter or thing into or near to water resource in such a manner as to cause, or be likely to cause, pollution of the water resource.

According to the Water Resources management Rules (2007), Fifth schedule Part A Water use activities that require approval by authority (d) Diversion of a water course, ANY PERSON shall obtain approval from the Authority to undertake the activity: In addition Part II-approval, authorization and permits (2) no water works approval, authorization and permit shall be issued or renewed for the purposes of supplying water for domestic, public, commercial or industrial use within the limits of supply of a water service provider without the applicant having received consent of the licensed water service provider for the area.

Relevance

The proponent TWWDA shall ensure that during both the construction and operation phases of the Project, all relevant water resources are not polluted from both liquid and solid wastes and therefore apply for permit from WRA in line with

this law. The hydrological survey report is the document that TWWDA shall present to WRA for consideration and issuance of an abstraction permit.

4.1.4. Climate Change Act 2016

The Act aims at addressing the multifaceted challenges posed by climate change. Enacted to provide a robust regulatory framework for enhanced responses to climate change, the Act outlines mechanisms and measures geared towards achieving low-carbon climate development. Its provisions encompass various aspects of climate action, including mitigation, adaptation, resilience-building, and community engagement.

At its core, the Climate Change Act emphasizes the imperative of reducing greenhouse gas emissions and transitioning towards a low-carbon economy. It sets clear targets and mandates for emission reduction efforts across sectors, encouraging the adoption of renewable energy sources, energy efficiency measures, and sustainable practices in industrial, agricultural, and transportation activities.

The Act underscores the importance of resilience-building and adaptation to the impacts of climate change. It calls for comprehensive risk assessments, vulnerability analyses, and the integration of climate considerations into planning and decision-making processes. This entails measures to enhance infrastructure resilience, protect natural ecosystems, and safeguard communities from the escalating risks of extreme weather events, sea-level rise, and other climate-related hazards.

Community engagement and participation are central tenets of the Climate Change Act, recognizing the vital role of local stakeholders in climate action. The Act advocates for inclusive governance structures, public awareness campaigns, and capacity-building initiatives to empower communities to contribute to climate mitigation and adaptation efforts effectively.

As a large-scale infrastructure development project, the Runyenjes Water Supply Project is inherently linked to both causes and consequences of climate change. The project's infrastructure including the water treatment facilities and distribution networks, may be vulnerable to climate-related risks such as droughts, floods, and water scarcity. Therefore, adherence to the Climate Change Act is essential for ensuring that the Runyenjes Water Supply Project aligns with national climate goals and priorities. The approved designs have adhered to the unprecedented climatic impacts including flooding and storms to ensure the projects remain climate resilient. The weirs have been designed to ensure that the abstraction does not compromise the ecosystems downstream in stances of harsh climatic patterns including drought and famine

4.1.5. National Land Commission Act. No. 5 of 2012. Revised Edition 2012

Part II Section 8 provides guidelines on management of public land by National Land Commission (NLC) on behalf of both National and County Governments. This law in Section 8(b) stipulates that the Commission shall evaluate all parcels of public land based on land capability classification, land resources mapping consideration, overall potential for use, and resource evaluation data for land use planning.

Section 8(d) stipulates that the Commission may require the land to be used for specified purposes subject to such conditions, covenants, encumbrances or reservations as are specified in the relevant order or other instrument. In managing public land, the Commission is further required in Section 10(1) to prescribe guidelines for the management of public land by all public agencies, statutory bodies and state corporations in actual occupation or use.

In these guidelines, management priorities and operational principles for the management of public land resources for identified uses shall be stated. This in essence means that the Commission shall take appropriate action to maintain public land. As well the Commission shall identify ecologically sensitive areas that are within public lands and demarcate or take any other justified action on those areas and act to prevent environmental degradation and climate change.

Section 9 (d) it states that community land may be converted to either private or public land in accordance with the law relating to community land enacted pursuant to Article 63(5) of the Constitution. (3) Any substantial transaction involving the conversion of public land to private land shall require approval by the National Assembly or county assembly as the case may be. Section 110 (1) of the Act provides that land may be acquired compulsorily if the Commission certifies, in writing, that the land is required for public purposes or in the public interest as related to and necessary for fulfilment of the stated public purpose. In such an acquisition, this Act, in section 111(1) provides that just compensation shall be paid promptly in full to all persons whose interests in the land have been determined. The procedure for land acquisition is laid out in Part VIII of the Act.

Relevance

This part of the law seeks to preserve and direct management of fragile public land held by the various public bodies for sustainable development. TWWDA and the contractor will therefore be required to ensure protection of any sensitive habitats and endangered species that have been identified. The Project routes will utilize government road reserve and some will traverse private land which implies that affected persons shall be liable for compensation of land for the pipeline to be constructed.

4.1.6. The Public Health (Drainage and Latrine) Rules

Rule 85 provides that every owner or occupier of every workshop, workplace or other premises where persons are employed shall provide proper and sufficient latrines for use by employees. Rule 87 requires every contractor, builder or other person employing workmen for the demolition, construction, reconstruction or alteration of any building or other work in any way connected with building to provide in approved position sufficient and convenient temporary latrines for use by such workmen.

Rule 91 provides that no person shall construct a latrine in connection with a building other than a water closet or a urinal, where any part of the site of such building is within 200 feet of a sewer belonging to the local authority which is at a suitable level, and where there is sufficient water supply.

Relevance

The contractor for civil works will be required to construct toilets for use by workers and visitors to the site during the construction phase of the proposed project. Sufficient latrines will also be required should there be any staff quarters within the site. During operation, the project is expected not to cause any public nuisance to the public

4.1.7. The County Governments Act, 2012

The County Governments Act of 2012 repealed the Local Government Act. Section 110 (2) provides for a spatial development framework for the county that indicates;

- Where public and private land development and infrastructure investment should take place;
- Desired patterns of land use within the county,
- Address the spatial construction or reconstruction of the county;
- Sets out basic guidelines for a land use management system in the county considering any guidelines, regulations or laws as provided under Article 67 (2) of the Constitution;
- Contains a strategic assessment of the environmental impact of the spatial development framework;
- Identify programs and projects for the development of land within the county

Section 114 of this act, sub sections (1) and (2) require that a project of national significance in a County be preceded by mandatory public hearings for approval. In addition, Section 115, sub section (1) Public participation in the county planning processes shall be mandatory and be facilitated through the mechanism stated under this section.

Relevance

The proposed development should be in line with the Embu County spatial development framework in section 110 (2) as well as allow for public participation prior to implementation. This ESIA provides a platform for public participation. TWWDA should work in liaison with County Government of Embu to ensure compliance with land use requirements within the County. The Project once commissioned shall be handed over to Kyeni Water and Sanitation Company (KYEWASCO) which is a water utility, wholly owned by Embu County Government for operation and maintenance in accordance to the Act.

4.1.8. Physical Planning Act, 2019

This is the main Act that governs land planning and all proposed developments must be approved by the respective local authority and certificate of compliance issued accordingly. Under the Act, the director of physical planning advises the commissioner of lands on land alienation issues that fall under Lands Act. The director also advises the commissioner of lands and local authorities on land use, sub-division and or amalgamation of land; prepares regional and local physical development plans. At the County level, the Act has established the County Physical and Land Use Planning Consultative Forum chaired by the County Executive Committee Member responsible for matters related to physical and land use planning. One of the major functions of the consultative forum is to determine development applications for change of user or sub-division of land that could have significant impact on adjacent land and or breach registered conditions in a given title deed; and also, industrial location which could have negative impact on the environment and adjoining land.

Relevance

TWWDA will be required to discuss its development plans with the Embu County Physical Planning Officers and seek the requisite approvals. For control of future development around the site, the County government shall enforce this law to ensure compatible land uses only are allowed near the water works. Similarly, any temporary contractor's facilities like camps will require development approval from the Embu County government.

4.1.9. Urban Areas and Cities (Amendment) Act, 2019

This is an Act of Parliament that gives effect to article 184 of the Constitution, to provide for:

- The classification, governance and management of Urban Areas and Cities;
- The criteria of establishing urban areas; and

- The principle of governance and participation of residents and the related purposes.

Section V of the Act on Integrated Development Planning requires that every city and municipality established under this act shall operate within the framework of integrated development planning. The second schedule of the Act outlines the rights and participation by residents in affairs of their city or Urban areas.

Relevance

As access to potable water is a problem in the project area, the project through this ESIA study collected views of the residents and incorporated them in the designs where feasible, to aid in provision of potable water for the residents of Runyenjes.

4.1.10. Employment Act, 2007

This is an Act of parliament that applies to all employees employed by any employer under a contract of service. The Act came in operation in June 2008. Employment of children in the following forms is prohibited in the following sections of the Act:

53. (1) notwithstanding any provision of any written law, no person shall employ a child in any activity which constitutes worst form of child labor.

56. (1) No person shall employ a child who has not attained the age of thirteen years whether gainfully or otherwise in any undertaking.

A child of between thirteen years of age and sixteen years of age may be employed to perform light work which is;

- Not likely to be harmful to the child's health or development; and
- Not such as to prejudice the child's attendance at school, his participation in vocational orientation or training programs approved by Minister for labor or his capacity to benefit from the instructions received.

Relevance

TWWDA and the contractor will need to understand all the requirements of the Act during employment such as ensuring that employees are of the right age, entitlement to leave, protection from discrimination and sexual harassment among others. Production of the national ID card shall be mandatory in order to ensure that minors are not exposed to age-inappropriate labour.

4.1.11. Work Injury Benefits Act (WIBA)

It is an Act of Parliament to provide for compensation to workmen for injuries suffered in the course of their employment. It outlines the following:

- Employer's liability for compensation for death or incapacity resulting from accident;

- Compensation in fatal cases;
- Compensation in case of permanent partial incapacity;
- Compensation in case of temporary incapacity;
- Persons entitled to compensation and methods of calculating the earnings;
- No compensation shall be payable under this Act in respect of any incapacity or death resulting from a deliberate self-injury; and
- Notice of an accident, causing injury to a workman, of such a nature as would entitle him for compensation shall be given in the prescribed form to the director.

Relevance

The contractor and TWWDA shall be required to comply with all the provisions of the Act throughout the project cycle such as management of hazards, forming health and safety committees and reporting all the accidents and near misses. They will also be required to accord injured persons their dues in terms of shouldering the medical expenses or compensation of the families should there be loss of life.

4.1.12. The Occupational Safety and Health Act, 2007

This is an Act of Parliament to provide for the safety, health and welfare of all workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. It applies to all workplaces where any person is at work, whether temporarily or permanently. The purpose of this Act is to:

- Secure the safety, health and welfare of persons at work; and
- Protect persons other than persons at work against safety and health arising out of, or in connection with the activities of persons at work.
- Section 44. (1) Before any person occupies or uses any premises as a workplace, he shall apply for the registration of the premises.
- Section 95. Every occupier shall provide and maintain so as to be readily accessible, a first- aid box or cupboard of the prescribed standard.

The Occupational Safety and Health Act 2007 (OSHA 2007) Kenya Gazette Supplement No. 111 (Acts No.15) dated October 26, 2007 revokes the Factories and Other Places of Work Cap.514.

The scope of OSHA 2007 has been expanded to cover all workplaces including offices, schools, academic institutions, factories and plantations. It establishes codes of practices to be approved and issued by the Directorate of Occupational Safety and Health Services (DOSHS) for practical guidance on the various provisions of the Act.

Relevance

The contractor and TWWDA will be required to comply with all the provisions of the Act throughout the project cycle such as registering the construction site as place of work, management of hazards, forming health and safety committees and reporting all the accidents and near misses and provision of First-Aid kits as necessary.

4.1.13. Environment and Land Court Act, 2012

The Court is established under section 4 of the Environment and Land Court Act No. 19 of 2011. It has the jurisdiction to hear any other dispute relating to environment and land. The jurisdiction of the court is provided under section 13 of the Act. The Court has original and appellate jurisdiction to hear and determine all disputes in accordance with Article 162(2) (b) of the Constitution and with the provisions of the Act or any other written law relating to environment and land. The court is also empowered to hear cases relating to public, private and community land and contracts, choses in action or other instruments granting any enforceable interests in land.

Relevance

In matters relating to land and environmental disputes that may arise between the project proponent/implementing agency and the local community or county government during requisite private land acquisition and environmental management for the development of local material sites, the court has the powers to deal with such disputes relating to land administration and management. Nonetheless, alternative grievance resolution mechanisms are also encouraged.

4.1.14. The Penal Code, Cap 63

Section 191 of the Penal Code makes it an offence for any person or institution that voluntarily corrupts, or foils water for public springs or reservoirs rendering it less fit for its ordinary use. Similarly, section 192 prohibits making the atmosphere in any place noxious to health of persons/institution in dwellings or business premises in the neighbourhood or those passing along a public way. In addition, section 193-any person who makes loud noises or offensive or unwholesome smells in a place so as to annoy any considerable number of persons in the exercise of their common rights commits an offence and is liable to be punished for common nuisance.

Relevance

The contractor and proponent will be required to ensure strict adherence to the Environmental Management Plan throughout the project cycle in order to mitigate

against any possible negative impact associated with dust, noise, and effluent discharge that may likely affect the public.

4.2. AfDB Integrated Social Safeguards

4.2.1. Environmental and Social Operational Safeguard 1: Assessment and Management of Environmental and Social Risk and Impact.

The aim of this overarching Operational Safeguard (OS), together with the OSs that complement it, is to mainstream environmental and social (E&S) considerations, including those related to climate change vulnerability into Bank operations and thereby contribute to sustainable development in the continent. Environmental and Social Assessment (ESA) work carried out under this OS helps to determine the scope and extent to which other OSs are addressed. It sets out the Borrower's responsibilities for assessing, managing, and monitoring E&S risks and impacts associated with each stage of an operation supported by the Bank Group. The Bank reviews and discloses all documentation related to an operation's ESA in accordance with this OS, and the Bank's Policy on Disclosure and Access to Information, prior to presenting an operation to the Bank's Board of Directors.

The objectives of OS1 are as follows:

- Identify and assess the E&S risks and impacts including those related to gender inequalities, climate change, and vulnerability of Bank lending, investment, and grant-supported operations, in their areas of influence in a manner consistent with the OSs.
- Provide opportunity for stakeholder engagement and consultation in assessing and managing the E&S risks and impacts.
- Adopt a mitigation hierarchy approach as follows:
    - Anticipate and avoid risks and impacts;
    - Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;
    - Once risks and impacts have been minimized or reduced, mitigate them; and
    - Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.
- Adopt differentiated measures so that adverse impacts do not fall disproportionately on the vulnerable to prevent them from being disadvantaged in sharing development benefits and opportunities resulting from the project.

- Utilize national E&S institutions, systems, laws, regulations, and procedures in the assessment, development and implementation of projects, whenever appropriate.
- Contribute to strengthening regional member countries' (RMC) systems for E&S risk management by assessing and building their capacity to meet Bank Group requirements set out in the ISS.

Relevance

The proponent has ensured that the proposed project conforms to the project by engaging the NEMA registered and licensed experts to conduct a comprehensive Environmental and Social Impact Assessment. The ESIA Process adhered to the NEMA and the AfDB Operational Safeguards to the later. All the stakeholders with interest in the project including the PAPs were involved in the entire process. This culminated to the development of an ESIA report with a comprehensive Environmental and Social Management Plan to ensure that all the impacts of the projects are duly mitigated.

4.2.2. Environmental and Social Operational Safeguard 2: Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement

Environmental and Social Operational Safeguard (OS) 2 recognizes that project-related land acquisition, restrictions on land access or land use, and loss of property/assets can have adverse impacts on communities and persons. Project-related land acquisition and restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term 'involuntary resettlement' refers to both of these impacts and the processes to mitigate and compensate for them. Resettlement is considered involuntary when affected persons or communities do not have the right or genuine opportunity, free from coercion or intimidation, to refuse land acquisition or restrictions on land access or use that result in loss of assets or displacement.

Physical and economic displacement, if unmitigated, may give rise to severe economic, social and environmental risks: production systems may be dismantled; people may face impoverishment if their productive resources or other income sources are lost and if there are restrictions on land use or on the enhancement of

their protection; people may be relocated to environments where their productive skills are less applicable and the competition for resources greater; community institutions and social networks may be weakened; gender and other social inequalities may be exacerbated; kin groups may be dispersed; and cultural identity, traditional authority, and the potential for mutual help may be diminished or lost. For these reasons, involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it will be minimized, and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented. Physical investment supported by the Bank may only be carried out if the required land is not free from any encumbrances, occupation or conflict, and/or has been the subject of negotiated adequate prior compensation, and finally secured for the benefit of the project concerned.

Relevance

Whereas the project proponent has made every effort to avoid adverse impact on loss of land and livelihoods, the above impacts are to be mitigated through the implementation of a comprehensive RAP prepared in accordance with the the provision of the Operational Safeguard.

4.2.3. Environmental and Social Operational Safeguard 3: Habitat and Biodiversity Conservation, and Sustainable Management of Living Natural Resources

This Environmental and Social Operational Safeguard (OS) outlines the requirements for the Borrower to:

- Identify and implement opportunities to conserve and sustainably use biodiversity and natural habitats; and
- Observe, implement, and respond to requirements for the conservation and sustainable management of priority ecosystem services.

The OS reflects the objectives of the Convention on Biological Diversity to conserve biological diversity and promote the sustainable management and use of natural resources. It also aligns with the Ramsar Convention on Wetlands, the Convention on the Conservation of Migratory Species of Wild Animals, the Convention on International Trade in Endangered Species of Wild Flora and Fauna, the World Heritage Convention, the United Nations Convention to Combat Desertification, and the Millennium Ecosystem Assessment. Its recommendations also align with the International Plant Protection Convention, which covers the movement of invasive alien species and pests, as well as pest risk analysis for quarantine pests, including an analysis of the risks and impacts of genetically modified organisms.

OS3 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. 'Biodiversity' is defined as the variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are a part, which includes diversity within species, between species, and of ecosystems. Biodiversity often underpins ecosystem services valued by humans; hence, impacts on biodiversity can often adversely affect the delivery of ecosystem services.

The OS recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support in a changing climate. 'Habitat' is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance, and importance. This OS also addresses the sustainable management of primary production and the harvesting of living natural resources.

OS3 recognizes the need to consider the livelihoods of project-affected parties, including vulnerable groups, whose access to, or use of, biodiversity or living natural resources may be affected by a project. The potential, positive role of project-affected parties, including vulnerable groups, in biodiversity conservation and sustainable management of living natural resources is also considered.

Relevance

The proposed Runyenjes Water Project has been designed draw water from River Thuci with the intake being at Irangi forest within the expansive Mt Kenya ecosystem. The proponent has undertaken a Comprehensive Biodiversity Study of the Irangi Forest. This study is essential as it allows for the identification and assessment of biodiversity within the project's area of influence.

Additionally, the development of a Biodiversity Management Plan further aligns to the OS requirements. This plan has outlined specific measures and strategies to conserve and sustainably use biodiversity and natural habitats affected by the project. This includes mitigation measures to minimize adverse impacts on sensitive ecosystems, aligning with the objectives of the Convention on Biological Diversity and other relevant international conventions mentioned in OS6.

4.2.4. Environmental and Social Operational Safeguard 4: Resources Efficiency and Pollution Prevention and Management

This Operational Safeguard (OS) recognizes that economic activities often cause air, water, and land pollution, and consume finite resources that may threaten people, ecosystem services, and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHGs) threatens the welfare of current and future generations. In addition, more efficient and effective resource use, pollution prevention, and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. OS3 sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle in a manner consistent with Good International Industry Practice (GIIP).

Throughout the different phases of the project's life cycle, i.e., planning and design, construction, commissioning, operations, and decommissioning, the Borrower is required to assess and evaluate resource efficiency and pollution-prevention techniques and implement them, taking into consideration their technical and financial feasibility and cost-effectiveness. As part of project preparation, in the Environmental and Social Assessment (ESA), the Borrower evaluates the potential impacts of pollutant discharges and resulting ambient concentrations to the environment, considering potential receptors, and assesses risks and impacts related to the following:

- Environmental/ecological carrying capacity
- Ecosystem services
- Land use (current and future), soils, and agriculture
- Surrounding communities and poverty conditions
- Local, regional, and transboundary potential impacts
- Proximity to environmentally sensitive areas and populations
- Proximity to surface and groundwater sources
- Current and future water body

Relevance

As part of project preparation, an Environmental and Social Impact Assessment for the projects was undertaken. The potential pollutant discharges and their impacts on the environment, considering various factors such as environmental carrying capacity, ecosystem services, land use, community conditions, and potential regional and transboundary impacts have been adequately evaluated with the mitigation of the negatively adverse impacts being outlined in the ESMP.

In addition, the project is subject to continuous assessment and audits to ensure it conforms to national and international environmental and social safeguards legislations and Good International Industry Practice (GIIP) standards throughout its implementation and operation. This will ensure that the project is sustainable and

meets internationally recognized norms and standards for resource efficiency, pollution prevention, and environmental management.

4.2.5. Environmental and Social Operational Safeguard 5: Labour and Working Conditions

OS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. Respect of workers' rights is one of the keystones for developing a strong and productive workforce. This OS is informed by the International Labour Organization's (ILO) Declaration on the Fundamental Principles and Rights at Work and the United Nations Guiding Principles on Business and Human Rights.

The objectives of OS are as follows:

- To protect workers' rights.
- To promote safety and health in the workplace.
- To promote the fair treatment, non-discrimination, and equal opportunity of project workers.
- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this OS) and migrant workers, contracted workers, community workers, and primary supply workers, as appropriate.
- To prevent the use of all forms of forced labour and child labour.
- To support the principles of freedom of association and collective bargaining of project workers, and align Bank requirements with ILO's Fundamental Principles and Rights at Work, the United Nations Convention on the Rights of the Child, and the Convention on the Elimination of All Forms of Discrimination Against Women, where national laws do not provide equivalent protection.
- To provide project workers with accessible means to raise workplace concerns.
- To require that the Bank, and national competent authorities, as appropriate, be promptly informed of any material adverse impacts and events relating to labour protection, and health and safety at the workplace.

Relevance

The proposed Runyenjes the proposed Runyenjes Water Project will align with OS by prioritizing the protection of workers' rights, ensuring safety and health in the workplace, promoting fair treatment and equal opportunity, and taking measures to prevent forced and child labour, among other provisions outlined in the OS. The contractor will adhere to all the best practices to ensure the health and safety of employees is well taken care of.

Specific measures shall be undertaken by the contractor in conjunction with the proponent to protect vulnerable groups of workers, such as women, persons with disabilities, and youth (if any are employed in accordance with relevant regulations), ensuring they are not exploited and are provided with necessary support.

The project coordinators through the GRM shall establish channels through which workers can raise concerns about workplace conditions or any violations of their rights, ensuring their voices are heard and addressed

4.3. Institutional Framework

4.3.1. County Environment Committee

The County Environment Committee in Embu County is responsible for environmental management at the County level through preparation of County environment action plans for consideration and adoption by the respective County Assemblies.

Relevance

TWWDA should ensure that the project abides by the set County environment action plan for Embu County.

4.3.2. County Government of Embu

The Fourth Schedule of the Constitution of Kenya 2010 Part 2 (3) provides for devolved environmental functions to be undertaken by the County Governments and includes; control of air pollution, noise pollution, and other public nuisances. In addition to development approvals, the county government has some jurisdiction of environmental management including waste management, drainage, noise permit issuance, and enforcement of public health act.

4.3.3. The National Environment Management Authority

The responsibility of the National Environment Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment. In addition to NEMA,

the Act provides for the establishment and enforcement of environmental quality standards to be set by the Cabinet Secretary in consultation with the Authority, which will govern the discharge, limits to the environment by the proposed project.

Relevance

NEMA must approve the project before implementation and also participates in the subsequent stages of construction, environmental management and annual audits review.

4.3.4. Water Resource Authority (WRA)

WRA is responsible for regulation of water resources issues such as water allocation, source protection and conservation, water quality management and pollution control and international waters. Its roles and responsibilities are as follows:

Planning, management, protection and conservation of water resources; Planning, allocation, apportionment, assessment and monitoring of water resources; Issuance of water permits; Water rights and enforcement of permit conditions; Regulation of conservation and abstraction structures; Catchments and water quality management; Regulation and control of water use; and Coordination of the Integrated Water Resource Management (IWRM) Plan.

Relevance

The contractor and TWWDA will be required to consult WRA for abstraction of water from Thuci River. They will also be required to apply for an abstraction permit which will be issued with conditions on the volume to abstract and the proper protection measures that should be undertaken in order to safeguard the sensitive biodiversity around the intake. The WRA is responsible for protection, conservation and management of the riparian areas. It is their mandate to ensure that there are WRUAs in place to actively manage the water resource.

4.4. Other Policies and international convections

Kenya is committed to various international conventions, treaties, and protocols aimed at promoting sustainable development and environmental protection. According to the Registrar of International Treaties and other Agreements in Environment (UNEP 1999), there several treaties and multilateral agreements of which are relevant and Kenya is a signatory covering areas such as the use of natural resources, protection of the atmosphere, and social well-being. These agreements, whether regional or international, become legally binding upon Kenya upon ratification by the appropriate authority

4.4.1. The National Biodiversity Strategy, 2007

The overall objective of the National Biodiversity Strategy and Action Plan (NBSAP) is to address the national and international undertakings elaborated in Article 6 of the Convention on Biological Diversity (CBD). It is a national framework of action to ensure that the present rate of biodiversity loss is reversed and the present levels of biological resources are maintained at sustainable levels for posterity. The general objectives of the strategy are to conserve Kenya's biodiversity to sustainably use its components; to fairly and equitably share the benefits arising from the utilization of biological resources among the stakeholders; and to enhance technical and scientific cooperation nationally and internationally, including the exchange of information in support of biological conservation.

Relevance

Activities during the construction of Runyenjes water supply project from the intake works, weirs, pipelines, pressure break tanks and finally to secondary pipelines are bound to impact negatively on the flora around the Irangi forest area. As such, during construction, the contractor will be required to reinstate the environment to its original state. This will be in order to reverse the loss of biodiversity or to maintain the levels of biological resources at sustainable levels for posterity.

4.4.2.Sustainable Development Goals (SDGs)

The SDGs provide a framework for the entire international community to work together towards a common end making sure that human development reaches everyone, everywhere. If these goals are achieved, world poverty will be cut by half, tens of millions of lives will be saved, and billions more people will have the opportunity to benefit from the global economy. Up to 2015, the development agenda was centered on the Millennium Development Goals (MDGs), which were officially established following the Millennium Summit of the United Nations in 2000. The MDGs were supposed to be achieved by 2015, so a further process was needed to agree and develop development goals from 2015-2030. Discussion on the post 2015 framework for international development began well in advance. On 19 July 2014, the UN General Assembly's Open Working Group on Sustainable Development Goals (SDGs) forwarded a proposal for the SDGs to the Assembly. The proposal contained 17 goals with 169 targets covering a broad range of sustainable development issues. Goal number 6 in the SDGs ensures availability and sustainable management of water and sanitation for all".

Some of the targets of this goal include:

Achieving universal and equitable access to safe and affordable drinking water for all by 2030; Protection and restoration of water-related ecosystems, including

mountains, forests, wetlands, rivers, aquifers and lakes by 2030; Expanding international cooperation and capacity-building support to developing countries in water and sanitation related activities and programs, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies; and Support and strengthen the participation of local communities in improving water and sanitation management

Relevance

The proposed project aims at achieving some of the mentioned targets for the SDG goal no 6. In the long run, this moves the country towards the goal of ensuring availability and sustainable management of water for all is addressed through this proposed water supply project. The SDG goal number 6 on ensuring healthy lives and promoting the well- being for all at all ages and access to water and sanitation for all can be achieved by this project through reduction of sanitation related diseases through provision of safe drinking water. This will in turn increase life expectancy and reduce some of the common killers associated with child and maternal mortality.

4.4.3. National Gender and Equality Commission Act 2011

The overall goal of this Policy Framework is to mainstream gender concerns in the national development process in order to improve the social, legal/civic, economic and cultural conditions of women, men, girls and boys in Kenya. The policy provides direction for setting priorities. An important priority is to ensure that all ministerial strategies and their performance frameworks integrate gender equality objectives and indicators and identify actions for tackling inequality. In addition, each program will develop integrated gender equality strategies at the initiative level in priority areas. Within selected interventions, the policy will also scale-up specific initiatives to advance gender equality.

Relevance

This policy will serve as a guiding framework throughout the project implementation process, particularly in activities such as staff recruitment, procurement of suppliers, sub-consultants, and subcontractors. NGEC's overarching objective is to actively work towards diminishing gender disparities and combating discrimination across various demographics including women, men, individuals with disabilities, youth, children, the elderly, minorities, and marginalized communities. This Act will specifically be enforced in the recruitment of on-site workforce.

4.4.4. United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC mandates parties to consider climate change in their social, economic, and environmental policies and actions. In line with this, the Environmental and Social Impact Assessment for the Runyenjes Water Supply Project aims to minimize adverse effects on the economy, public health, and the environment. Compliance with this convention involves mitigating climate change impacts, such as by implementing sustainable water management practices. Additionally, the proponent is encouraged to enhance positive impacts by adopting measures like watershed conservation and promoting water conservation awareness among stakeholders.

4.4.5. The United Nations Convention on Biological Diversity (CBD)

The CBD, established in 1992, recognizes the importance of biological resources for economic and social development while acknowledging the threats to species and ecosystems. The convention aims to conserve biodiversity, promote its sustainable use, and ensure fair and equitable sharing of benefits. This includes introducing procedures for environmental impact assessment of proposed projects likely to affect biodiversity and considering the environmental consequences of policies and programs. The Runyenjes Water Supply Project passes through a critical biodiversity area in Irangi forest which is part of Mt Kenya ecosystem. The project must therefore incorporate appropriate mitigation measures outlined in the Environmental and Social Management Plan and the biodiversity management plan to minimize negative impacts on biodiversity, including vegetation, habitats, and aquatic ecosystems.

4.5. Institutional Structure of the Water Sector

4.5.1. Ministry of Water and Irrigation (MWI)

This is the overall Ministry in charge of water and sewerage in Kenya. It is responsible for policy development, sector co-ordination, monitoring and supervision to ensure effective Water and Sewerage Services in the Country, sustainability of Water Resources and development of Water resources for irrigation, commercial, industrial, power generation and other uses. Its mission statement is to contribute to national development by promoting and supporting integrated water resource management to enhance water availability and accessibility. The MWI has the following technical departments: Water Services, Water Resources, Water Storage and Land Reclamation, and Irrigation and Drainage. The Ministry executes its mandate through the following sector institutions presented below.

4.5.2. Water Services Trust Fund (WSTF)

The Water Services Trust Fund (WSTF) serves to assist in the financing of water deficient service area through providing financial support to improve water services towards;

- Active community participation in the management of water services
- Capital investment to community water schemes in underserved areas
- Capacity building activities and initiative among communities
- Water services activities outlined in the Water Services Strategic Plan as prioritized by the Government
- Awareness creation and information dissemination regarding community management of water services

This project shall be a beneficiary of the body's financing services in partnership with European Union.

4.5.3. Water Services Regulatory Board (WASREB)

The regulatory Board is responsible for the regulation of the water and sewerage services in partnership with the people of Kenya. Its mandate covers the following key areas;

- Regulating provision of water and sewerage services including licensing, quality assurance and issuance of guidelines for tariffs, prices and disputes resolution.
- Overseeing the implementation of policies and strategies relating to provision of water services licensing of Water Services Boards and approving their appointed Water Services Providers,
- Monitoring the performance of the Water Services Boards and Water Services Providers,
- Establishes the procedure of customer complaints,
- Informs the public on the sector performance,
- Provides advice to the Minister in charge of water affairs.

4.5.4. Water Services Providers

Water Service Providers are the utilities or water companies. being the beneficiary of the proposed project, will be responsible for the following:

- Ensure effective communication of all matters related to project to the target group.
- Sensitize the community for buy in of the project and ensure its sustainability.
- Ensure implementation of the project in accordance with the project rules

4.6. Legal requirements permit

The Proponent (TWWDA) should demonstrate compliance to the legislation through acquisition of the appropriate licenses and permits. Furthermore, all contractors and consultants who will be engaged during the planning and design, construction, operation and maintenance and decommissioning should demonstrate compliance to the necessary pieces of legislation. These includes:

- NEMA registration certificates and licenses
- NCA Site Registration
- WRA Permits
- Occupational Health and Safety (Health and Safety Policies)
- Kenya Forestry Service Easement Permit
- Way Leaves from KFS, KENHA, KURA and KERA
- Any other Mandatory Licenses and Permits

5. CHAPTER FIVE: ANALYSIS OF PROJECT ALTERNATIVES

5.1. Project Design Consideration

This Chapter analyses the design process used to arrive at the proposed project capacity, technology used and location of project components. The 'No Project' alternative was also considered. The design considerations analysed were as follows;

- Project Location
- Water Treatment Technology
- Land Acquisitions and Resettlement Impacts
- Material sourcing sites and disposal of soil
- Proposed Project Option
- No Project Alternative

5.2. Location of Project Components

The Environmental Impact Assessment Study should identify and assesses alternatives to the proposed development/project. Only the best alternative (one with the least adverse impacts) should be selected based on less negative impacts and cost-benefit analysis. An important alternative to be analysed always is the "no project" alternative. This is a very important analysis because it helps the proponents measure the impacts from the project against those which would have taken place without the project. The following factors were considered during the selection of the sites for the project components:

5.3. Selection of Intake Works site

- The intake will be constructed 12.2 Km from the edge of Irangi forest of the larger Mt. Kenya Forest at river Thuci
- From hydrological survey studies carried out, the river has adequate flows to provide the required water demand over the design horizon
- Availability of raw water by inclusion major tributary catchments
- Availability of rock foundation for the intake structure
- Gravity flow to proposed Water Treatment Works and Water Storage Tank Site

5.4. Selection of Water Treatment Works

- Suitable topography ensuring proper drainage and ease of construction
- Public land was selected where possible resulting in limited land acquisition
- Ease of access from the existing roads
- Good soil for strong foundations without excessive stabilization procedures

- Gravity flow of water to consumers from the Treatment Works Site

5.5. Project Capacity

- To determine the capacity of the water treatment system, the design team followed the following steps;
- Defined the project area
- Determine the population from the 2019 Population census and project to the year 2043 design horizons

5.6. Project Resettlement Issues

The proposed project will mainly utilize the public road reserve that spans 30 feet with a provision of 20 feet carriage way development. The remaining 10 feet is reserved for other public utilities which included water infrastructure. There are no observable encroachments into the public road reserve through which the pipeline will be constructed. It was however observed that a small section of the proposed storage tanks will have to traverse private lands in Rukuriri, Gitare, Gikuuri, Kigaa and Karurumo. Compensation shall therefore be affected to provide an easement for the pipeline tanks. This would be at a comparatively low cost compared to pumping the water uphill. Resettlement issues will therefore be minimal as only a few private lands are affected. However, the pipeline will require permits from the public works office and relevant road authorities to enable the proponent trench through the road crossings in cases of road reserves. Specifically, the sites are as described below:

5.7. Project Alternative

The no-action alternative is a crucial reference point in impact assessment, providing a baseline against which other options are measured. Choosing this alternative means deciding not to proceed with the project, resulting in no significant change to the environmental situation. On the other hand, implementing the project would lead to improved water provision for the communities in Runyenjes Sub-County. Opting for the No Project Option preserves the current state, making it the most environmentally conservative choice by maintaining existing conditions. This alternative ensures non-interference with the environment. However, without the project, issues will persist for residents of Runyenjes Town and surrounding rural areas:

- Inadequate Access to Reliable Water Supply: Residents in Runyenjes will continue to face challenges in accessing a consistent and reliable source of portable water

- High Non-Revenue Water Losses: The town will continue to experience significant losses of abstracted water due to factors such as leakages and illegal connections, exacerbating water scarcity issues
- Lack of Improvement in Living Standards: The overall well-being and living standards of the target beneficiaries will not see any positive changes, potentially leading to a stagnant socio-economic environment
- Limited Opportunities for Future Growth: The town's potential for expansion and development will be constrained, hindering progress and prosperity in the long term
- Absence of Employment Opportunities - The absence of the project means there will be no new job opportunities generated during both the construction and operational phases, impacting local employment rates
- Unregulated Tariff Charges - The Community Water Supply Schemes may continue to impose uncontrolled tariff charges, potentially burdening residents with high water costs
- Inefficient Water Network System - The lack of a coordinated approach may result in an unplanned and uneconomical water network system, with numerous parallel water pipes from different community Water Supply Schemes
- Higher Risk of Waterborne Diseases: Residents will face an elevated risk of contracting waterborne diseases, posing a threat to public health and well-being.
- Continued Water Shortages and Rationing: The targeted populations will continue to experience acute water shortages and the need for rationing, affecting daily life and productivity
- Environmental Degradation: The absence of the project may lead to continued environmental degradation, potentially harming local ecosystems and natural resources
- Loss of Productivity and Wealth Creation: The lack of improved water infrastructure may result in reduced productivity and hinder the ability of residents to create wealth, impacting the overall economic well-being of the community
- Continued Use of Untreated Water: The beneficiaries will persist in using raw water from the existing system, which lacks proper treatment facilities, potentially exposing them to health risks
- Stagnation of Sub-County Growth: The lack of progress in water infrastructure will likely lead to a stagnation of growth in the sub-county, affecting various aspects of development and well-being.

The expected environmental impacts are not extreme and can be managed to reduce negative impacts on the environment. Therefore, the 'No Project' option is not a suitable alternative for the community.

5.8. Alternative Site

The Runyenjes Water Supply Project is founded on specific criteria, ensuring that the proposed development is situated in an area designated for similar projects or requires the protection of rare or endangered species of plants or animals found on-site. Additionally, the chosen site may be close to an ecologically sensitive area. Following the completion of the Environmental and Social Impact Assessment (ESIA) processes, it has been verified that the project harmonizes with the surrounding environment and will not impede other developments. The selected site benefits from favourable water flow, and also has existing infrastructure, including treatment works and a treated water main. The chosen site does not present any particular concerns related to physical, biological, cultural, or socio-economic features. However, should this option be selected, the proponent would be required to explore an alternative site, either within or outside the designated zone. This means acquiring or leasing another parcel of land elsewhere, as there is currently no alternative site available. This search for and acquisition of a similarly sized piece of land could be a time-consuming process, involving official transactions related to land ownership changes. Furthermore, there is no guarantee that suitable land will be available, and if it is, the cost may exceed what the proponent can afford. The processes of designing and planning would need to be initiated anew. The proponent would have to re-engage professionals such as architects, ESIA experts, land surveyors, and physical planners to evaluate the feasibility of the new site. Additional expenses would be incurred in the design and approval of building plans for the new location. No other site would be as suitable for implementing the proposed project, especially given that it involves rehabilitation work on existing facilities.

This alternative is therefore not a viable to adopt for this project, this is due to the fact that implementing the proposed Runyenjes Water Supply Project is linked with no purchase and compensation of land for any project activity only wayleave easement from the KFS only for the Storage tanks within the community which have also possibility of been constructed on public land.

6. CHAPTER SIX: STAKEHOLDER ENGAGEMENT

6.1. Introduction

Project stakeholders are individuals, groups or other entities who are affected by, or have interest in, the Project and must be informed and consulted about the project. Engagements with the project affected communities was conducted before the project commences and will be sustained throughout project implementation and closure. For effective engagement, project stakeholders were categorized into three main groups, as described in the next sections. This section also describes the public consultation events held to discuss the proposed water supply project with various stakeholders. The aim of the consultations was to ensure that stakeholder interests were identified during the ESIA and that stakeholder views, and in particular those of PAPs were considered. The copies of the lists of attendants at various public meetings (*barazas*) and key informants are provided in the Annexes. Community members were mobilized through the provincial administration (local chiefs and sub chiefs) and village chairmen. The public consultations took the form of public meetings (*barazas*), which brought together representatives from the larger community including the local leaders and village chairmen. Annexed in this report is the Stakeholder Engagement Plan (SEP) Annex three for further details.

6.2. Stakeholder Engagement Plan (SEP)

A Stakeholder Engagement Plan has been developed to outline a structured, informed, and inclusive approach for TWWDA to engage with stakeholders regularly throughout the project phases. The primary objectives of the SEP are:

- Establishing a systematic method for stakeholder engagement throughout the project lifecycle.
- Identifying key stakeholders impacted by the proposed projects, understanding their interests, concerns, and influence regarding project activities.
- Facilitating effective and inclusive engagement with project-affected individuals throughout the project cycle on matters that may affect them.
- Identifying efficient methods to disseminate project information based on stakeholders' needs.
- Ensuring timely and accessible disclosure of project information regarding environmental and social risks and impacts to stakeholders.
- Providing accessible and inclusive channels for project-affected parties to raise grievances, enabling project implementers to respond to and manage such grievances effectively

6.3. Stakeholders Consulted

During the field investigations, the Consultants held discussions and interviews with various stakeholders with the view of gathering their views on various aspects regarding the proposed rehabilitation project and incorporating them in the ESIA report. These stakeholders included:

Table 6-1: List of stakeholders consulted

Category of stakeholder	Stakeholder consulted
Project Proponent	• TWWDA staff
Embu County Government	• County Executive (Ministry of Environ, Water and Natural Resources)
Public Administration	• County Commissioner, Embu County • DCC Embu East • ACCs • Chiefs
General public	• Community barazas
Key Ministries and related agencies	• Tana Water Works Development Agency • Water Resources Management Authority • Public Health & Sanitation • Lands office • Ministry of lands • Directorate of Occupational Health and Safety Services

For this project, the affected parties are the ministry of Water and Sanitation and other water sector institutions and County Government institutions and their staff, communities and community institutions that will directly benefit from projects activities, and other government staff that will support the project including, but not limited to, Ministry of Finance and Planning, National Treasury, Ministry of Environment, Ministry of Public Services and Special Programs, among others. Others will include universities, colleges and other technical institutions targeted for capacity building under the project. More project affected parties may be identified as the project is implemented and the SEP will be updated accordingly.

Table 6-2: Categories of Project Affected Parties identified as stakeholders

Project Affected Parties (PAPs)

Name of the stakeholder	Type of Engagement done	Remarks
Private individuals whose land or source of income or livelihood has been affected	Contacted through the local community leaders. Informed of the type of impact and that they will be compensated commensurately. Minutes of these engagements are annexed on the ESIA report.	Detailed RAP report has been prepared
Kenya Forestry Service (KFS)	The County Conservator was consulted formerly. Her input was factored in the development of Biodiversity management plan.	Way leaves permit and Easement Permit shall be acquired from KFS
Irangi Community Forest Association	A meeting was held to inform and consult their leadership on Friday 23rd February 2024. The consultation feedback was factored in the Biodiversity Management Plan.	A fee of 10,000Sh to be paid for the ecosystem services to the CFA.
Kenya National Highway Authority (KENHA)	Project pipework will pass through some of their road reserves	Consulted during the RAP process and Way leave permits to be sort
Kenya Urban Road Authority	Project pipework will pass through some of their road reserves	Consulted during the RAP process and Way leave permits to be sort
Kenya Rural Roads Authority	Project pipework will pass through some of their road reserves	Consulted during the RAP process and Way leave permits to be sort

6.4. Other Interested Parties (OIP)

These constitute individuals/groups/entities whose interests may be affected by the project and who have the potential to influence project outcomes. OIP may not experience direct impacts from the project, but they may consider or perceive their interests as being affected by the project and/or who could affect the project and the process of its implementation in some way.

For this project, OIPs include CSOs, UN agencies, and development partners engaged in the water sector in the country who may become partners. Others include local entrepreneurs and the business community that will benefit from business opportunities and contracts; universities and colleges which will provide technical expertise to the project; and mass media and associated interest groups, including local, regional, and national print and broadcasting media, digital/web-based entities, and their associations, among others.

6.5. Disadvantaged and vulnerable individuals and Groups

These are persons who may be disproportionately impacted or further disadvantaged by the project as compared with any other groups due to their lowly position in society and their vulnerability. Such individuals and groups may require special efforts to ensure their equal representation in the project consultation and decision-making processes.

The disadvantaged and vulnerable individuals and groups identified for this project include nomadic pastoralists, people with disabilities (PWDs), internally displaced persons (IDPs), minority groups/clans/sub-clans, female and child headed households, among others.

6.6. Identification of stakeholders

There are several categories of people and institutions that will be affected directly by the project and those with an interest in the project at different levels that will need to be consulted and engaged in the project activities, as summarized in the Table below

Table 6-3: Stakeholder group, nature of interest in the project, interest and influence

Stakeholder group	Nature of interest in the project	Interest	Influence
	Project Affected Parties		
Communities that will benefit from	• Meaningful community engagement in the project decisions	High	High

water infrastructure investments for their households' consumption, livestock, and farming	including identification of priority Last Mile infrastructure need, project site selection • Involvement in project implementation • They reap maximum benefits from the project activities including sanitation and quality drinking water • Lack of interference in the selection of community project committees at the local level • Community project committees are trained and facilitated to perform their multiple roles • They will get employment from the project activities (e.g., construction workers, security guards, jobs for youth, men and women with requisite education and skills in project management)		
Ministry of Water and Sanitation officials and staff (including WRMA, WSRB, etc.) and County Government levels	• MoWSI will meaningfully engage with partners in all aspects of the project from project design and throughout the project cycle • Capacities of the staff are built to effectively deliver the project • Communities benefit from the projects which will enhance government legitimacy National water legal, policy and administrative actions are developed and/or reformed for effective management and use of water resource	High	High

	• Coordination between the National and County Governments is done in a transparent and accountable manner, and with mutual respect for institutional and functional integrity at the level of government • Principles of engagement are observed in all aspects of consultation at different levels- National, County, and local community		
Department of Water Officials in County Governments (including the WSPs)	• Meaningful and structured engagement in all aspects of the project from design and throughout implementation cycle • Capacities of the staff are built to effectively deliver the project • Communities benefit from the projects, which will enhance government legitimacy • County groundwater legal, policy and administrative actions are developed and/or reformed for effective water management and use • The coordination between the National and County Governments is done in a transparent and accountable manner, and with mutual respect for institutional and functional integrity of the different levels of government • Principles of engagement are observed in all aspects of consultation at different levels -	High	High

	national, county and local/community		
Other Ministries at national and County levels (e.g. Finance, Environment and Natural Resources, Labour and Social services ; Gender)	• Principles of engagement are observed in all aspects of consultation at the different levels • Information is shared in a timely manner and feedback is used to inform further engagement on the project • Clarity on terms of engagement and ministries'/departments' role is provided from the beginning.	Medium	Medium
Women and Youth	• That they will be involved in project related decision-making processes to overcome traditional practices that have relegated them to the sidelines of decision making • That female/child headed households will benefit equally from the project.	High	Low
Older people and those with chronic illnesses	• These people have limited movement and may not be able to attend meetings and be part of decision-making • That some are illiterate and would require communication to be delivered to them in a language they understand using channels they can access • That they, or their caregivers/representatives, will be informed and engaged in project processes	High	Low

	• That they will have access to project services once the project is operationalized
People with Disabilities	• These people might have limited movement and may not be able to attend meetings and be part of decision-making • Depending on the type of disability, some might require special consideration during meetings inform of sign languages, brailles etc. • That they, or their caregivers/representatives, will be informed and engaged in project processes • That they will have access to project services once the project is operationalized

6.7. Public Participation Meeting

Table 6-4: Public Participation Meetings

Date of Meeting	Sampled Area	Meeting Venue	Participants Involved	No. of Participants
13th, February 2024	Municipality and the entire Sub County	Runyenjes Town Hall	Public Administration PAPs Representatives fron County government and WSPs Village representatives	
5th September, 2023	Mwenendega, Jeruri, kigangari, kagumori, Rugusha,Gatinda, Gicakiri, Gachuki,	**Kigaa Market, Chief's Office**	Chief Runyenjes East location Proponent representatives Sub-County Water Officer Runyenjes	**TOTAL:82** Male:47 Female:35

	Mbogori and Kigaa		Village Elders Residents	
6th September,2023	Gikuuri	**Gikuuri Chiefs office**	Chief Runyenjes East Location Assistant Chief Gikuuri Sub location Proponent representatives Sub-County Water Officer Runyenjes Village Elders Residents	**TOTAL:28** Male:11 Female:17
	Mbiruri	**Mbiruri Assistant Chief's Office**	• Chief Runyenjes East Location • Assistant Chief Mbiruri Sub location • Proponent representatives • Sub-County Water Officer Runyenjes • Residents	**TOTAL:9** Male: 4 Female:5
	Gitare	**Gitare Tea Buying Centre**	• Chief Runyenjes East Location • Assistant Chief Gitare Sub location	**TOTAL:12** **Male:11** **Female:1**

6.7.1. Main Issues from Public Participation

The respondents mentioned positive impacts related to the proposed project as follows:

- There will be reliable and safe water supply to the targeted people in the targeted areas.
- There will be adequate water supply once the project is completed to the areas that face water rationing
- The increase in amount of water available for use at the homestead would improve on the standard of hygiene
- There will be job opportunities for skilled and unskilled labour

6.7.2. Public Concerns and Consultant Responses

Table 11 below summarises issues that were raised by various stakeholders. Detailed minutes and attendance lists have been annexed as annex 4.

Table 6-5: Issues raised during the stakeholder engagement forum

Key Issue	Comment	Response/Mitigation Measure
Clearing Vegetation	Vegetation within and around the project site work area will be destroyed	Reinstatement of the project sites to their original state Limit site clearance to pipeline route
Interference with Individual Property	Residents stated that any interference with individual property should be compensated	✓ The proposed pipeline route would utilize road reserves. In case of any interference with individual property valuation would be done and compensation carried out accordingly.

Occupational, Health and Safety	Animals and human beings could fall into the trenches and be injured There might be some incidences of work-related injury to human beings	No excavated areas/trenches should be left open. Backfilling should be done immediately. Workers be provided with PPE. Communities be sensitized before commencement of work on issues to do with safety. Put up signage to show construction work is going on
Noise and Air Pollution	There will be noise from workers and machines (including vehicles) during construction The vehicles bringing the construction materials will cause air and noise pollution	✓ Use machines minimally and the rest to be done manually to create jobs ✓ Control the noise from the workers at the ✓ construction site ✓ Control human and vehicular traffic Use modern technology able to minimize noise ✓ Cover construction materials to control dust from polluting the air ✓ Sprinkle Water accordingly to minimize dust.
Solid Waste generation	Solid waste will be generated from construction activities	✓ Solid waste generated from the construction work need to be collected and disposed

		appropriately and on time
Employment of the Locals	Residents requested that the Contractor offers the residents job opportunities both skilled and unskilled during construction phase.	✓ The proposed project would offer a platform where locals would get jobs both skilled and unskilled.
Community inclusion in decision making	Residents pointed out the Proponent and all stakeholders involved should include the residents during all project phases to ensure their needs are met especially during decision making.	✓ The Proponent would ensure the community concerns and issues are addressed accordingly.
Tariffs/Water Charges	Residents enquired on the charges to be incurred once connected to the proposed project. The residents proposed that charges be user-friendly as many residents' struggle paying water bills while others do not pay for water.	✓ The residents were informed that the water tariffs are provided by WASREB in consideration of all factors

New Connections	Some residents questioned on whether they would be allowed to connect to the new system considering some have existing water connections from other water service providers. Some residents enquired whether the proposed project would utilize the existing water infrastructure especially pipelines	The Residents were informed that all interested applicants would be connected. Additionally, the water would be metered independently and charged based on consumption. The proposed project would have new infrastructure i.e., new intake, raw water mains, water treatment works facility, distribution lines and storage tanks. The proposed project would not use pipelines from other existing water projects.
Modalities of connection	Modalities of getting a water connection once the project is complete	✓ They were informed that water connections will be spearheaded by the Water Service Provider in the area after commissioning
Project and commencement **Completion date**	Locals enquired on the commencement and completion of the proposed project Residents recommended the project commences as soon as possible.	✓ The proposed project is currently in the planning stage. Once all documentation and all relevant procedures are fulfilled the project would commence.

Irrigation Water	Residents enquired whether the proposed project would create provision for irrigation water	✓ The proposed project only caters for domestic water needs.
Other Community Recommendations		
✓ Some residents proposed construction of a dam project for both domestic and irrigation purposes.		
✓ A community member from Kathageri Sub location commented that the riparian areas to conserved so as to preserve the current water sources and springs in the area i.e., plant water conserving trees such Bamboo be considered and other native species that are adapted to the local ecosystem		

6.8. Grievance Redress Mechanism

Grievance redress mechanisms are procedures put in place to allow people to complain without cost and with assurance of a timely and satisfactory resolution of that complaint. They are essential tools for allowing affected people to voice their concerns regarding their complaints as they arise and, if necessary, for corrective action to be taken in a timely manner.

6.9. Objectives of the Grievance Redress Mechanism

The objectives of the GRM are as follows:

i. To address complaints and grievances and enhance conflict resolution arising from, and during project implementation.
ii. Ensure transparency and accountability throughout the implementation of projects and programmes amongst the relevant stakeholders including project beneficiaries.
iii. Resolve any emerging environmental and social grievances in project areas.
iv. To promote relations between the project implementers, executers and beneficiaries.

The Grievance Redress Mechanism Structure

A three-level redress mechanism targeting all stakeholders involved in project implementation will be adopted.

1. Community Level

The first level of redress targeting communities and project beneficiaries, in general, will be at the community level. To address issues of project complaints and compensation conflicts, a Local Grievance Management Committee at location level shall be formed. The committee shall comprise of five members who shall include the local chief and the other members who shall be elected by the project beneficiaries. The committee will be chaired by the local chief. Amongst the four members elected, both genders must be represented**1**. The committee shall be trained by the local WSP (KYEWASCO) liaison officer on conflict resolution, group dynamics, and financial management among other areas that shall be deemed necessary.

The mode of receipt of the complaints/ grievances will either be in writing, reported verbally, over the phone or emails. The committee secretary shall record all reported

1 The committee should have at least two female members

grievances in the standardized grievance log provided. It is however anticipated that at this level, most complaints will be made verbally.

Once a complaint has been registered, the local grievance management committee will set a day to investigate the same and offer an action/ solution. If possible, a meeting will be held between the complainants and the concerned project officer to find a solution. The details of how the complaint was investigated and recommended action will be filled in the grievance log. If the complainant will not be satisfied with the recommended action given, they shall be advised to report to the second level of redress.

2. County Level

The second level of redress will be at the county level where a county grievance management committee shall be chaired by a nominee of the proponent, TWWDA with membership from KYEWASCO. Other members of the committee shall include the community liaison officer from KYEWASCO and the chairs of the various local grievance management committees. The committee will be trained in handling project grievances.

Just like the case with the first level of redress, once a complaint has been registered, the county grievance management committee will set a day to investigate the same and offer an action/ solution. If possible, a meeting will be held between the complainants and the concerned project officer to find a solution. A grievance investigation report form which will give details of how the complaint was investigated and recommended action as provided in the attached grievance log.

3. The Commission on Administrative Justice (CAJ) the Ombudsman

Another avenue for grievance redress is the Commission on Administrative Justice. The Ombudsman is the formal feedback and complaints handling mechanism in Kenya. Its mandate is to receive and address complaints against public officers and public institutions to improve service delivery. The types of complaints can be made to the office of Ombudsman including the following:

- Citizen against state/ public officers and institutions
- Public officers against fellow public officers
- Public institutions against other public institutions

Figure 6.1 below presents various levels of grievance redress for the project.

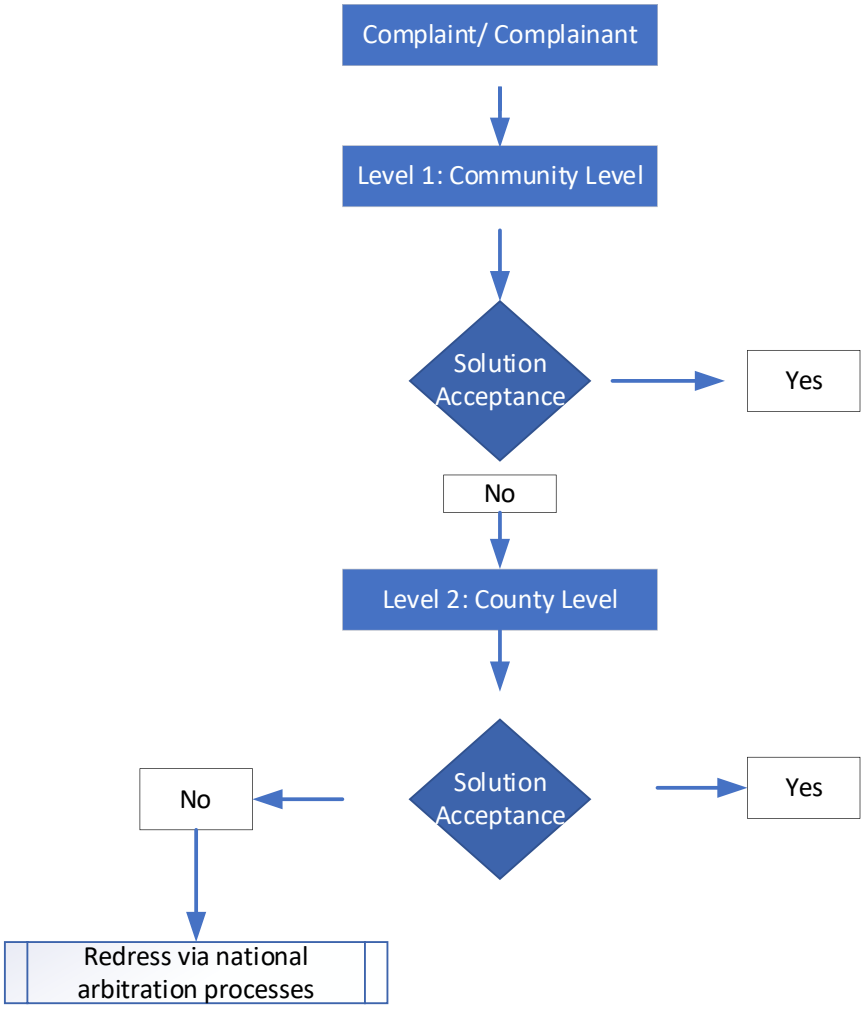


Figure 6-1: Levels of grievance Redress Mechanism

7. CHAPTER SEVEN: ASSESSMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS

7.1. Introduction

This chapter presents analysis of positive and negative impacts of various components of the project on the climate, soils, geology, topography, air, noise, water resources, sanitation, biological, social and economic status of the people. The assessment is presented for the pre-construction/ planning, construction, operational and decommissioning phases. Appropriate mitigation measures to prevent, minimize, mitigate or compensate for adverse environmental and/or social impacts have been proposed.

Impact assessment was based on project activities listed detailed in Chapter 3.

- Construction of water source intake at Thuci River
- Treatment works of 15,000m^3 capacity
- Construction of Storage Tanks (11)
- Transmission Pipe Network
- Water Resources Monitoring
- Climate Change Adaptation and Mitigation

The interactions between project activities and environmental and social receptors were assessed and the anticipated impacts for all project phases classified under three categories i.e.

1. Environmental category - geology, soil and topography, climate, water quality and biodiversity (plants, birds, animals)
2. Social category - social disruption and livelihoods, jobs & income
3. Occupational health and safety category - Health & safety, noise, air quality and sanitation
4. Community Health and Safety category

7.2. Anticipated Positive impacts during the construction phase;

a) Job Opportunities: the implementation of the project shall require human resource in form of skilled and unskilled labour. This shall contribute to income for the people who will be hired. To enhance this impact, the contractor shall ensure that they hire persons from the special category groups of women, youth and persons with disability and also prioritize buying construction materials from them.

b) Economic Stimulus in the locality: purchasing of construction materials from the local hardware shall contribute to growth of income for the businesses within the project site. Another way in which the proposed water supply project shall spur economic growth is by having the food businesses in the

project site thriving since the people at the construction site shall require to be supplied with food and beverages like tea.

c) Development of infrastructure; the need to improve the existing roads within the project site shall lead to improved access which could have a positive ripple effect economically since improved roads enhance mobility of people and goods. In addition, the contractor may install street lights, thereby improving the security of the area and encouraging a twenty-four-hour economy. Supply of construction water would by extension benefit the people within the project area since the contractor may decide to allow them to enjoy the resource.

7.3. Anticipated Negative Impacts and Enhancement during the Construction and Planning Phase

7.3.1. Planning phase;

a) **Loss of land and land use**; where pipelines pass through, land use shall be lost since the owner of such land cannot put up a permanent structure on that space. In an area where tanks for treatment works are to be carried out, absolute loss of land would happen to the owner of such a parcel of land. To mitigate against the negative impacts of loss of land or land use, a resettlement action plan would be paramount in order to compensate the project affected persons for their loss of land of land use.

b) **Conflicts as a result of compensation**; where a property is jointly owned by more than one person, compensation for their loss of land or land use may lead to conflict if they are not able to agree on the proportion of sharing the money given to them for compensation of their land. To mitigate against this negative impact, the project proponent shall have a GRM in place and ensure that all conflicts are well documented and handled amicably.

7.3.2. Construction phase;

a) **Risk of conflicts during workforce recruitment** (discrimination, child labour engagement etc). In the event that the contractor hires people from outside the project area at the expense of the people within the project area, conflict might arise. To mitigate against this negative impact, priority of employment shall be given to the local people and to ensure non-discrimination based on gender, both men and women shall be given equal opportunities of being hired. Additionally, the contractor shall adhere to the requirements of the Employment Act, Section 38 by keeping records of all workers engaged indicating date of employment,

name, national ID number, age, sex, hours of work and wages paid. A GRM shall also be established and followed to the letter to ensure proper conflict resolution.

b) **Potential risk of insecurity due to influx of job seekers**; in search of daily bread and better livelihood, people from various corners of the region may travel to the site of the proposed site to look for employment. Their being strangers in the area may make them comfortable to commit some crimes like stealing or sexual abuse to the vulnerable groups. To mitigate against this risk, the contractor shall develop a labour influx Management Plan to manage influx of workers and most importantly, ensure that he only hires people of majority age on production of identification documents, to enable easy tracking of anybody who may commit crime of any nature.

c) Risks of accidents during construction of the Contractor' campsites and construction of the water supply project; non observance of the basic safety protocols like wearing of PPEs or assuming the wrong ergonomics during work could lead to personal injuries and accidents. To mitigate against any possible accidents and personal injuries, a risk assessment should be conducted and all potential risks clearly mapped out to enable precautions to prevent their occurrence. Proper housekeeping should also be maintained in order to manage the stock of materials. The campsite should be equipped with fire extinguishers and fenced off in order to keep off unauthorized persons. Additionally, a speed limited of 20 Km/Hr should be enforced for vehicles moving around the campsite.

d) **Loss of natural vegetation** during project implementation; excavation works in order to lay the pipeline, construct the campsite or and the treatment works shall lead to significant loss of vegetation. This negative impact can be mitigated by ensuring minimal clearance of vegetation only within the project area and re-vegetation after completing the project.

e) **Disruption of road users' movement** on the road due to road closure or diversion during pipes laying activities; Excavation and pipe laying works may interfere with the movements of the motorists that would be using the road at the time of the project implantation. To reduce the negative impacts of this activity, the contractor shall ensure use of safety signage to guide road users to alternative routes on sections that may experience disruption. Additionally, permits and licenses to carry out the works shall be sought from the authorities.

f) **Occupational health and safety risks**; to mitigate against any possible occupational health and safety risks, the contractor shall hire a qualified safety officer to ensure adherence with safety requirements in the workplace. Display of safety appropriate signage to enhance awareness creation on the potential

hazards of the project shall be diligently done emergency contacts shall also be displayed in strategic positions. In addition, all new workers shall be inducted before being on boarded to work and safety signage to enhance awareness creation on the potential hazards of the project shall be displayed. WIBA Insurance for all workers as per Work Injury Benefits Act, 2007 shall also be undertaken by the contractor.

g) **Dust pollution**; dust generation could result from movements of vehicles and machineries or from excavation works. To reduce the negative impacts of dust pollution, Vehicles and site trucks shall be driven under the recommended speed of 40Km/h within public areas such as schools, and markets. Sprinkling of water on degraded access routes to reduce dust emission during transportation of materials to project site shall be enforced and any earth moving shall be done under dump conditions as much as possible to prevent emission of dust into the air. Similarly, piled materials (sand and aggregate) should be maintained dump to prevent dust emissions and workers operating in a dusty atmosphere should be provided with face masks to prevent them from inhaling any particulate matters around the working environment.

h) **Noise pollution** due to use of heavy machinery and earth moving equipment; Noise resulting from heavy machinery and earth moving equipment can be a source of nuisance especially in areas that are populated like market centres or even worse, near hospitals or schools. To reduce the negative impacts of noise pollution, hooting in public and reserved places shall be prohibited, noise levels shall be monitored at sensitive receptors (residential areas, schools and hospitals) and workers shall be encouraged to use ear muffs whenever they will be working in a noisy environment.

i) **Risk of gender-based violence/harassment/abuse**; Social interactions amongst workers might result into sexual relationships, some of them abusive. As a mitigation measure against any possible gender-based violence, workers shall be encouraged to report any cases of GBV for investigation and intervention. Additionally, workers shall be sensitized on GBV.

j) **Public health risk; spread of HIV/AIDS, STDs and other communicable diseases**; Exposure to unprotected sex could lead to people contracting the STDs or even HIV/AIDs. Mitigation against this would require efforts in educating the workers on the dangers of STDs through distribution of HIV & AIDS awareness materials in collaboration with NACC and provide them with condoms to protect themselves should they decide to engage in sexual relationships.

k) **Conflicts amongst workers and local communities**; In the daily interactions between the project workers and the community members, conflicts may arise

out of competition for work or disagreements. The contractor shall have a GRM for workers and will take time to sensitize the workers on the GRM and encourage the workers as well as community members to officially report their grievances so that they can be resolved amicably.

l) **Fire risks**; fire accidents could result from many sources and endanger the lives of both the project workers and community members. Provision of firefighting appliances in offices, stores, and site vehicles as well as regular training on fire risk reduction to workers during tool box talks would help in mitigating the risk of fire.

m) **Poor hygiene and sanitation**; Influx of many people into the project as workers or regular providers of various services would lead to the need for proper disposal of human waste. Failure to handle the human waste properly would lead to outbreak of water borne diseases, thus affecting the productivity of the workers. To address this, it shall be necessary to provide clean drinking water and sanitation facilities to workers at the work place and also provide mobile toilets and water for sanitation purposes such as hand washing and maintaining menstrual hygiene.

n) **Labour engagements risks**; with contracting of project workers, certain risks might arise such as discrimination based on gender, tribe, race and colour. The contractor shall ensure equal opportunities in labour engagements for all persons regardless of tribe, gender, colour or race. Timely payments of work done shall be observed as well.

o) **Interruption of existing infrastructure such as roads and internet cables**; Digging of trenches to lay the pipelines and excavating in order to construct the treatment plant might disturb the already existing infrastructure such as road. Involvement of all the relevant stakeholders would ensure minimum destruction during the construction phase.

p) **Solid waste generation**; solid waste resulting from packaging materials of some of the construction materials such as cement can pollute the environment or even find their way into water bodies where they can cause damage to the aquatic life. Among the ways of mitigating against the negative impacts of solid waste are; having a waste management plan before commencing the construction works, providing solid waste receptacles and storage containers, ensuring regular collection of the waste that has accumulated in site over a period of time, encouraging recycling and reusing where possible and most importantly, ensuring that segregation and disposal system is functioning properly at all times during the construction phase.

q) **Interference with physical setting** through blockage of natural drainage system at valley crossings and excavation for creation of access routes and related structures; the excavated soils and solid waste may be washed away and lead to blockage of drainage systems and also alter the aesthetics of an area. To prevent the adverse effects of this from interfering with the setting of the physical environment, any structures that are being developed should be aesthetically acceptable to blend in with the surrounding and site restoration shall be carried out in order to ensure that the original state is maintained as much as possible.

r) **Water quality impacts**; the excavated soil and debris could be washed away into the rivers and other water bodies thereby causing a deterioration in the quality of water. To keep minimal this negative impact, the contractor shall isolate solid wastes originating from the works during excavations for safe disposal. The wastes shall be collected and disposed in approved sites, earth moving and excavations for the construction shall be carried out considering safety of the river and surface drainage, there will be control siltation of rivers and other surface drains, and deliberate efforts shall be made in order to ensure that spilt oil does not discharge into water sources and also oil spill containment including concrete platform for servicing of construction equipment and holding of scrap oil drums shall be provided.

s) **Drainage and Hydrology disruption**; deposition of solid wastes into the drainage system can cause blockage and therefore interfere with the natural flow of water especially during rainfall. To minimize the negative impact that may result from drainage and hydrology disruption, the supervising engineer shall ensure that all excavated channels follow contours to avoid interference with surface drains, where necessary, the drains shall be directed along the construction line towards existing drainage systems to cater for storm water during the rains, excavated soil shall be utilized to level excavated ground where necessary in order to cover the pipelines and other construction materials and other debris (lime, cement and fresh concrete) shall be handled carefully to prevent them from finding their way into the nearby water sources.

t) **Soil erosion**; clearance of vegetation during digging of trenches to lay water pipelines and excavating in order to construct the treatment plant can expose soil to erosion by both wind and water. This can be mitigated by re-planting of the indigenous vegetation as much as practical once work is completed, limiting vegetation clearance unless where unavoidable circumstances appear, containing excavated soils so that they will not find their way into nearby water sources, ensure that cement mixing is carried out in a designated area away at a safe distance from storm water drains, spilled cement or concrete is collected and disposed away from natural water ways or storm water drainage and workers

are sensitized to enable them to properly handle concrete spillages or waste cement.

u) **Impact on natural vegetation**; in an effort to clear the leeway for the water pipeline as well as the proposed site of treatment works, some trees may be felled and certain vegetation cleared. This would lead to a loss of the value of such trees and vegetation in the area. To mitigate the negative impacts of this act, cutting of trees shall be restricted to the way leave area only and the PAPs and the local community that benefits from the existence of such trees/vegetation shall be given free seedlings as compensation in order to increase the forest cover.

v) **Contamination of the soil**, air and water by waste generated during construction works; various construction activities could lead to the contamination of the environment, i.e., soil, air and water. For instance, excavations lead to production of dust which pollutes the air, oil spillage from vehicles and machineries could lead to water and soil pollution and solid waste could add to water pollution. To mitigate the negative impacts of this, the 3Rs of waste management; reduce reuse and recycle shall be exercised. A site management plan outlining all possible waste streams and how to handle them shall be prepared by the contractor prior to commencement of work.

w) Impacts on air quality from vehicle exhaust emissions; the vehicles and machineries will be running on fossil fuels and this has the potential to produce emissions that could lead to air pollution, exposing the site workers to respiratory illnesses. To mitigate the potential negative impacts of this, drivers shall be instructed to not leave vehicles idling so that exhaust emissions are lowered, and the contractor shall ensure that all the machinery and equipment used on site are well maintained and in good working conditions to ensure keep emissions at the lowest level possible.

7.4. Anticipated Positive Impacts During the Operation Phase

a) **Improved health and quality of life** due to reduced incidences of waterborne diseases; the proposed water supply project shall deliver potable water to the residents of Runyenjes. Consumption of safe water shall help to keep the water borne diseases at bay, thus allowing the community to carry out development projects with the money that would otherwise be used in medical treatment of the waterborne diseases. Additionally, regular access to clean water means that the community is able to maintain high levels of hygiene through sanitation practices like hand washing and regular cleaning of their sanitation facilities. To enhance this impact, the WSP (KYEWASCO) should design innovative ways of ensuring that many households have access to safe and potable water close to

where they need it (either through increased communal water points or individual household connections)

b) **Reduced time spent by women in search for water**; women trek over long distances in search of water for domestic use. The proposed water supply project shall help to address this issue by ensuring that many households have access to safe and potable water close to where they need it (either through increased communal water points or individual household connections).This will leave more time for the women to undertake other activities of economic growth and personal development also to spend more quality time with their families.

c) **Increased access to safe drinking water**; The connection of households and institutions to tapped water shall mean increased access of safe drinking water which has numerous advantages such as reduced waterborne diseases, improved sanitation practices such as hand washing and reduced stress. To enhance this positive impact, the WSP shall ensure that as many households and institutions as possible are connected to the water supply.

d) **Increased revenues**; the water service provider shall be able to increase their revenue as they connect many households and institutions. Additionally, the sellers of water treatment substances such as chlorine and various mechanical parts that'll be required for the maintenance of the project shall increase their revenues. The plumbers and other technician that'll be responsible for operation and maintenance of the water supply project shall earn revenue for themselves in form of salaries and wages. The taxes that'll be paid upon provision of the routine operations and maintenance of the water project shall be a source of revenue for both the county and national governments. To enhance this positive impact, the project proponent should observe strict timelines of delivering the project so that all the points of revenue generation within the project can be activated.

e) **Employment opportunities**; at different points of the project operation, certain people shall be employed and this will lead to greater growth of their income. Engineers, technicians and unskilled workers shall be on boarded into the project during the operation phase.

7.5. Anticipated Negative Impacts and Mitigation Measures During Operation Phase

a) **Risk of encroachment** and construction of structures on the water easement corridor and way leaves; the informal sector in Kenya is characterized with semi-permanent structures which are built on road reserves. If built on top of a pipeline, this could add unnecessary pressure to the pipeline especially if heavy

activities are to be carried out. To mitigate the possible negative impact of this, mapping and installation of beacons which illustrate the width of the pipeline reserve shall be done, regular patrol of the pipeline corridor for encroachment shall be carried out, prosecution of encroachers as required by County By-Laws on way leaves and road reserves maintenance shall be also done and members of public shall be sensitized on the need for way leave protection.

b) **Risk of water pipeline bursts leading to water wastages** (increased non-revenue water); bursting of pipes that are meant to convey water could lead to increased non-revenue, thereby causing a financial strain on the water service provider due to increased cost of repairs. This shall be mitigated by ensuring regular check, repair and maintenance of the water pipeline, activating a community watch group for information sharing on the status of the waterline and implementation of a leak detection and repair program (including records of past leaks and unaccounted- for water to identify potential problem areas).

c) **Risk of Illegal connection** to the water pipeline; the need for potable water is dire and some people could decide to connect illegally, increasing the non-revenue water for the WSP. This can be mitigated by ensuring constant inspection by the WSP (KYEWASCO) officials and installation of leak and burst detectors at designated areas along the pipeline. In addition, conducting public sensitization programs on the importance of non-interference with the water pipeline and the need to seek official water connection from the area WSP would aid in mitigating against illegal connection.

d) **Solid Waste Generation**: Water Discharges during flushing/cleaning of pipes to remove sediments; This exercise would result in generation of solid waste which has negative impacts on the general environment. This shall be mitigated through sensitization programs on the best practices on solid waste management right from the source, transportation and disposal.

e) **Risk of vandalism of the infrastructure**; some of the people especially those that are in scrap metal business could resort to vandalizing some of the mechanical parts of the water supply system. To mitigate against this, a regular surveillance of the pipe network and treatment plant shall be conducted. This will ensure that there are proper security measures to guard the infrastructure and reduce cases of vandalism. Regular sensitization of the local community on the importance of protection of the water infrastructure shall be encouraged and an active community watch group for information sharing on the status of the water supply line shall be set up.

7.6. Impacts during Decommissioning phase;

a) **Occupational health and safety risks**; the activities of decommissioning the proposed water supply project could entail bringing down the treatment plant or excavating some of the laid pipes. These activities could lead to humans hurting themselves of even hurting each other as they use the machinery and move about the site. To mitigate the negative impacts of this, it would be paramount of the contractor to provide the correct PPE for the workers when conducting the demolition activities e.g safety shoes, helmets, gloves, overalls, dust masks etc, conduct training on health and safety procedures to the workers prior to commencement of demolition, display of appropriate safety signage to enhance awareness creation on the potential hazards involved during decommissioning, provide and display emergency contacts in appropriate areas, provide a well-stocked first aid kit at all active sites and ensure regular training of workers on basic first aid procedures and also ensure acquisition of WIBA Insurance for all workers as per Work Injury Benefits Act, 2007.

b) **Loss of jobs and income**; decommissioning of the water supply project would mean loss of job for so many people, from those working in the management of the WSP, to the technicians and plumbers who operate and maintain the water supply project all the way to the casuals who carry out different tasks that keep the project alive and profitable. Job loss could lead to emotional and psychological stress and to mitigate the negative impacts of job loss and income, the WSP should notify the employees in advance on the Project closure date and adequately compensate them, ensure that the dismissal procedures are compliant with Employment Act, 2007, provide counselling & alternative skills for alternative activities and find alternative means of livelihood for the staff who were employed at the water supply project where possible.

c) **Dust pollution**; excavation, demolition activities and movement of vehicles and machineries could lead to generation of dust and if not well managed, this can cause a strain on the respiratory system of the people working in the site at the time of project demolition. To mitigate the negative impacts of this, speed control of site vehicles to a max of 40kph should be observed, water should be sprayed on dusty excavated areas to keep down the dust, dust masks should be provided to workers when working in dusty conditions and vehicles and machineries should be regularly serviced in order to avoid excessive smoke emission.

d) **Noise pollution** due to use of heavy machinery and earth moving equipment; movement of vehicles and machineries can lead to generation of noise which can cause disturbance to the people living near the site. This shall be mitigated by

strictly scheduling night activities during the day, using silencers on machines where possible and ensuring that machines are well maintained in order to reduce noise emitted.

e) **Risk of gender-based violence/harassment/abuse**; a convergence of many people of different genders could lead to some human conflicts like competition for work which could escalate to gender based violence. Sensitization of all workers on the dangers of gender-based violence can help to mitigate any negative impacts of GBV.

f) **Public health risk; spread of HIV/AIDS**, STDs and other communicable diseases; sexual interactions of men and women at the time of working to decommission the water supply project could lead to spread of HIV/AIDs and STDs. To mitigate against this, worker's sensitization on HIV/ AIDs and other STDs shall be carried out regularly, condoms shall be freely provided and distribution of HIV & AIDS awareness materials in collaboration with NACC shall also be done.

g) **Conflicts amongst workers and local communities**; disagreements may arise between workers and the community members due to various reasons. The contractor shall mitigate against any negative impacts of this by having a GRM for workers in place, sensitizing workers on the GRM and encouraging official reporting of grievances.

h) **Solid waste generation**; the various materials that were used in the construction of the water supply project shall form a great part of the solid waste. To manage the menace of solid waste and avoid environmental pollution, disposal of solid waste shall be carried out in compliance with EMCA 2006 Waste Management Regulations, segregation of waste to encourage reuse and recycling shall be done at source and a registered waste handler shall be contracted in order to ensure proper and safe disposal of waste.

i) **Contamination of the soil, air and water** by waste generated during decommissioning works; all the waste resulting from the decommissioning of the water supply system has the potential to contaminate soil, air and water. Collection, segregation and responsible disposal of wastes generated through engaging a registered waste handler could help in lowering the chances and extent of environmental pollution.

j) **Site restoration and rehabilitation impacts during decommissioning activities**; there are negative impacts that may result from site restoration and rehabilitation activities during project decommissioning such as change of sceneries from what was previously there. To reduce on the negative impacts of this, efforts shall be

made to maintain the original state of the site before the project was commissioned

7.7. Contractors Campsite

The implementation of this project shall also have contractors' campsite during construction Phase of the project. The Campsite is a place with temporally structures from which the contractor operates from during implementation of the project. The site may comprise structures such as office buildings, dinning, stores and warehouses, worker's accommodation building, recreation facilities, vehicle maintenance garage, metal and electrical workshop, crushed quarry stone and sand piles, other fixed equipment such as cement batch plant, fuel storage facility, quarry stone piles among others.

Depending on the activities at campsites, and materials stored at the place, the campsite might have low, medium to high impacts on social and natural environment of the area that needs proper assessment and mitigation measure put in place. The campsites will be decommissioned after construction phase of the project is completed.

7.8. Camp Site Location Criteria

Camp site selection will depend on many factors, including the size and conditions of the site and availability of resources; the safety, security and protection it offers and cultural and social considerations. Choosing a site involves consideration of access, coexistence with surrounding communities, topography, trees and vegetation, the potential impact on the environment, environmental causes of disease and other public health issues.

Selection of the location for the campsite location should consider environmental and social mitigation hierarchy i.e., Avoidance, where avoidance is not possible minimize/reduce risk and impacts, once risk reduced mitigate, and where significant residue impacts remains compensate for. The project will ensure that all campsites have minimal environmental and social impacts by following the criteria below to guide selection:

i. Away from populated human settlement preferable away from villages and cluster settlement, (preferably at least 5km away). This is to prevent disruption to local communities due to an influx of labour
ii. The area to be used for the camp must be agreed with the landowner and compensation paid in line with the project's RAP before access to the site is permitted
iii. No tree that is bigger than 200mm diameter at breast height may be felled in the construction of a camp

iv. Away from cultural sites and heritage such as graveyard
v. At least 1.0 km away from surface water resource,
vi. Away from flood water passage
vii. Availability of reliable water supply
viii. Availability of sanitation services
ix. Public Safety and Security
x. No requirement for intensive vegetation clearance
xi. No heavy settlement along access road to campsites
xii. The site should not result in dispersion of solid waste, and dust.

7.9. Camp Closure

Camp closure or decommissioning shall be done upon completion of construction phase. The contractor shall ensure once the use the camp(s) has been completed, the camp has been fully rehabilitated. All buildings, foundations and hard-standings must be removed. The septic tank must be pumped out by a certified waste disposal company, and the place back-filled. All waste materials must be disposed of according to the guidelines provided in this ESIA.

8. CHAPTER EIGHT: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

8.1. Introduction

An Environmental and Social Management Plan (ESMP) provides the framework for management and mitigation of impacts anticipated from the proposed project. This ESMP has been prepared in accordance with national and international requirements. The ESMP outlines 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.

8.2. Environmental and Social Management and Monitoring Plan (ESMMP)

Table 8-1:Environmental and Social Management and Monitoring Plan (ESMMP) for the proposed Runyenjes Water Supply Project

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
Planning Phase						
Human (Local community Contractor workers)	Conflicts related to loss of Land and Land Use	High	• Prepare a Resettlement Action Plan (RAP) for purposes of compensation of assets and crops where land will be acquired particularly for wayleave purposes • Prepare a Grievance Redress Mechanism (GRM)	TWWDA Consultant Team	• Minutes of PAPs consultation meetings • Comprehensive RAP Report	250,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
					• Grievance Redress Mechanism	
	Risk of conflicts during workforce recruitment (discrimination, child labour engagement etc)	Medium	• Priority of employment to be given to the local people • Contractor to ensure equal opportunities in labour engagements for both men and women • Contractor to adhere to the requirements of the Employment Act, Section 38 by keeping records of all workers engaged indicating date of employment, name, national ID number, age, sex, hours of work and wages paid • Establishment of a Grievance Redress Mechanism (GRM)	TWWDA Contractor Resident Engineer	• Staff records • Records of grievances	N/A
	Potential risk of insecurity due to influx of job seekers	Medium	Contractor to develop a Labour Influx Management Plan to manage influx of workers	TWWDA Contactors	Availability of a Labour Influx Mgt Plan and the project GRM Public	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
					sensitisation minutes	
	Risks during construction of the Contractor' campsites	Medium	• Risk assessment for proposed campsite sites' which must be approved by the client • Proper housekeeping measures to manage stock of materials • Campsite not to be located in a highly inhabited site • The campsite to be equipped with fire extinguishers • Campsites must be well fenced and appropriate safety signages displayed in strategic locations • Enforcement of speed limit of 20kph for vehicles within the campsite	TWWDA Resident Engineer Contractor	Risk Assessment Report Accident reports	2,000,000
Animals, plants and biodiversity	Loss of natural vegetation during campsite construction	Low	• Vegetation clearance to be limited to the minimum required place • Revegetation after construction	TWWDA Resident Engineer Contractor	Restored site	30,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
Construction Phase						
Human	Disruption of road users' movement on the road due to road closure or diversion during pipes laying activities	Medium	• The client to seek necessary permits from authorities • Use of safety signage to guide road users to alternative routes on sections that may experience disruption	TWWDA Contractor	• Permits • Availability of safety signage in affected road sections	N/A
	Occupational health and safety risks	High	• Contractor to hire a qualified safety officer to ensure adherence with safety requirements in a workplace • Conducting training • Provision of adequate PPEs to all workers e.g safety shoes, helmets, gloves, overalls, dust masks etc • Display of appropriate safety signage to enhance awareness creation on the potential hazards of the project	TWWDA Contractor Resident Engineer	• Availability of PPEs and first aid kits • Availability of safety signage in appropriate areas	1,500,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Provision and display of emergency contacts in appropriate areas • Safety induction of new workers • Provision of a well-stocked first aid kit at all active sites and regular training of workers on basic first aid procedures • All Contractor to acquire WIBA Insurance for all workers as per Work Injury Benefits Act, 2007		• Records of Tool box talks • Attendance list	
	Dust pollution	Low	• Vehicles and site trucks should be driven under the recommended speed of 40Km/h within public areas such as schools, and markets • Sprinkle water on degraded access routes to reduce dust emission during transportation of materials to project sites • Earth moving be done under dump conditions as much as possible to prevent emission of dust into the air, • Similarly, piled materials (sand and aggregate) should be maintained dump to prevent dust emissions • Provision of dust masks to workers working in dusty environs	TWWDA Contractor Resident Engineer	Adequate PPEs to workers Records of traffic accidents involving site vehicles	350,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	Noise pollution due to use of heavy machinery and earth moving equipment	Low	• Discouraging hooting within public places or reserved places • Proper servicing of vehicles • Monitor noise levels at sensitive receptors (residential areas, schools, hospitals) • Use of hearing protective gears e.g. ear muffs and ear plugs by workers working in noisy environments	TWWDA Contractor Resident Engineer	Vehicle maintenance records	50,000
	Risk of gender-based violence/harassment/abuse	Low	• All cases of GBV to be reported, investigated and resolved • Sensitisation of workers on issues of GBV	Contractor Resident Engineer	GBV Reports Training Reports	100,000
	Public health risk; spread of HIV/AIDS, STDs and other	Medium	• Worker's sensitization on HIV/ AIDs and other STDs • Provision of condoms to workers • Distribution of HIV & AIDS awareness materials in collaboration with NACC	Contractor Resident Engineer	Records of toolbox talks	250,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	communicable diseases					
	Conflicts amongst workers and local communities	Low	• All Contractor to have a GRM for workers • Sensitization on project GRM • Reporting on all grievances	TWWDA Contractor Resident Engineer	Training reports Grievance reports	250,000
	Fire risks	Medium	• Provision of firefighting appliances in offices, stores, site vehicles • Regular training on fire risk reduction to workers during tool box talks	Contractor Resident Engineer	• Availability of firefighting appliances • Records of tool box talks	200,000
	Poor hygiene and sanitation	High	• Provision of clean drinking water and sanitation facilities to workers at the work place • Provision of mobile toilets and water for sanitation purposes	Contractor Resident Engineer	Availability of clean drinking water and sanitation	50,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
					services on site	
	Labour engagement risks	Medium	• Contractor to ensure equal opportunities in labour engagements for both men and women • Timely payments to workers to be made in line with agreements	Contractor Resident Engineer	Staff records (M/F)	N/A
Environment (Land, Biodiversity / plants & animals, Water)	Interruption of existing infrastructure such as roads and internet cables	Medium	• Involvement of all parties utilising the road reserve to ensure minimum destruction during construction phase	TWWDA Contractor Resident Engineer	Copies of agreements	30,000
	Solid waste generation	High	• A site waste management plan should be prepared by the contractor prior to commencement of construction works • Proper solid waste receptacles and storage containers should be provided • Arrangements should be made for the regular collection of litter and for its disposal with the County Government	• TWWDA • Contractor Resident Engineer	Availability of a solid waste management plan	150,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Ensure that the solid waste collection, segregation, and disposal system is functioning properly at all times during the construction phase; • Recycle and re-use wastes where possible such as scraps metal.			
	Interference with physical setting • Blockage of natural drainage system at valley crossing; • Excavation for creation of access routes and related	Medium	• The structures to be developed should be aesthetically acceptable to blend in with the surrounding; • The proponent shall as much as possible complete the works in such a way that natural aesthetics shall be retained at the locations • Restoration shall be undertaken to ensure that the original setting is as much as possible retained	• TWWDA • Contractor • Resident Engineer	Restored/ rehabilitated sites	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	structures.					
	Water quality Impacts	High	• Isolate solid wastes disrupted from the works during excavations for safe disposal. The wastes should be collected and disposed in approved sites. • Earth moving and excavations for the construction are carried out considering safety of the river and surface drainage. Control siltation of rivers and other surface drains • Ensure spilt oil does not discharge into water sources • Provide oil spill containment including concrete platform for servicing of construction equipment and holding of scrap oil drums.	TWWDA Contractor Resident Engineer	Water quality tests	30,000
	Drainage and Hydrology disruption	High	• Excavated channels to follow contours to avoid interference with surface drains • Where necessary, the drains to be directed along the construction line towards existing drainage systems to cater for storm water during the rains.	Contractor Resident Engineer	Clear drainage	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Utilise excavated soil to level excavated ground where necessary and cover the pipelines • Construction materials and other debris (lime, cement and fresh concrete.) should be handled carefully to prevent them from finding their way into the nearby water sources			
	Soil Erosion	Medium	• Re-plant the indigenous vegetation as much as practical once work is completed. • Limit vegetation clearance unless where unavoidable circumstances appear; • Contain excavated soils so that they will not find their way into nearby water sources; • Cement mixing should be done in a designated area away at a safe distance from storm water drains; • Spilled cement or concrete should be collected and disposed away from natural water ways or storm water drainage • Sensitise workers and enable them to properly handle concrete spillages or waste cement;	Contractor Resident Engineer	• Rehabilitated sites • Incidents of soil erosion reported	30,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Re-vegetation of exposed areas around the site should be carried out rapidly in order to mitigate against erosion of soil through surface water runoff and wind erosion.			
	Impact on natural vegetation	Medium	• Cutting of trees to be restricted to the wayleave area only • Issuance of tree seedlings to PAPs and local community to compensate for the trees cut and increase forest cover	TWWDA Contractor Resident Engineer	• Records of number of trees cut • No. of tree seedlings issued to PAPs and local community	500,000
	Contamination of the soil, air and water by waste generated during	Medium	• A site waste management plan to be prepared by the contractor prior to commencement of construction works • Practicing 3Rs of waste management: reduce, reuse, recycle of materials • Recycling of all E-waste	Contractor Resident Engineer	• Re-use/ recycling documents • Contracts with licensed waste handlers	250,000

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	construction works					
	Impacts on air quality from vehicle exhaust emissions	Low	• Drivers shall not leave vehicles idling so that exhaust emissions are lowered • Contractor to ensure that all machinery and equipment used on site are well maintained and in good working conditions to ensure minimum emissions are produced	Contractor Resident Engineer	• No vehicle idling on site • Vehicle maintenance records	N/A
Operation Phase						
Environment	Risk of encroachment and construction of structures on the water easement corridor and wayleaves	High	• Mapping and installation of beacons which illustrate the width of the pipeline reserve • Regular patrol of the pipeline corridor for encroachment • Prosecution of encroachers as required by County By-Laws on way leaves and road reserves maintenance. • Conduct public sensitization programs on way leave protection	TWWDA EWASCO	• Well maintained wayleave	To be part of operational costs

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	Risk of water pipeline bursts leading to water wastages (increased non-revenue water)	High	• Regular check, repair and maintenance of the water pipeline • Activate a community watch group for information sharing on the status of the water line • Implement a leak detection and repair program (including records of past leaks and unaccounted- for water to identify potential problem areas)	EWASCO	Percentage of Non-Revenue Water	To be part of operational costs
	Risk of Illegal connection to the water pipeline	High	• Constant inspection by EWASCO officials and installation of leak and burst detectors at designated areas along the pipeline. • Conduct public sensitization programs on importance not interfering with the water pipeline and the need to seek official water connection from the area WSP, EWASCO	EWASCO	Non-Revenue Water	To be part of operational costs
	Water Discharges during	Medium	• Initiate sensitization programmes on best practices on solid waste management right from the source, sorting, transportation and disposal	• EWASCO • Contractor	Minutes of sensitisation meetings	To be part of

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	flushing/cleaning of pipes to remove sediments					operational costs
	Risk of vandalism of the infrastructure	High	• Put in place proper security measures to guard the infrastructure and reduce cases of vandalism • Regular sensitisation of local community on importance of protection of the water infrastructure • Activate a community watch group for information sharing on the status of the water supply line	• TWWDA • EWASCO	Sensitisation Meetings and minutes	To be part of operational costs
Decommissioning Phase						
Human	Occupational health and safety risks	High	• Provide the correct PPE for the workers when conducting the demolition activities; • Conduct training on health and safety procedures to the workers prior to commencement of demolition	• TWWDA • Contractor	• Availability of PPEs and first aid kits	To be determined during development of a

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			• Provision of adequate PPEs to all workers e.g safety shoes, helmets, gloves, overalls, dust masks etc • Display of appropriate safety signage to enhance awareness creation on the potential hazards involved during decommissioning • Provision and display of emergency contacts in appropriate areas • Provision of a well-stocked first aid kit at all active sites and regular training of workers on basic first aid procedures • Acquisition of WIBA Insurance for all workers as per Work Injury Benefits Act, 2007	• EWASCO	• Availability of safety signage in appropriate areas • Records of Tool box talks • Attendance list	decommissioning plan
	Loss of jobs and income	High	• Notify the employees in advance on the Project closure date and adequately compensate them; • Dismissal procedures to be compliant with Employment Act, 2007; • Provide counselling & alternative skills for alternative activities; • Employer should find alternative means of livelihood for the staff who were	• TWWDA	Notice to employees	N/A

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
			employed at the water supply project where possible.			
	Dust pollution	Low	• Speed control of site vehicles to a max of 40kph • Water should be sprayed on dusty excavated areas • Provision of dust masks to workers for use when working in dusty conditions • Use of serviceable vehicles and machinery to avoid excessive smoke emission	• TWWDA • Contractor	• Adequate PPEs to workers • Records of traffic accidents involving site vehicles	To be determined during development of a decommissioning plan
	Noise pollution due to use of heavy machinery and earth moving equipment	Low	• Schedule noisy activities during the day time period • Use silencers on machines where possible; • Ensure machinery is well maintained to reduce noise emitted	• TWWDA • Contractor	NEMA license	To be determined during development of a decommissioning plan
	Risk of gender-based	Low	Sensitisation of workers on issues of GBV	• Contractor	GBV Reports • Training Reports	To be determined during

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	violence/harassment/abuse					development of a decommissioning plan
	Public health risk; spread of HIV/AIDS, STDs and other communicable diseases	Medium	• Worker's sensitization on HIV/ AIDs and other STDs • Provision of condoms to workers • Distribution of HIV & AIDS awareness materials in collaboration with NACC	• Contractor	• Records of toolbox talks	To be determined during development of a decommissioning plan
	Conflicts amongst workers and local communities	Low	• All Contractor to have a GRM for workers • Sensitization on project GRM • Reporting on all grievances	• TWWDA • Contractor	Training reports • Grievance reports	To be determined during development of a decommissioning plan

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
Environment (Soil, air and water)	Solid waste generation	Low	• Disposal of solid waste in compliance with EMCA 2006 Waste Management Regulations; • Segregation of waste to encourage reuse and recycling; • Engagement of a registered waste handler	• TWWDA • Contractor • EWASCO	License of the waste handler Waste recycling plan	To be determined during development of a decommissioning plan
	Contamination of the soil, air and water by waste generated during decommissioning works	Medium	Collect, segregate and dispose wastes generated responsibly by engaging a registered waste handler	• TWWDA • Contractor	Contracts with licensed waste handlers	To be determined during development of a decommissioning plan
	Site restoration and rehabilitatio	Medium	Rehabilitate/restore the site to its original state	• TWWDA • Contractor	Restored/ rehabilitated sites	To be determined during develop

Impact Receptor	Potential Impact	Impact Levels	Mitigation and Enhancement Measures	Responsibilities	Performance Indicator	Estimated Costs (KES)
	n impacts during decommissioning activities					ment of a decommissioning plan

8.3. Management Responsibility of the ESMMP

In order to ensure the sound development and effective implementation of the ESMMP, it will be necessary to identify and define the responsibilities and authority of the various persons and Organizations which will be involved in the project. Table 4.2 presents the roles and responsibilities of various entities in ESMMP implementation.

Table 8-2: Roles and Responsibilities of various entities in ESMMP implementation

Entity	Roles and Responsibilities in ESMMP Implementation
Tana Water Works Development Agency (TWWDA)	• To ensure that all project operations are conducted in accordance with their internal environmental policies and in accordance with the ESMMP • Ensure that all authorizations/Approvals/Licenses required for project implementation are obtained; • Request the contractor operates on the basis of valid Authorizations/approvals/licenses for the activities to be implemented; • Ensure that the EMP is an integral part of the contract document with the Contractor and that the contractor will be responsible for its implementation; • Establish institutional linkages with relevant parties in the project implementation as needed, or designate a representative for that purpose; • Ensure that the various project activities comply with the mitigation measures proposed in the Environmental Management and Monitoring Program (ESMMP); • Make regular inspections to all the different activities with regard to social aspects, health, safety and environment and check for any non-conformity with the ESMMP attributable to the Contractor and identify the steps taken for its correction
National Environmental Management Authority (NEMA)	Regulatory function • Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programmes and projects.

Entity	Roles and Responsibilities in ESMMP Implementation
	• Identify projects and programmes or types of projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under this Act; • Monitor and assess activities, including activities being carried out by relevant lead agencies, in order to ensure that the environment is not degraded by such activities
Water and Sanitation Company	• Operate and maintain the water supply system in a manner that will reduce non-revenue water • Carry out effluent quality analysis in collaboration with other government lead agencies • Ensure treated wastewater and sludge for re-use/disposal meets accepted health standards • Conduct regular monitoring and inspection to ensure facilities are not interfered with • Ensure that effluent discharged from industries into the sewage system is treated and meets effluent discharge quality standards
Contractor	• Prepare own ESMP implementation plan as well as a health and safety plan within 30 days of signing of the contract. • Operate on the basis of valid Licenses/Approvals/Authorizations for the activities to be implemented; • Prevent or minimize the occurrence of accidents which might cause damage to the environment and be able to respond positively to an accident if it occurs; • Ensure compliance to working procedures and environmental requirements and health and safety established in the contract with the Proponent; • Minimize environmental damage, waste control, avoid pollution, prevent loss or damage on natural resources and minimize the effects on the users and occupants of surrounding lands and the public; • Provide Personal Protective Equipment (PPE) to workers which are appropriate to the tasks to be performed and ensure that it is used;

Entity	Roles and Responsibilities in ESMMP Implementation
	• Manage the complaints process on the elements that fall within its jurisdiction, or refer complaints to the Proponent, so that they can receive treatment/appropriate response;
Supervising Consultant/ Resident Engineer	• To ensure that the ESMMP is up to-date and is being used by the contractor. • Conduct periodic audits of the ESMMP to ensure that its performance is as expected
Embu County Government	• The relevant departmental officers in the above county government will be called upon where necessary during Project implementation to provide the necessary permits and advisory services to the project implementers
Directorate of Occupational Safety and Health Services (DOSHS)	• To register the project site as a work station and subsequent enforcement of relevant provisions in occupational safety and health in line with Occupational Safety and Health Act, 2007.
Water Resource Authority (WRA)	• Monitor and enforce conditions attached to water permits and water use; • Regulate and protect water resources quality from adverse impacts; • Regulate and protect water resources from adverse impacts; • Regulate water infrastructure, use and effluent discharge; • Work with the beneficiary communities to manage and protect water catchments; • Establish water resources monitoring networks

8.4. Monitoring and Auditing of ESMMP

Environmental monitoring and audits are essential in the project's life span as they are conducted to establish if project implementation has complied with set environmental management standards in accordance with applicable legislation and regulations. In this Project, Annual Environmental Audits will be conducted to check the status of compliance with the project ESMMP and its efficacy. Environmental concerns, that will be monitored and audited regularly during the project's construction and maintenance period include: water quality and resource use, soil erosion and occupational health and safety issues.

8.5. Monitoring of Occupational Health and Safety Issues

Project activities during the construction and operation phase involve a lot of risks and exposure to hazards. It is therefore important to regularly check and monitor the activities to find out the extent to which the impacts are mitigated and emerging problems are addressed. Table 4.3 presents a monitoring plan of the key issues key verifiable indicators which will be used to monitor the impacts are presented below.

Table 8-3: Monitoring of Occupational Health and Safety Issues

Monitoring Parameters	Responsibility	Monitoring Location(s)	Time/ Frequency	Indicators
Condition of machinery and equipment	Contractor EWASCO	At work stations	Weekly	Service, maintenance, repair or replacement records of faulty machines
Accidents, incidents, injuries etc.	Contractor, EWASCO	At work stations	Daily	Mitigation/prevention measures in place, PPEs, Records of incidents or accidents, medical records, Training, First Aid kits; Fire extinguishers
Dust and exhaust emission	Contractor, EWASCO	At work stations	Daily	Health safety measures in place
Noise emissions	Contractor	At work stations	Daily	Noise monitoring records
Sanitation and welfare facilities	Contractor, EWASCO	Workers camps, construction sites and site offices	Weekly	Presence of sanitation & welfare facilities
Oil Spills and Leakages	Contractor	Workers camps and construction sites	Daily	Records of daily inspections
Solid Wastes	Contractor, EWASCO	Workers camps, construction sites Site offices	Daily/weekly	Inspection and waste disposal records

8.6. Water Resources

Table 4.4 presents a water resource monitoring plan.

Table 8-4: Water Resources Monitoring

Monitoring Parameters	Responsibility	Monitoring Measures	Time/Frequency
Disturbance to river flow	WSP, WRA	• After construction, the river morphology and sediment transport will be monitored until the end of first complete wet season. • Upstream and downstream water quality monitoring will be conducted periodically pre and post construction	Quarterly
Contamination of water	WRA	Undertake water quality monitoring throughout the construction period and even after construction	Records of site inspections and water analysis
Contamination of water resources by pipeline construction	TWWDA, WRA	Undertake water quality monitoring throughout the construction period and even after construction	Review of records

8.7. Soil Erosion Monitoring

Table 8-5: Soil Erosion Monitoring Parameters

Monitoring Parameters	Responsibility	Mitigation Measure	Monitoring Measures	Frequency of Monitoring
Soil Erosion	TWWDA Contractor	• Natural re-vegetation following construction • Reinstatement and recontouring of soils • Proper handling of soil to preserve different soil layers	Records of date, soil type and removal date will be made during soil stripping process to ensure the top soil is maintained to allow natural revegetation	Daily Records

Monitoring Parameters	Responsibility	Mitigation Measure	Monitoring Measures	Frequency of Monitoring
Soil pollution through contamination by hazardous waste	TWWDA Contractor	• There will be set procedures for handling, storage, treatment and disposal of hazardous waste according to appropriate standards Secondary containment structures will be used where there is storage of hazardous materials to reduce potential contamination Limit the volume of hazardous substances to only what is required to reduce potential contamination	In case of contamination, a risk assessment will be done to ascertain the cause of contamination, treatment and disposal option. Records of waste handling and disposal to NEMA licensed disposal site will be maintained Quality analysis of soil samples will be undertaken quarterly to assess any possibility of contamination	Daily Site inspections and quarterly chemical analysis of soil and water
Contamination of soil by waste disposal	TWWDA Contractor	Waste will be disposed of at NEMA licensed waste facility		Daily observations and inspections
Contamination of soil by fuel and oils	TWWDA Contractor	Installation of oil water separators and grease straps at refueling facilities, workshops and parking yards, fuel storage and containment areas	Define the frequency and extent of soil sampling to be conducted at suitable depths to assess any possibility of contamination	Regularly

Monitoring Parameters	Responsibility	Mitigation Measure	Monitoring Measures	Frequency of Monitoring
		in order to reduce potential contamination		

8.8. Decommissioning Plan

The Project has been designed to operate effectively for over 20years. Before commencement of decommissioning activities, the proponent shall develop a Decommissioning Plan. The plan will guide on the various activities which will include the following:

- Details of infrastructure, buildings and structures to be retained; alternative uses and further development proposals for retained infrastructure, and structures; infrastructure and structures to be dismantled, removed, sold for recycling and / or disposed-off.
- Environmental restoration plan. The dismantling of site facilities and transportation of material may expose the ground, leave open pits and disturb vegetation. Such sites can be restored by back-filling with soil and replanting of grass or trees on disturbed areas.
- Waste Management Plan – A formal site waste management plan should be developed to ensure that both solid and liquid waste is managed in accordance to the existing applicable laws on waste handling and disposal.
- Health & Safety plan that shall be implemented to safeguard the safety, health and welfare of workers and the public. Establish and operate an emergency evacuation procedure for casualties.
- Mechanisms for addressing project related social issues
- Take note of any existing regional and national development plans that may be of relevance to the area.

In the event that the infrastructure will be required to be overhauled, then the following steps should be considered in order to undertake the procedure in a structured manner with minimum impact to both human and natural environment as illustrated in Table 4.6 below.

Table 8-6: Steps for Overhauling Infrastructure

Stage	Action	Actor
Step 1	• Initiation • Development of an Objective Worksheet and checklist incorporating references, legal and policies • Undertake decommissioning audit	TWWDA
Step 2	• Prepare Road Map for Decommissioning Design • Conduct design review to validate elements of the design and ensure design features are incorporated in the decommissioning design • Public consultations	TWWDA
Step 3	• Prepare and Award Contract • Prepare a contract that incorporates validated Project information and award to a contractor as per the Procurement rules.	TWWDA
Step 4	• Execute Decommission Works • Implement design elements and criteria on the Project in accordance with specifications and drawings. • Inspect during decommissioning and at Project completion to ensure that all design elements are implemented according to design specifications.	TWWDA
Step 5	Commissioning Environmental Management Plan	TWWDA

9. CHAPTER NINE:CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions and recommendations from the ESIA study findings for effective implementation of the proposed Runyenjes Water Supply Project.

9.1. Conclusion

The Environmental and Social Impact Assessment (ESIA) Study for the proposed Runyenjes Water Supply Project was conducted in strict adherence to the Environmental Management and Coordination Act of 1999, Environmental (Impact Assessment and Audit) Regulations of 2003. The overwhelming support from the local community, with 97% of the surveyed population expressing acceptance, underscores the pressing need for this project in providing water to the people of Runyenjes Sub-County.

The identified negative environmental and social impacts can be effectively mitigated, as outlined in the Environmental and Social Management Plan, with thorough monitoring during both the construction and operational phases. To ensure the project's long-term viability, it is imperative to allocate and utilize the budget for the implementation of ESMP provisions. In summary, the implementation of the proposed Water Supply Project holds numerous benefits. It will substantially increase the availability of clean water to Runyenjes town and the surrounding areas, leading to a marked improvement in public health by reducing water-related ailments. Additionally, communities will benefit from reduced time and effort spent fetching water, allowing for more productive economic activities and thereby enhancing overall quality of life. Furthermore, the project will create employment opportunities and facilitate skills transfer within the local population, contributing to the broader socio-economic well-being of the community. While negative environmental impacts are primarily associated with the construction phase, the proposed mitigation measures are comprehensive and will be closely monitored and evaluated throughout project implementation.

9.2. Recommendations

The consultant recommends licensing of the proposed Runyenjes Water Supply Project as a step towards increased access to clean drinking water which to a large extent contributes towards achieving Vision 2030. The Proponent should meet the conditions to which NEMA may set during issuance of license.

The proposed project should also be implemented with the following recommendations:

i. Mitigation measures outlined in this report should be adhered to and the

Environmental and Social Management and Monitoring Plan (ESMMP) implemented to the letter. The implementation of this ESMP will be key in achieving the appropriate environmental management standards as detailed in this report

ii. The WSP formed after the development should undertake annual environmental audits (EA) of the project after completion to confirm the efficiency and adequacy of ESMMP

iii. The impacts of the proposed project should be monitored closely and documented by the Proponent

iv. TWWDA should liaise with relevant agencies like NEMA, WRA and DOSH on a need basis during project implementation and operation phases to ensure compliance with various legal requirements

9.3. Resettlement Action Plan

The scope of the RAP exercise for the project entails land acquisition of 2 hectares of land for the water treatment plant (WWTP); land of varying sizes for storage tanks (2 tanks inside the forest and 9 tanks on private land) and wayleave of approximately 45.7km of pipeline on road reserve.

Whereas the project proponent has made every effort to avoid adverse impact on loss of land and livelihoods, the above impacts are to be mitigated through the implementation of a comprehensive RAP prepared in accordance with the AfDB's Environmental and Social Operational Safeguard 5 Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement

The comprehensive RAP report and its annexes will be submitted separately.

10. REFERENCES

Embu County Integrated Development Plan 2023-2027

KNBS Kenya Population and Housing Census (KPHC) Report, 2019

African Development Bank Group Safeguards and Sustainability Series: African Development Bank Group's Integrated Safeguards System — Policy statement and operational safeguards. 2013

African Development Bank Group's Integrated Safeguards System 2023

11. ANNEXURES

Annex 1: Proposed Runyenjes Water Project Biodiversity Plan

Biodiversity_Management PLan_16th Marc

Annex 2: Proposed Runyenjes Water Project Public Participation Questionnaire

Runyenjes Water Supply Qsnr.pdf

Annex 3: Proposed Runyenjes Water Project Hydrological Survey Report

Hydroligical Assessment Report-R

Annex 4 Proposed Runyenjes Water Project Full Physical Chemical & Bacteriological Quality Analysis Results

Physical Chemical Analysis Results Certi

Runyenjes Water Supply- Bacteriologi

Annex 5: Stakeholder Engagement minutes

Stakeholder Engagement Minutes

Annex 8: Public Participation List

THE NATIONAL URBAN WATER SUPPLY AND SANITATION PROGRAM)
SITE SPECIFIC STUDIES, ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT(ESIA) AND RESETTLEMENT ACTION PLAN (RAP) FOR PROJECTS IN EMBU COUNTY

PROJECT: PROPOSED RUNYENJES WATER SUPPLY PROJECT

PUBLIC PARTICIPATION LIST

VENUE Runyenjes Town DATE 13/02/2024 TIME

S/ No.	NAME	VILLAGE/INSTITUTION	[redacted]	SIGN
1.	BEATRICE MACHARIA	ACC SC HQ		
2.	ASHA OMAR	ACC- RUNYENJES		
3	WANGECI MUMBI	ACC - KYENI		
4	ERIC MUNENE NJERU	WARD MANAGER RNMS CENTRAL WARD		
5	ESTHER NYAGA	ASST. CHIEF- KIRIRING		
6	DANIEL KAWIGA	SNR. CHIEF KAGAARI S.E LOC		
7.	MADRES MWATHA	SNR ASST. CHIEF KANJA NORTH S/LOC		
8.	EMMA NANJIRA	CHIEF - KITHI CENTRAL LOC.		
9	KIBARU KAUMBUTHU	CHIEF RUNYENJES EAST LOCATION		
10	FRANCIS IRERI PAUL	ASST CHIEF NJUKURI		
11	EMMAROSE. W. GITONGA	ASST-CHIEF GITARE		

THE NATIONAL URBAN WATER SUPPLY AND SANITATION PROGRAM)
SITE SPECIFIC STUDIES, ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT(ESIA) AND RESETTLEMENT ACTION PLAN (RAP) FOR PROJECTS IN EMBU COUNTY

PROJECT: PROPOSED RUNYENJES WATER SUPPLY PROJECT

PUBLIC PARTICIPATION LIST

VENUE Runyenjes Town DATE 13/02/24 TIME

S/ No.	NAME	VILLAGE/INSTITUTION	[redacted]	SIGN
12	PATRICK IRUNGU	ASST. CHIEF		
13	DAVID NGARI	SNR. ASST. CHIEF		
14	RITA WAMBUI NJAGI	ASSISTANT CHIEF		
15	ALPHAN G. MUGOH	ASSISTANT CHIEF		
16	SILAS N. MURIRA	SNR CHIEF		
17	[illegible] IRERI	ASST. CHIEF		
18	JULIAH WANGUI NJOROGE	ASST. CHIEF		
19	EPHANTUS N. NDWIGA	ASST. CHIEF		
20	EMILY WANGARI	CHIEF		
21	DANIEL M NYAGA	ASST CHIEF		
22	AUGUSTINE - M. NJERU	ASST. CHIEF		

THE NATIONAL URBAN WATER SUPPLY AND SANITATION PROGRAM)
SITE SPECIFIC STUDIES, ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT(ESIA) AND RESETTLEMENT ACTION PLAN (RAP) FOR PROJECTS IN EMBU COUNTY

PROJECT: PROPOSED RUNYENJES WATER SUPPLY PROJECT

PUBLIC PARTICIPATION LIST

VENUE Runyenjes Town DATE 13/02/2024 TIME

S/ No.	NAME	VILLAGE/INSTITUTION	[redacted]	SIGN
23	NANCY MURIGI KARIUKI	KYERII		
24	DOBECY KINYUA IAERA	KYENI NORTH/MUFU		
25	Justus Njagi Kamau	MEMBER CHAIRMAN		
26	JOHN MURIUKI HUDSON	SECRETARY RUNYENJES JUA KALI		
27	SILAS NJERU GILBERT	MUNYUTU KANJA NORTH.		
28	SAMMY NYAGA KAUNYU	KYENI CENTRAL PLOT		
29	PATRICK NYAGA	RUNYENJES		
30	PAUL Murangiri	MUMBUBI		
31	FAITH KARIMI	GIKUURI (MCA OFFICE		
32	MOSES NJERU	KIGAA (MCA OFFICE		
33	STEPHEN NDETI	GITARE (MCA OFFICE)		

THE NATIONAL URBAN WATER SUPPLY AND SANITATION PROGRAM)
SITE SPECIFIC STUDIES, ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT(ESIA)
AND RESETTLEMENT ACTION PLAN (RAP) FOR PROJECTS IN EMBU COUNTY

KEY INFORMANT INTERVIEW LIST

S/ No.	NAME	INSTITUTION	[redacted]	SIGNATURE
	Eng. Albert Gatitu	Embu County Government		
	MOSES M. KIGORO	E.C.G.		
	MERCY GATOBU	DCC EMBU WEST SUBCOUNTY		
	ALEX SAPINGOT	ACC-cc office		
	JACK ODHIAMBO OBVD, MBS	County Commissioner EMBU		
	ERIC N MUGO	General Manager		
	JANE W. WARUINGE	DCC-EMBU EAST		
	J.S. KIANJE	LANDS OFFICE-EMBU VALUATION DIRECTORATE		

THE NATIONAL URBAN WATER SUPPLY AND SANITATION PROGRAM)
SITE SPECIFIC STUDIES, ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT(ESIA)
AND RESETTLEMENT ACTION PLAN (RAP) FOR PROJECTS IN EMBU COUNTY

KEY INFORMANT INTERVIEW LIST

S/ No.	NAME	INSTITUTION	[redacted]	SIGNATURE
	KELLY N. MURITHI IKERA	ASS. CHIEF IKAMMARINGA SUB-LOC		
	DOROTHY WANJIRA NJERU	CHIEF ITABUA LOC.		
		CHIEF ITABUA LOCATION EMBU WEST SUB-COUNTY DATE:		

Annex 9: Grievance Redress Log

Ref No.	Date	Name	Phone	Post	Email	Description of Grievance	Date of Grievance	One-time grievance	Happened more than once	Ongoing	Expected Resolution /Redress	Action identified to resolve the grievance	Date taken	Taken by whom	Complainant satisfied	If not, why?

Annex 10: Photo Gallery



The assistant chief of Gitari,Mr.Emmarose Gitonga introducing himself.



Eng.Kevin Njuki explaining the details of the proposed water project for Runyenjes



Mr.Ezekiel Oranga, the team leader of RAP explaining about who paps are and what the rap exercise entails.



Embu county diretor of water and sanitation Mr.Albert Gatuta giving remarks.



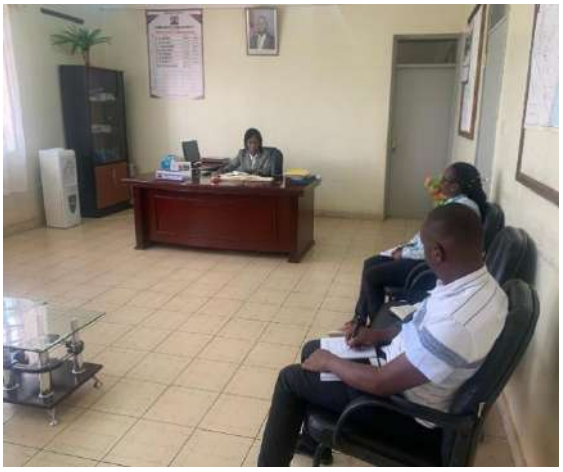
Madam Joyce Waruinge the DCC of Embu East Subcounty addressing the members present



A group of chiefs, assistant chiefs and village elders attending the stakeholders sensitization meeting at the Runyenjes town hall



ESIA team undertaking Key Informant Interviews at Kyeni Water and Sanitation Company



ESIA team undertaking Key Informant Interviews at the ACC's office in Runyenjes

THE NATIONAL URBAN WATER
SUPPLY AND SANITATION PROGRAM
Tana Water Works Development Agency
(TWWDA)

BIODIVERSITY MANAGEMENT PLAN

Runyenjes Water Project – Embu County

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Declaration

Greenville Nexus International Ltd (Consultant) for the Tana Water Works Development Agency do hereby certify that this Biodiversity Management Plan was prepared based on the information provided by Key Informant Interviews and beneficiaries as well as data collected from other primary and secondary sources and on the best understanding and interpretation of the facts by the Biodiversity Experts and Environmental experts. It is issued without any prejudice.

KEY EXPERTS AND THEMATIC LEADERS ARE AS LISTED BELOW:

S/No	NAME	TITLE OF ASSIGNMENT
1.	Mr. Eliphus Mutuma Murithi	Ecologist / Biodiversity Lead Expert
2.	Engr. Hellen Mwai	Environmental Engineer EIA/EA/ESIA, Reg. Lead Expert
3.	Engr. Bernadette Wairimu	Environmentalist & Team Leader EIA/EA/ESIA, Reg. Lead Expert
4.	Mr. Noel Koech Kimurgor	Environmentalist / GIS expert/ EIA/EA/ESIA, Reg. Associate Expert

Signed by Consultant	Signed by Client
Engr. Bernadette Wairimu	Engr. Philip Gichuki
Signature:	Signature:
Date:	Date:

Terminologies

Biological diversity – Means the variability among living organisms from all sources including, terrestrial ecosystems, aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, among species and of ecosystems;

Biological resources – Include genetic resources organisms or parts thereof, populations, or any other biotic component or ecosystems with actual or potential use or value for humanity;

Burdened land – Means any land upon which an environmental easement has been imposed;

Environment – Includes the physical factors of the surroundings of human beings including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants and the social factor of aesthetics and includes both the natural and the built environment;

Environmental audit – Means the systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing in conserving or preserving the environment

Environmental impact assessment – Means a systematic examination conducted to determine whether or not a programme, activity or project will have any adverse impacts on the environment;

Environmental management -Includes the protection, conservation and sustainable use of the various elements or components of the environment;

Environmental monitoring – Means the continuous or periodic determination of actual and potential effects of any activity or phenomenon on the environment whether short-term or long term;

Environmental planning – Means both long-term and short-term planning that considers environmental exigencies;

Environmental resources – Includes the resources of the air, land, flora, fauna and water together with their aesthetical qualities;

Ecosystem – A geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life.

Ecosystem services – The direct and indirect contributions of ecosystems to human well-being, such as food, water, climate regulation, cultural enrichment and habitat functioning

Environmentally friendly – Includes any phenomenon or activity that does not cause harm or degradation to the environment;

Ex-situ conservation – Means conservation outside the natural ecosystem and habitat of the biological organism;

Good environmental practice – Means practice that is in accordance with the provisions of this Act or any other relevant law;

Hazardous substance – Means any chemical, waste, gas, medicine, drug, plant, animal or microrganism which is likely to be injurious to human health or the environment;

Hazardous waste – Means any waste which has been determined by the Authority to be hazardous waste or to belong to any other category of waste provided for in section 91;

In-situ conservation – Means conservation within the natural ecosystem and habitat of the biological organism;

CHAPTER ONE: INTRODUCTION

1.1 Background

Tana Water Works Development Agency (TWWDA) is one of the nine Water Works Development Agencies (WWDAs) established under the Water Act, 2016 and whose areas of jurisdiction are Nyeri, Meru, Embu, Kirinyaga and Tharaka Nithi County. The Agency is mandated to; undertake the development, maintenance and management of the national public water works within its area of jurisdiction. It is in this regard that Tana Water Works Development Agency is undertaking this study in line with its mandate endeavors to develop water works which will ensure adequate and safe water for the residents of Runyenjes, Embu County.

Despite the availability of surface and ground water resources, lack of adequate water supply remains a big problem and a hindrance to a better lifestyle and development for the residents of Runyenjes constituency, Embu County. The area faces acute shortage of water both for domestic use and livestock. Runyenjes is currently supplied with raw water by Kyeni Water and Sanitation Company. Additionally, the area has other CBOs supplying the water. Water challenges experienced in the project area are as follows:

a) Low water supply coverage. The WSP and other CBOs present only cover a small part of the area
b) Inadequate water to serve the growing population due high frequency of water rationing (the WSP in the area supplies water three (3) days in a week) and inactive connections.
c) Poor water quality since the WSP provides residents with raw water.
d) High non-revenue water (NRW) due to old dilapidated water system which has never been augmented since construction and unattended cases of water leakages which dwindle efforts in water supply.

For this reasons, Tana Water Works Development Agency conceptualized Runyenjes Water Supply project to improve quality water supply and improve water coverage in the area. The proposed projects seek to get water from river Thuchi about 14 km into Irangi Forest. The

forest is a protected area under Kenya Forestry Service (KFS) within Mount Kenya National Park.

1.2 Justification for Biodiversity Management Plan

Biodiversity (i.e. the variety of ecosystems, species and genes) boosts nature's ability to provide the ecosystem services that we all benefit from, like clean water, pollination of crops by insects, and erosion control. Sectors that benefit from such services include forestry, fishing, farming, tourism and the medical industry. There are also many less immediately visible ecosystem services, such as the climate regulation and natural flood defenses provided by forests and carbon storage. Other very important but often fewer tangible benefits include cultural ecosystem services associated with religious, social, spiritual and indigenous values. Minimizing environmental harm is therefore a fundamental requirement for the sustainable operation of all industries.

A BMP is a practical site-specific document developed and used by the site management team to maintain or improve biodiversity values during the operational and post-closure phases, and to determine risks and opportunities before extraction begins. The process for developing a BMP should focus on identifying, evaluating, conserving (and if possible enhancing) the relevant aspects of biodiversity, and should serve to:

- **Avoid or mitigate** biodiversity loss, with the objective of maintaining the diversity of species, habitats and ecosystems and the integrity of ecological functions
- **Contribute** towards the remediation of significant global, regional and local biodiversity losses caused by project activities
- **Respect** the mitigation hierarchy – Avoid, Minimize, Compensate
- **Address** any biodiversity risks identified through an environmental and social impact assessment (ESIA)
- **Respond to regulatory requirements:** Regulation and legislation that are relevant to BMPs relate to invasive species, protected species, protected habitats, nature conservation, treatment of wildlife, waste management, pollution prevention and water management

CHAPTER THREE: PROJECT DESCRIPTION

2.1 Project activities

Intake

The intake shall be constructed along Thuchi River in Mount Kenya Forest 13km along the Irangi gate. The intake shall be built approximately 200meters upstream from another intake of Ndamunge water project. The intake site is deep within the forest with predominant vegetation being trees, Shrubs and other alpine riverine vegetation.

Raw Water Main

The water from the intake will be transmitted to the treatment works site through a raw water gravity main. From New Intake Works at River Thuci the raw water will be traversing the dense indigenous Mt. Kenya Forest to the proposed treatment Works on a land next to St. Joseph Munyutu Primary School. The transmission line through the forest is interrupted by two pressure break tanks (PBT). The line will run along the contour that two other water lines have used before to minimize impact on the natural forest vegetation.

Treatment Works

The land next to St. Joseph Munyutu Primary School at the edge of Mount Kenya forest is the identified site for the treatment works. The components of the proposed treatment work include:

- Inlet Structure with robust flow measurement devices,
- Stilling Well
- 2 No. Flocculation Basins
- 4 No. Horizontal Flow Sedimentation Tanks
- 8 No. Rapid Sand Filters
- Chemical Storage and Dosing Building
- Administration Building
- 1,000M^3 capacity clear water tank
- Chlorine Storage and Dosing Building

- 150M^3 Elevated Backwash Tank
- Staff Houses
- Onsite Ancillary Works

The main storage tank was sited at Gitare market which is approximately 10km from the proposed treatment works site. This tank will act both as a BPT and storage tank.

Transmission Lines

The proposed project will have the following lines:

Name of the pipeline	Description
Raw water gravity main	This line passes through Mount Kenya Forest and truncates at the treatment plant
Treated water Main	This line passes through areas with tea plantations and other cropped areas. Part of it will be through road reserves
Ugweri Line	These lines are passing through road reserves mainly and a few cropped areas.
Gikuuri Line	
Karurumo Line	
Kathageri	

Ten storage tanks have been proposed along the transmission lines.

CHAPTER THREE: LEGAL AND LEGISLATIVE FRAMEWORK

3.1 Introduction

Biodiversity (i.e. the variety of ecosystems, species and genes) boosts nature's ability to provide the ecosystem services that we all benefit from, like clean water, pollination of crops by insects, and erosion control. A BMP is a practical site-specific document developed and used by the site management team to maintain or improve biodiversity values during the operational and post-closure phases, and to determine risks and opportunities before extraction begins. The process for developing a BMP should focus on identifying, evaluating, conserving (and if possible enhancing) the relevant aspects of biodiversity. A BMP in anchored in several regulatory foundations among them the EMCA 1999 and African Development Bank Integrated Safeguards System and Operation Safeguards as described in this chapter.

3.2 EMCA 1999

This report is premised on the requirements of Environmental Management and Coordination Act of 1999 (EMCA 199) Part 4 that deals with protection of conservation of environment. The act prohibits any person without prior written approval of NEMA Director General from:

a) Erecting, reconstructing, placing, altering, extending, removing or demolishing any structure or part of any structure in, or under the river, lake or wetland;
b) Excavating, drilling, tunneling or disturbing the river, lake or wetland
c) Introducing any animal, whether alien or indigenous, dead or alive, in any river, lake or wetland
d) Introducing or planting any part of a plant specimen, whether alien or indigenous, dead or alive, in any river, lake or wetland;
e) Depositing any substance in a lake, river or wetland or in, on or under its bed, if that substance would or is likely to have adverse environmental effects on the river, lake or wetland;
f) Directing or blocking any river, lake or wetland from its natural and normal course; or

g) Draining any lake, river or wetland.

The act also provides for protection of hill tops, hill sides, mountain areas and forests. The Act provides for NEMA in consultation of subject experts to develop issue and implement regulations, procedures and guidelines and measures for sustainable use of hill sides, hill tops, mountain areas and forests and such regulations, guidelines, procedures and measures shall control the harvesting of forests and any natural resources located in or on a hill side, hill top or mountain area so as to protect water catchment areas, prevent soil erosion and regulate human settlement. The act also provides for identification, management and conservation of ecologically sensitive hill slopes, mountainous areas and forests.

The act also provides for conservation of biological diversity by:

a) Identifying, preparing and maintaining an inventory of biological diversity of Kenya;
b) determining which components of biological diversity are endangered, rare or threatened with extinction;
c) identifying potential threats to biological diversity and devise measures to remove or arrest their effects;
d) undertaking measures intended to integrate the conservation and sustainable utilization ethic in relation to biological diversity in existing government activities and activities by private persons;
e) specifying national strategies, plans and government programs for conservation and sustainable use of biological diversity;
f) protecting indigenous property rights of local communities in respect of biological diversity; and
g) measuring the value of unexploited natural resources in terms of watershed protection, influences on climate, cultural and aesthetic value, as well as actual and potential genetic value thereof

Based on these provisions and requirements of EMCA 1999, a biodiversity management plan is developed to:

i. develop a baseline information on the status of the ecosystem that will be affected by the proposed project
ii. Evaluate the positive and negative interruptions likely to be caused to the ecosystem by the proposed project activities in short term and long term
iii. Propose mitigation measures for all the negative impacts to the ecosystem
iv. Propose permits and licenses necessary to conduct project activities in ecologically fragile areas and protected ecosystems

3.3 Africa Development Bank Integrated and Social Safeguards (ISS)

The African Development Bank Group (AfDB) presents its Integrated Safeguards System, a cornerstone of its strategy to promote growth that is socially inclusive and environmentally sustainable. The ISS is designed to promote the sustainability of project outcomes by protecting the environment and people from the potentially adverse impacts of projects. In addition, the Bank has adopted five OSs, limiting their number to just what is required to achieve the goals and optimal functioning of the ISS. Among the five OSs is; Operational Safeguard 3: Biodiversity and ecosystem services. This safeguard aims to conserve biological diversity and promote the sustainable use of natural resources. It also translates the commitments in the Bank's policy on integrated water resources management into operational requirements.

The specific objectives of the OS are to:

- Conserve biological diversity and ecosystem integrity by avoiding or, if avoidance is not possible, reducing and minimizing potentially harmful impacts on biodiversity;
- Endeavour to reinstate or restore biodiversity, including, where some impacts are unavoidable, through implementing biodiversity offsets to achieve "not net loss but net gain" of biodiversity;
- Protect natural, modified, and critical habitats; and
- Sustain the availability and productivity of priority ecosystem services to maintain benefits to the affected communities and sustain project performance.

The scope of application of this OS is to projects supported by the bank in both private and public sector that are:

- Located in any type of habitat
- Are located in areas providing ecosystem services upon which potentially affected stakeholders are dependent for survival, sustenance, livelihood or primary income, or which are used for sustaining the project
- Extract renewable natural resources as a main purpose (e.g., plantation forestry, commercial harvesting, agriculture, livestock, fisheries and aquaculture); or
- Involve the use and commercialization of an indigenous knowledge system

This OS requires that:

i. As part of the environmental and social assessment, the borrower or client identifies and assesses the potential opportunities for, risks to, and impacts on biological diversity and ecosystem services, including direct, indirect, cumulative and premitigation impacts.

ii. The borrower or client applies the mitigation hierarchy: to avoid potentially adverse impacts; if avoidance is not possible, to reduce and minimise potential adverse impacts; if reduction or minimization is not sufficient, to mitigate and/ or restore; and as a last resort to compensate for and offset.

iii. Special attention is given to the major threats to biodiversity and ecosystem services, such as pollution and contamination, land conversion, habitat fragmentation, natural habitat loss, deforestation, over-exploitation of natural areas and resources, invasive alien species, migration barriers, the capturing of wild animals, the harvesting of endemic species and indigenous ornamental flora and fauna, and wildlife poaching.

iv. The borrower or client obtains the advice of and uses recognised experts to assess biodiversity and ecosystem services values - for example, cultural, aesthetic, spiritual, educational, and recreational values - identified by potentially affected community members and other stakeholders.

v. The borrower or client ensures that access to and commercialisation of indigenous knowledge is based on equitable benefits.

vi. Where national regulations permit a project to encroach on legally protected areas or internationally recognised areas or on areas that are proposed for protection or international recognition, the borrower or client complies with national and local regulations for appropriate environmental management, and consults with relevant stakeholders during the preparation of management and mitigation measures.

CHAPTER FOUR: BIODIVERSITY BASELINE

4.1 Introduction

Biodiversity is the variety of living species on Earth – plants, animals and microorganisms – and the ecosystems they form. An ecosystem is the name given to all living species that live together in a stable community, interacting with one another and their physical environment. Biodiversity includes the diversity within species and between different species within terrestrial, freshwater and marine ecosystems. Ecosystems need a balanced and diverse number of species to thrive.

This report established a baseline information on the status of the ecosystem from which the project is getting water for this project. Through this baseline effort has been made to identify the key flora and fauna species in Irangi Forest and other areas where projects activities are.

4.2 Methodology

Materials

The following materials were used during the survey, plant pruner, digger, knife, leather gloves, flora books, field note book, pencil, permanent ink pens, magnifying glass, digital camera, binocular and personal field gears. During the survey, the map of the study site was used to locate both the existing project site and biodiversity status.

Methods

All habitats within area and its environment were explored using dam and it's environs site as habitat references. To maximize recording the flora and fauna in all traversed habitats, meander and patterned searches were used. The meander searches were employed on difficult terrains such as in the dam project (in progress) development areas and immediate river valleys, and especially the confluence area. On the other hand, the systematic transect was also employed on flat grounds, such as open grassland, flat community farms, wooded grassland and shrub lands.

4.3 Ecosystem description

Mount Kenya is an extremely important water catchment area, supplying the Tana and Northern Ewaso Ngiro systems. The wet south-eastern slopes (with rainfall up to 2,500 mm/year) hold luxuriant rainforest up to 2,400 m, with valuable timber trees such as camphorwood *Ocotea usambarensis*. Five other main forest-types are recognized, including *Newtonia buchananii* forest (lower eastern slopes, up to 1,800 m); Juniperus procera–Nuxia congesta–Podocarpus falcatus forest (eastern slopes, to 2,300 m); forest dominated by *Croton megalocarpus*, *Brachylaena huillensis* and *Calodendrum capense* (south-western slopes, up to 1,900 m); more open Juniperus *procera–Olea europaea* forest (on the drier western and north-western slopes, to c.2,300 m); and mixed *Podocarpus latifolius* forest (north-western slopes, up to 2,600 m).

Most of the forest has already been logged over for valuable trees such as *Ocotea usambarensis*, *Vitex keniensis* and *Podocarpus* species. Demand for indigenous timber continues to be extremely high despite a ban on extraction.

The Runyenjes Water Project sources it's water from River Thuchi 14kms deep into Irangi Forest, along the slopes of Mount Kenya. The Intake is 100 meters upstream of Ndamunge water project intake along the same river. The Ecosystem is characterized by natural vegetation of indigenous trees, shrubs and undergrowth of tropical forest weeds. the forest palsy host to several species of wildlife such buffaloes, hyenas and predominantly elephants. River Thuchi plays host to Irangi puddle frog which is endemic species in that ecosystem.

The ecosystem outside the forest is characterized by human settlements with small monocultures of tea plantations in the Upper Midland 1(UM1) ecological zone, coffee and Banana plantations in Upper Midland 2 (UM2) and Upper Midland 3 (UM3) zones. The untreated water trunk of approximately 13 km runs through a natural Irangi forest along a contour that served as way leave for two other water projects. The treatment plant is hosted at the edge of the forest in a local public primary school farm. The treated water mainlines as well as other submains are running along the road reserves into various storage tanks.

The table below shows some of the flora and fauna species identified in various parts of the forest. They do not necessarily occur within the the project activities but are found within Irangi forest:

Taxonomic Group	Scientific name	Common name	IUCN Red List Category
Amphibians	*Phrynobatrachus irangi*	Irangi Puddle Frog	EN
Birds	*Andropadus nigriceps*		
Birds	*Apalis porphyrolaema*		
Birds	*Apaloderma vittatum*	Bar-tailed Trogon	
Birds	*Apus niansae*	Nyanza Swift	
Birds	*Asio abyssinicus*	African Long-eared Owl	
Birds	*Bradypterus cinnamomeus*	Bracken Warbler	
Birds	*Buteo oreophilus*	Mountain Buzzard	
Birds	*Campethera tullbergi*	Tullberg's Woodpecker	
Birds	*Caprimulgus poliocephalus*	Montane Nightjar	
Birds	*Cercomela sordida*	Moorland Chat	
Birds	*Chloropeta similis*	Mountain Flycatcher-warbler	
Birds	*Cinnyricinclus sharpii*	Sharpe's Starling	
Birds	*Cisticola hunteri*	Hunter's Cisticola	LC
Birds	*Coracina caesia*	Grey Cuckooshrike	
Birds	*Cossypha semirufa*	Rueppell's Robin-chat	
Birds	*Cryptospiza salvadorii*	Abyssinian Crimson-wing	
Birds	*Dioptrornis fischeri*	White-eyed Slaty Flycatcher	
Birds	*Elminia albonotata*	White-tailed Crested-flycatcher	
Birds	*Euplectes jacksoni*	Jackson's Widowbird	NT
Birds	*Falco naumanni*	Lesser Kestrel	LC
Birds	*Francolinus psilolaemus*	Moorland Francolin	
Birds	*Linurgus olivaceus*	Oriole Finch	
Birds	*Macronyx sharpei*	Sharpe's Longclaw	EN
Birds	*Merops oreobates*	Cinnamon-chested Bee-eater	

Birds	*Monticola rufocinereus*	Little Rock-thrush	
Birds	*Nectarinia johnstoni*	Red-tufted Sunbird	LC
Birds	*Nectarinia kilimensis*	Bronze Sunbird	
Birds	*Nectarinia mediocris*		
Birds	*Nectarinia preussi*	Northern Double-collared Sunbird	
Birds	*Nectarinia reichenowi*	Golden-winged Sunbird	
Birds	*Nectarinia tacazze*	Tacazze Sunbird	
Birds	*Onychognathus tenuirostris*	Slender-billed Starling	
Birds	*Onychognathus walleri*	Waller's Starling	
Birds	*Oreolais pulchra*	Black-collared Apalis	
Birds	*Oriolus percivali*	Black-tailed Oriole	
Birds	*Phylloscopus umbrovirens*	Brown Woodland-warbler	
Birds	*Ploceus baglafecht*	Baglafecht Weaver	
Birds	*Ploceus insignis*	Brown-capped Weaver	
Birds	*Poeoptera femoralis*	Abbott's Starling	
Birds	*Poeoptera kenricki*	Kenrick's Starling	
Birds	*Pogoniulus leucomystax*	Moustached Green Tinkerbird	
Birds	*Pogonocichla stellata*	White-starred Robin	
Birds	*Pseudoalcippe abyssinica*	African Hill Babbler	
Birds	*Pternistis jacksoni*	Jackson's Francolin	
Birds	*Sarothrura affinis*	Striped Flufftail	
Birds	*Schoutedenapus myoptilus*	Scarce Swift	
Birds	*Scleroptila elgonensis*	Elgon Francolin	
Birds	*Serinus burtoni*	Thick-billed Seedeater	
Birds	*Serinus frontalis*	Yellow-browed Citril	
Birds	*Serinus striolatus*	Streaky Seedeater	
Birds	*Sylvietta leucophrys*		
Birds	*Tauraco hartlaubi*	Hartlaub's Turaco	
Birds	*Telophorus dohertyi*	Doherty's Bush-shrike	
Birds	*Zoothera gurneyi*	Orange Ground-thrush	
Birds	*Zoothera piaggiae*	Abyssinian Ground-thrush	

Birds	*Zosterops kikuyuensis*	Kikuyu White-eye	
Birds	*Zosterops poliogastrus*		
Invertebrates	*Pisidium artifex*		
Invertebrates	*Platycypha amboniensis*	Montane Dancing-jewel	
Mammals	*Grammomys gigas*	Giant Thicket Rat	
Mammals	*Surdisorex polulus*	Mt. Kenya Mole Shrew	
Plants	*Carex runssoroensis*		
Plants	*Carpha eminii*		
Plants	*Dendrosenecio keniensis*		
Plants	*Helichrysum brownei*		
Plants	*Senecio keniophytum*		
Plants	*Vitex amaniensis*		

Soils and topography

The terrain in the forest is gradually slopping and with minimal erosion due to the ground vegetation cover. This ensures a very stable soil structure. The proposed Runyenjes water project will be located in sites characterized by rugged topography with several small valleys and ridges which are the source of the major stream tributaries and springs feeding the River Thuchi basin. The rocks present along the Runyenjes water project intake line to treatment plant and along the main distribution lines area are Kenytes (a type of lava) which were erupted as part of the Mount Kenya volcanic activity. In the present state they directly overlie the sub-Miocene peneplanation indicating that no other volcanic formation between them and the weathered and deformed Basement System rocks. The soils in the forest are dark brown and have a high organic matter added by the litter from the leaves of the trees. The cultivated area is characterized by brown to light brown deep fertile soils evidenced by the tea crop that they support. The riparian area has clay loam soils which are well drained. Runyenjes farm land soils are deep, well-drained Humic Nitisols of volcanic origin with moderate to high fertility. The soil's texture class is clay, with an average of 11% (sand) and 12.7% (silt), while the soil organic carbon content averages

2.8%. The sloppy terrain in Runyenjes stimulates conditions for soil erosion and degradation.

Flora

The area where project activities are carried out covers both forest area and farmlands. In the farmlands, most natural vegetation has been cleared to pave way for farming. The natural vegetation is either a fence, within homesteads or along the river. Some of the natural species include: *Anthocleista grandiflora*, *Casearia battiscombei*, *Commiphora eminii*, *Cordia abyssinica*, *Croton macrostachyus*, *Croton megalocarpus*, *Ehretia cymosa*, *Ficus sur*, and *Myrianthus holstii.* Agroforestry trees include: mangoes, avocadoes and macadamia. The area is extensively farmed with tea on the steep slopes and subsistence farming at the valley near the river. Some of the crops farmed are: maize, beans, kales and bananas. The vegetation in the proposed project site consists of both indigenous and exotic species. The forest is a highland forest with high species diversity both planted and natural. It is a well-managed forest with minimal disturbance and canopy closure of about 70%. The forest has a thick underground covered with shrubs and herbs including: *Clerodendrum johnstonii*, *Cyperus immensus*, *Cythea manniala*, *Eregorostis*, *Hypoestes aristata*, *Oplismenus bumanii*, *Pipers capense*, *Pteridium aquillinum*, *Rhus pinato* and *Solanum incanum*. The trees in the forest not only vary in species but also in height and frequency of occurrence.

Fast growing and soil fertilizing plant species

The following plant species were identified in the forest and especially along the contour where the proposed untreated water line passes

Cordia Africana – Muringa

Teclea nobilis - *Syzygium guineense*

Ficus sur – *Mukaragati*

Grevillea robusta – *Mukima*

Bridelia micrantha

Olea Africana – Mutero

Albizia gummifera

Markhamia lutea – Mugwanyi

Croton megalocarpus

Ocotea usambarensis – camphors (Muthaitiri)

Vitex keniensis

Prunus Africana – Mwiria

Ficus thonningii – Mugumo

Spathodea campanulate

Ficus sycomorus - Mukuu

Neoboutonia macrocalyx (pioneer species),

Vepris nobilis,

Allophylus abyssinicus,

Urera hypselodendron (liana)

Acanthus eminens.

Rapanea melanophloeos,

Podocarpus latifolius,

Podocarpus falcatus

Maytenus undata,

Hagenia abyssinica - Rosewood – Mujoya

Olea europaea ssp. Africana – Mutero

Juniperus procera,

Prunus africana,

Ocotea usambarensis

Juniperus procera,

Podocarpus falcatus,

Podocarpus. latifolius,

Nuxia congesta,

Newtonia buchanii.

Hypoestes forskaolii,

Stephania abyssinica,

Pentas longiflora

Scutia myrtina,

Dovyalis abyssinica,

Achyrospermum schimperi,

Cyphostemma kilimandscharica

Achyranthes aspera

Kalanchoe densiflora

Carduus afromontanus

Ocotea usambarensis Croton macrostacheus

Fauna

Several animals are known to occur in Irangi forest including; Elephants, Buffalloes, Antelopes, hyrax, monkeys. Near-endemic mammals include Jackson's mongoose, Abbot's duiker, sun squirrel, and the eastern tree hyrax. Irangi forest is the host of endangered and endemic type of frog called *Phrynobatrachus irangi* or the **Irangi puddle frog.** Phrynobatrachus irangi is the largest puddle frog in East Africa. It is labeled in the IUCN Red list as an endangered species and is threatened to habitat loss. The loss and destruction of the habitat where this frog lives is blamed largely on the community through their robust agricultural and forestry practices within and around the forest.

Other strictly endemic reptile and amphibian species, such as Tilbury's chameleon, Müller's leaf chameleon, Mount Kenya hornless chameleon, and Ashe's bush viper. Other animals in the forest includes some bird species such as Aberdare cisticola, Abbotts starling, and Kenrick's starling.

River Thuchi has different species of fish depending on the part of the river and these include: Mastacembelus Victoria, Alestes nurse, Tilapia zilli and Clarias angullaris. Cat fish (Clarias angullaris) is found in the forest and are only harvested in January.

Tea zone

At lower elevations, areas of forest have been converted to tea and coffee estates, conifer plantations, and subsistence agriculture. The major loss of habitat from plantations occurred during the British colonial period in the early and middle part of the 20th century. Since that time, increasing human populations have further converted montane habitats to farmland. In many places, land conversion has occurred up to the boundaries of the protected areas

Community Forest Associations (CFAs)

The conservation efforts of the forest are a joint effort between Kenya Forestry Services (KFS) and local community who are organized into community forest association (CFA). Control of the forests is being systematically given to democratically elected community forest associations (CFAs) that manage the forests under agreements with the KFS. The CFAs were established by the 2005 Forests Act, which encouraged the forest service to initiate the formation of CFAs and to enter into agreements with them. Under the agreements, CFAs are tasked with ensuring sustainable use of the forests, preventing illegal activity in them, managing and raising fees for grazing of livestock and firewood cutting in the forests, and starting new economic activities based on forest resources. No members of the community are allowed to live in the protected forests, but they can use them. The idea is that, with the incentive of control, communities will both value and protect their forests. The CFAs have very clear leadership structure and legal registration and recognition. They manage the utilization of ecosystem services from the forest and support in conservation measures within the forest. Below are some of the ecosystem services enjoyed by the local communities:

- Harvesting of honey from the forest
- Collection of forest soil
- Collection of humus or fallen and decomposed leaves in the forest
- Water abstraction
- Tourism
- Cultural values – the forest has sites for prayers and recollection

- Collection of medicinal herbs, fruits and tree parts
- Collection of dead fallen tree parts for firewood
- Cut and carry fodder for domestic animals

The CFOs charges a fee for anyone else who wants to enjoy ecosystem services such as water projects who pay 10,000KES to access the forest service. This fee is over and above the easement and wayleave permit fee offered by KFS. The CFOs also provide various services to as their contribution to conservation:

- Run and manage tree nurseries
- Assist in scouting and forest protection
- Assist in fire suppression in case of fire breaks
- Provide labor for planting trees

CHAPTER FIVE: IDENTIFICATION OF RISKS TO BIODIVERSITY AND MITIGATION

Introduction

The conservation outlook for Mount Kenya National Park/Natural Forest is good with some concern. The site's remote and rugged geography, combined with its very limited potential for alternative use means it is not highly threatened. However, a series of issues continue to negatively affect the site and require stronger management efforts. Wild fires occur annually and are sometimes difficult to bring under control, causing extensive damage to the natural vegetation. There are also continuing issues with illegal hunting, illegal forest resource extraction and unsustainable subsistence use by local communities and impacts from a growing number of visitors. The ecological resilience of the site is dependent on sustainable management of natural forests at lower elevations beyond its current boundary, where the recent resurgence of illegal forest resource extraction could jeopardize the conservation gains made over the past decades. Moreover, the impacts of climate change are difficult to assess but glaciers are melting and vegetation communities are likely to alter in the long term. The proposed project activities have been analyzed and their impact to the ecosystem summarized below:

Identified threats;

i. Over abstraction of the water from river Thuchi

Water abstraction from river Thuchi catchment has increased over time and may reach unsustainable levels if this continues unchanged. This development could significantly harm the wildlife, ecosystem health and the communities. Moreover, a water shortage lower in the catchment could result in people moving higher into the catchment which then may result in clashes over water resources. This could threaten the future of the site.

ii. Destruction of vegetation due to excavation processes

The proposed pipework shall be within the forest and will be laid a few feet under the soil. There will be excavation of the ground to allow laying of the pipe work. This will

affect the vegetation along the line. From our transect walk, the vegetation along the line is mainly shrubs and fast growing trees such as *croton macrostachuix since* the same contour has been used twice before for similar water projects.

iii. Interreference with elephant movement within the forest during construction phase

The forest is a host of several herds of elephants who move to drink water in river Thuchi across the proposed line. The excavation process during construction phase may leave open tranches that may might affect movement of elephants. The severity of this threat is based on how long these excavated tranches remain open.

Proposed Mitigation measures

i. Supporting conservation activities of the CFA – we propose that Tana Water Works Development Authority (TWWDA) should partner with the local CFA of Irangi forest and support some of their conservation activities.
ii. In efforts of achieving ex-situ net zero impact of the project activities we recommend that the agency partners with the community in agroforestry activities by providing fruit trees seedlings to farmers along the project affected areas
iii. During construction phase efforts should be made to avoid uprooting of trees of significant ecological importance
iv. On the wildlife corridor we propose that the contractor does not leave open trenches for more than two days.
v. The project untreated trunk to pass along the contour / way leave used by other water projects
vi. In case of any falling of trees full compensation to be done by the project as per the easement requirements given by KFS

Recommendation

The site's remote and rugged geography from the intake to the treatment plant, combined with its very limited potential for alternative use means it is not highly threatened. The potential threats identified above can be neutralized fully by the proposed mitigation measures and therefore we recommend it for support by The Bank.

Proposed Biodiversity Management Plan

	Ecosystems	Ecological Feature Description/Comments	Threats	Action/ measures	Indicator	responsibility
	Local Ecosystems & Habitats	Terrestrial (Trees their canopies/ Aerial habitats; ground habitats and ground flora; grass land, Riverine and riverbanks and aquatic vegetation; other locally diverse habitats;	Potential threats from indirect and indirect impacts of construction - leading to degradation of habitats- and direct &indirect adverse effects on species supported by the habitats; Habitat fragmentation resulting from vegetation clearance; Dam reservoir in a river system may affect phytoplankton populations - main drivers of primary production &	Control of airborne Pollution (ust); deposition/Silt Develop Inventory of trees/vegetation cut on sites during the work Critical Habitat offset--Undertake re-planting actions Educating workers & community on importance of habitats/ wildlife	Control plan to be adhered to throughout construction Inspection reports on habitats Awareness/training reports	Main contractor

			base of aquatic food webs.			
		Invasive plant species (Plants and animals	Invasive species may affect ecosystem structure, habitats and lead to extinctions of some native species	Identify & undertake eradication and control measures for alien invasive species. e.g physical removal for tree species, screening new plantings etc.	Regular monitoring and removals Develop a biosecurity plan/ Invasive Species Monitoring reports	Project management & site contractor
	Plants					
	Local trees and other key plant species Riparian and riverbank/water vegetation	Locally important mix of plant species (terrestrial and aquatic)	Cutting/removal or damage to of trees and other vegetation Airborne pollution leading to leaves damage	Sensitization of workers on the need to protect plant species Trees re-planting Riparian and aquatic vegetation restoration Measures for reduction of dust and other air-borne pollution	Reports on number and types of seedlings planted & restoration actions Inspection reports & and monitoring schedules	Project management & site contractor
	Mammals					

	(Large and small mammals)	Biodiversity (including of mammals and especially of small mammals) of land flooded by dam reservoir, may be diminished or lost.	-Risks of local poaching – Habitats Degradation leading to reduced biomass -Reduced for foraging -animal disturbances & reduced animal movement range -Reduced prey availability/ --population decline	Habitats restoration measures Precautionary Site Maintenance Minimal Fencing of specific sites to protect humans and livestock especially from predictor wildlife. wildlife crossing points will be put up at specified points Effecting Measures to compensate wildlife related deaths and injuries	Mammal population records/ inventory Wildlife Monitoring plans Regular Inspection of riparian special zones fencing Compensation records	KWS Contractor Community Livestock sector
	Birds					
	Birds- (Ground Nesting Birds of Open country /Farmland birds	Populations of birds, including several species of conservation concern. Bird species have	Pollution effects; Accidental injury/ mortality from construction	Minimization of pollution (noise, dust, chemicals especially during bird breeding seasons)	Birds inventory reports & monitoring schedules	KWS/ Nature Kenya; Project management; Site contractor

		territories, home ranges and feeding zones associated with rivers.	activities; especially vegetation clearance		Protocols for Pollution control throughout construction	
	Reptiles and Amphibia					
		Widespread reptiles and Amphibian species likely to be present in cool marginal habitats and Amphibia in riparian areas	Accidental injury/ mortality from habitat clearance; water pollution	Precautionary Measures for widespread Reptiles and Amphibians	Inventory reports Protocols & Reports on Pollution control	Project management & site contractor
	Fish					
		Fishes in rivers and adapted to conditions of flowing river/water.	Water pollution, Accidental injury/ mortality from habitat clearance. Transformation of a river to a dam reservoir usually results in the extirpation of resident riverine fishes	Effecting pollution control measures Reducing the impact of dams on fish migration by installation of various types of fish pass Develop Man-made spawning areas Develop hatcheries and	Protocols & Reports on Pollution Reports on status of fish passes	Project management & site contractor

			or even extinction fish species Reduction in fish populations	undertake fish stocking		
	Invertebrates					
		Locally important assemblage of invertebrates, both terrestrial and aquatic	Direct and indirect effects of pollution Habitats loss	Airborne Pollution (dust) & Silt Control	Protocols & Reports on Pollution	Project management & site contractor

Budget for Biodiversity Plan Implementation

Ecological Feature Description/Comments	Threats	Action/ measures	Responsibility	Budget in KES
Terrestrial (Trees their canopies/ Aerial habitats; ground habitats and ground flora; grass land, Riverine and riverbanks and aquatic vegetation; other locally diverse habitats;	Potential threats from indirect and indirect impacts of construction -leading to degradation of habitats- and direct &indirect adverse effects on species supported by the habitats; Habitat fragmentation resulting from vegetation clearance; Dam reservoir in a river system may affect phytoplankton populations - main drivers of primary production & base of aquatic food webs.	Control of airborne Pollution (dust); deposition/Silt Develop Inventory of trees/vegetation cut on sites during the work Critical Habitat Offset-Undertake re-planting actions Educating workers & community on importance of habitats/ wildlife	Main contractor	250,000
Invasive plant species (Plants and animals)	Invasive species may affect ecosystem structure, habitats and lead to extinctions of some native species	Identify & undertake eradication and control measures for alien invasive species. e.g physical removal for tree	Project management & site contractor	N/A

		species, screening new plantings etc.		
Locally important mix of plant species (terrestrial and aquatic)	Cutting/removal or damage to of trees and other vegetation Airborne pollution leading to leaves damage	Sensitization of workers on the need to protect plant species Trees re-planting Riparian and aquatic vegetation restoration Measures for reduction of dust and other air-borne pollution	Project management & site contractor	N/A
Biodiversity (including of mammals and especially of small mammals) of land flooded by dam reservoir, may be diminished or lost.	-Risks of local poaching – Habitats Degradation leading to reduced biomass -Reduced for foraging -animal disturbances & reduced animal movement range -Reduced prey availability/ -- population decline	Habitats restoration measures Precautionary Site Maintenance Minimal Fencing of specific sites to protect humans and livestock especially from predictor wildlife. wildlife crossing points will be put up at specified points	KWS Contractor Community Livestock sector	200,000

		Effecting Measures to compensate wildlife related deaths and injuries		
Populations of birds, including several species of conservation concern. Bird species have territories, home ranges and feeding zones associated with rivers.	Pollution effects; Accidental injury/ mortality from construction activities; especially vegetation clearance	Minimization of pollution (noise, dust, chemicals especially during bird breeding seasons)	KWS/ Nature Kenya; Project management; Site contractor	N/A
Widespread reptiles and Amphibian species likely to be present in cool marginal habitats and Amphibia in riparian areas	Accidental injury/ mortality from habitat clearance; water pollution	Precautionary Measures for widespread Reptiles and Amphibians	Project management & site contractor	N/A
Fishes in rivers and adapted to conditions of flowing river/water.	Water pollution, Accidental injury/ mortality from habitat clearance. Transformation of a river to a dam reservoir usually results in the extirpation of resident riverine fishes or even extinction fish species Reduction in fish populations	Effecting pollution control measures. Reducing the impact of dams on fish migration by installation of various types of fish pass Develop Man-made spawning areas	Project management & site contractor	50,000

		Develop hatcheries and undertake fish stocking		
Locally important assemblage of invertebrates, both terrestrial and aquatic	Direct and indirect effects of pollution Habitats loss	Airborne Pollution (dust) & Silt Control) Use adopt a forest strategy to compensate the lost habitats	Project management & site contractor	550,000
Ecosystem services to the community	Direct and indirect impacts of exploitation of ecosystem services such as water abstraction, impacts on the fishing activities from river Thuchi	Work with community CFOs to support conservation of distracted ecosystems Training of CFOs on sustainable use of Ecosystem services. Promote community owned tree nurseries. Payment of annual Ecosystem Service Access to the CFO	TWWDA Contractor KYEWASCO	550,000
Total Biodiversity Implementation Budget				**1,690,000**

REFERENCES

African Development Bank Group's Integrated Safeguards System — Policy statement and operational safeguards

The Environmental Management and Co-ordination Act, 1999

Mount Kenya National Park/Natural Forest - 2020 Conservation Outlook Assessment

Ministry of Environment and Forestry. (2018). Taskforce Report on Forest Resources Management and Logging Activities in Kenya. April 2018.

National Irrigation Board. (2013). Feasibility Study to Identify Irrigation Investments in Kieni East and West. March 2013.

The Standard. (2018). High number of water intakes in Mt Kenya forest worries CS Tobiko. [online] Available at: https://www.standardmedia.co.ke/central/article/2001292657/… [Accessed on 26 August 2020].

Appendices

Photo Gallery



Engagement with the community forest association at Irangi forest station



Consultation with the Irangi CFA on issues of conservation



Expert team during the visit to Irangi forest



The view at the periphery of Irangi natural forest

	
An intake chamber near the proposed site for abstraction	Access roads to the proposed intake in River Thuci
	
The forest underground at the intake environs	The proposed intake point at River Thuci
	

Experts at the intake led by the county conservator mapping critical species	Rear view of the proposed intake point
 underground growth near the intake	 Consultations in the forest during the visit
 BPT's for other projects assimilated within the forest	 Marshaland within the forest near the proposed intake

	
Transect work along the proposed pipe route mapping critical species along the line	A section of *Ocotea usambarensis* along the proposed pipe route.
	
Some species of importance at the site for the proposed BPT	Wash out chamber for other projects within the forest ecosystem

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) QUESTIONNAIRE FOR LOCAL COMMUNITY MEMBERS/ SORROUNDING ENTERPRISES/INTERESTED PARTIES

Proposed Runyenjes Water Supply Project

Tana Water Works Development Agency (TWWDA) is one of the nine (9) water Agencies under the Ministry of Water, Sanitation and Irrigation which is supporting the government in developing, maintaining, and managing national public water works to attain sustainable access to quality water and improved sewerage services within its area of jurisdiction. As part of its strategic plan, TWWDA is committed to increase the water and sewerage coverage in its area of jurisdiction from 57.8% and 8.1% in 2023 to 90% and 30% by 2027 respectively through development of sustainable Water and Sanitation Infrastructure

TWWDA has identified various water and sewerage projects within its area of jurisdiction to be undertaken under the National Urban Water Supply and Sanitation Program (NUWaSSaP) and have engaged the services of a consultant to undertake review and site-specific studies, Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) for implementation of the above proposed project. The implementation of the project is to be funded by the African Development Bank (AfDB) and the Government of Kenya (GoK). As a prerequisite for project funding and subsequent implementation, ESIA and RAP studies have to be undertaken and the reports approved.

As a member of the local community / surrounding enterprise / interested party, we request your comments on the expected socio-economic and environmental impacts of the proposed project. As a requirement of the AFDB Integrated Safeguards System, the Environmental Management and Co-ordination Act (1999), the Environmental (Impact Assessment and Audit) Regulations (2003) revised in 2015, Relevant Environmental and Social Policies, Public Health Act and Legal Supplement 2003, on environmental impact assessment, public participation is an important exercise for achieving the fundamental principles of sustainable development.

(Please note that these details are required for the purposes of authenticity in relation to the proposed project)

a) What is the distance between your house/enterprise and the project site? (*Tick where applicable*)

Less than 100m ☐ 100 – 500m ☐ 501 -1000m ☑ Over 1Km ☐

b) Are you familiar with the activities that would be involved in the Proposed Project?

Yes ☑ No ☐

c) Do you think you and your enterprise will be affected by the above proposed project?

Yes ☑ No ☐

d) Do you think this proposed project is suitable and compatible with the surrounding developments?

Yes ☑ No ☐

e) What **POSITIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project:

There will be adequate and effective for use to control and reduce diseases in the area

f) What **NEGATIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project?

Dave will water drainage

g) Make suggestions on the measures that the developer needs to put in place during the construction/setting up and operation stages.

- Involve the surrounding ppl during Construction
-

h) Any other **comments/suggestions** you would like to make in relation to the proposed project activities?

- Dave will be higher enhanced developed areas
- High standard of living will be improved

Name: Trifosia Murugi Date:

Designation / Residence: SUB-ALPHA GITARE

Contact: 0112273647

Signature:

THANK YOU FOR YOUR RESPONSE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) QUESTIONNAIRE FOR LOCAL COMMUNITY MEMBERS/ SORROUNDING ENTERPRISES/INTERESTED PARTIES

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a) What is the distance between your house/enterprise and the project site? (*Tick where applicable*)

Less than 100m [✓] 100 – 500m [ ] 501 -1000m [ ] Over 1Km [ ]

b) Are you familiar with the activities that would be involved in the Proposed Project?

Yes [✓] No [ ]

c) Do you think you and your enterprise will be affected by the above proposed project?

Yes [✓] No [ ]

d) Do you think this proposed project is suitable and compatible with the surrounding developments?

Yes [✓] No [ ]

e) What **POSITIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project:

.....
.....Youths will be employed during part time.....
.....
.....
.....

f) What **NEGATIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project?

The employment would occure

g) Make suggestions on the measures that the developer needs to put in place during the construction/setting up and operation stages.

Pay the workers well who will be employed

h) Any other **comments/suggestions** you would like to make in relation to the proposed project activities?

Youths groups training tree nurseries should be looked

Name: Ephantus Ndiwa Date: 13/2/2023

Designation / Residence: Area Elder

Contact 0702459873

Signature

THANK YOU FOR YOUR RESPONSE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) QUESTIONNAIRE FOR LOCAL COMMUNITY MEMBERS/ SORROUNDING ENTERPRISES/INTERESTED PARTIES

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(Please note that these details are required for the purposes of authenticity in relation to the proposed project)

a) What is the distance between your house/enterprise and the project site? (*Tick where applicable*)

Less than 100m [ ] 100 – 500m [ ] 501 -1000m [✓] Over 1Km [ ]

b) Are you familiar with the activities that would be involved in the Proposed Project?

Yes [✓] No [ ]

c) Do you think you and your enterprise will be affected by the above proposed project?

Yes [✓] No [ ]

d) Do you think this proposed project is suitable and compatible with the surrounding developments?

Yes [✓] No [ ]

e) What **POSITIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project:

.....Employment.....Opportunity.....
.....
.....
.....
.....

f) What **NEGATIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project?

.....
.....
.....
.....
.....
.....
.....

g) Make suggestions on the measures that the developer needs to put in place during the construction/setting up and operation stages.

1. Fences should be constructed on the done
2. Use the provided materials

h) Any other **comments/suggestions** you would like to make in relation to the proposed project activities?

Take the Boundary line

Name: Paul Mwangi Date: 17/02-2021

Designation / Residence: Mwaluphe Village

Contact: 0797906029

Signature.....

THANK YOU FOR YOUR RESPONSE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) QUESTIONNAIRE FOR LOCAL COMMUNITY MEMBERS/ SORROUNDING ENTERPRISES/INTERESTED PARTIES

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a) What is the distance between your house/enterprise and the project site? (*Tick where applicable*)

Less than 100m [✓] 100 – 500m [ ] 501 -1000m [ ] Over 1Km [ ]

b) Are you familiar with the activities that would be involved in the Proposed Project?

Yes [✓] No [ ]

c) Do you think you and your enterprise will be affected by the above proposed project?

Yes [✓] No [ ]

d) Do you think this proposed project is suitable and compatible with the surrounding developments?

Yes [✓] No [ ]

e) What **POSITIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project:

Many young boys and girls will get jobs and the environment will be affected by digging ditches and cutting trees.

f) What **NEGATIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project?

Many trees will be cutdown affecting the whole environment

g) Make suggestions on the measures that the developer needs to put in place during the construction/setting up and operation stages.

The developer should hold the groups with tree nurseries by supporting them financially

h) Any other **comments/suggestions** you would like to make in relation to the proposed project activities?

Local leaders should be cooperated during the construction phase of the project

Name: ERNEST NJUE MBUGUA Date: 13/2/2024

Designation / Residence: SUB-AREA RUKURIRI

Contact: 0729922657

Signature:

THANK YOU FOR YOUR RESPONSE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) QUESTIONNAIRE FOR LOCAL COMMUNITY MEMBERS/ SORROUNDING ENTERPRISES/INTERESTED PARTIES

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(Please note that these details are required for the purposes of authenticity in relation to the proposed project)

a) What is the distance between your house/enterprise and the project site? (*Tick where applicable*)

Less than 100m [ ] 100 – 500m [ ] 501 -1000m [ ] Over 1Km [✓]

b) Are you familiar with the activities that would be involved in the Proposed Project?

Yes [✓] No [ ]

c) Do you think you and your enterprise will be affected by the above proposed project?

Yes [✓] No [ ]

d) Do you think this proposed project is suitable and compatible with the surrounding developments?

Yes [✓] No [ ]

e) What **POSITIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project:

.....Damage of Roadsides.....
.....
.....
.....
.....

f) What **NEGATIVE** socio-economic and environmental impacts do you anticipate during the construction and operation stages of the project?

.....
.....We dont feel there.....
.....
.....
.....
.....
.....

g) Make suggestions on the measures that the developer needs to put in place during the construction/setting up and operation stages.

.....Enrollment.....of.....the.....area.....people.....
.....
.....
.....
.....
.....
.....

h) Any other **comments/suggestions** you would like to make in relation to the proposed project activities?

.....Fencing.....of.....the.....area.....before.....
.....construction.....is.....done.....
- Using.....the.....right.....material.....of.....the.....work.....
.....
.....
.....
.....

Name: .....Peter.....Mwiru.....Njoka.....Date: .....17/07/2024.....

Designation / Residence: .....

Contact.....0725578606.....

Signature.....

THANK YOU FOR YOUR RESPONSE

SNR ASST CHIEF
Mbiruri Sub-location
P.o. Box 152 - 60103
Date 06/01/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

SECTION 1: RESPONDENTS DETAILS

NAME	DANIEL MURIUKI NYAGA			
POSITION/ORGANISATION	NGAO (ASSISTANT CHIEF)			
TELEPHONE NO.	0725204742			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	MBIRURI B	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household... 4 ...Persons.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs... NIL ... (2) 6-18Yrs... 2 ..... (3)19-35Yrs... ~~[illegible]~~ NIL

(4) 36-49Yrs...1.....(5) 50-65Yrs....1..... (6) Over 66Yrs..Nil

3. (a)What is your Occupation/Economic Activity ...Administrator / Farmer
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Goats rearing.....

   (d) If Business, what kind of business?.....n/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....~~about~~ Piped water.....
2. How often do you fetch water?.....I use from the pipe(Coal enough
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?:...Piped CARTS / vehicles / bikes
6. How do you dispose off your household waste?....Waste disposal Pit / Composed pit
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay? N/A

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption ✓	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		PUBLIC AWARENESS
2.	Demolition of structures	YES		Compensation
3.	Possible Displacement	YES		"
4.	Loss of farmland/Trees/Crops	YES		"
5.	Interruption of Services and public amenities (Road access, electricity)	YES		RECTIFICATION
5.	Traffic operations impacts	YES		PUBLIC AWARENESS
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....N/A.....

.....N/A.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....YES ..like ..churches.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

Possibly be extended to farmers water for irigation.

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**.....06/09/2023

SNR ASST CHIEF
Mbiruri Sub-location
P.o. Box 132, 60103
Date: 06/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act(EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

CHIEF
RUNYENJES WEST LC
P.O. BOX 45-60103, RUN
Date

SECTION 1: RESPONDENTS DETAILS

NAME	LYDIA . N MUTURI			
POSITION/ORGANISATION	CHIEF / INTERIOR			
TELEPHONE NO.	0717 738981			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
GITARE SUBLOC	IRIARI	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....1..... (3)19-35Yrs....3...

(4) 36-49Yrs.....(5) 50-65Yrs..2.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ...CROP FARMING.....
   (i) Crop Farming ☑ (ii) Livestock Farming ☒ (iii)Formal Employment ☑

   (iv)Business ☐ (v) Mining ☐ (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....TEA/COFFEE.....

   Large Scale ☐

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....TAP WATER.....
2. How often do you fetch water?...N.A.....
3. What is the general quality of water? Good ☐ Fair ☑ Bad ☐

   (a)Are there cases of waterborne diseases in the area? Yes ☑ No ☐

   (i)Diarrhea ☐ (ii) Cholera ☐ (iii)Typhoid ☑ (iv) Malaria ☐

   (v)Others(Specify).....
4. Do you pay for water? Yes ☑ No ☐
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes ☑ No ☐

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line ☐ (ii) Flush system with Septic Tank ☑

   (iii) Pit Latrine ☑ (iv) Mobile Toilet ☐ (v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes ☐ No ☑

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**
   (b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	It will improve livelihood in the area	✓
4)	Reduced Cases of waterborne diseases due to provision of treated water	✓
5)	Any other that is not mentioned above; - - -	

2. Are there any culturally sensitive sites within the project vicinity? YESÿ NOÿ

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

TANA WATER WORKS DEVELOPMENT AGENCY

5. Do you have any other comments about the project?

.....

To implement immediately Sewerage System is needed urgently in Runyenjes town

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

CHIEF RUNYENJES WEST LOC P.O. BOX 45 60103 RUNY... Code...

Signature..... **Date** 06/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	CHARLES KIBE IRUNGU			
POSITION/ORGANISATION	CHIEF / KAGARI SOUTH WEST			
TELEPHONE NO.	0727424287			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	IVARI	KAGAARI SOUTH WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....EIGHT.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs...3..... (2) 6-18Yrs...2..... (3)19-35Yrs.....1....

(4) 36-49Yrs...2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming ✓ (iii)Formal Employment ✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Miraa,...Maize,..Beans...and Bananas

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Dairy..Goat,..Dairy cows

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Stream,...Rivers...Irrigation.....Water.....
2. How often do you fetch water?.....Daily.....basis.....
3. What is the general quality of water? Good € Fair ✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓ No €

   (i)Diarrhea ✓ (ii) Cholera ✓ (iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes ✓ No €
5. What is the common mode of transporting water in this area?..Human,..Animal
6. How do you dispose off your household waste?...Dust.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick) - ~~pit latrine~~.

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption ✓	
2.	Reduced Cases of waterborne diseases due to provision of clean water ✓	
3.	Improved General Hygiene ✓	
4.	Provide market for raw materials during construction ✓	
5.	Employment opportunities during construction & operation ✓	
6.	If any other please state: - Increase food security. - Raise living standard.	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Prior information to people for awareness
2.	Demolition of structures			
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		Replacement after it is over
5.	Interruption of Services and public amenities (Road access, electricity)	✓		look for alternatives especially to roads.
5.	Traffic operations impacts			
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

...Let the Contrator use the Local Labour.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date**..08/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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CHIEF KYENI CENTRAL
LOCATION

SECTION 1: RESPONDENTS DETAILS

NAME	EMMA WANJIRA			
POSITION/ORGANISATION	CHIEF			
TELEPHONE NO.	0703260333			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIRIGIAMBO	KYENI CENTRAL	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs....1..... (3)19-35Yrs....2...

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs....2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming ✓ (iii)Formal Employment ✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Maize, Beans, Bananas, Macadamia

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Cow, Poultry, goat

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Kathathani.....Spring.....500 metres.....
2. How often do you fetch water?....Daily.....
3. What is the general quality of water? Good ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea ✓(ii) Cholera ✓(iii)Typhoid ✓ (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No € no but pay a person to fetch.
5. What is the common mode of transporting water in this area?..Person.....
6. How do you dispose off your household waste?..In..a..Pit.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction			
2.	Demolition of structures	✓		Leave them as they wer
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Diversion of the route
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs....2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ../.....
   (i) Crop Farming ✓ (ii) Livestock Farming € (iii)Formal Employment €✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Maize, Beans, Bananas, Macadamia

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Cow, Poultry, goat

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Kathathan Spring ~ 500 metres
2. How often do you fetch water?....Daily.....
3. What is the general quality of water? Good ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea ✓(ii) Cholera ✓(iii)Typhoid ✓ (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No € not but Pay a person to fetch.
5. What is the common mode of transporting water in this area?..Person.....
6. How do you dispose off your household waste?..In a Pit.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction			
2.	Demolition of structures	✓		Leave them as they wer
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Diversion of the route
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes✓ No €

5. Do you have any other comments about the project?

...Hope That The Project will be

....Sustainable and affordable.

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature.....Zakuh..... **Date**.....07/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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ASST. CHIEF
NYAGARI SUB-LOCATION
P. O. Box 25-60103, RUNYENJES
DATE: 07/09/23

SECTION 1: RESPONDENTS DETAILS

NAME	EPHANTUS MYAGA NDWIGA			
POSITION/ORGANISATION	ASST. CHIEF			
TELEPHONE NO.	0724338407			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	IGAMJATA	KYENI CENTRAL	EMBU-EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....3.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....1..... (3)19-35Yrs....1.....

(4) 36-49Yrs....1.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ € (ii) Livestock Farming € (iii)Formal Employment ✓ €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Maize and Beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....well.....
2. How often do you fetch water?....daily.....
3. What is the general quality of water? Good € Fair ✓ € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓ €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No ✓ €
5. What is the common mode of transporting water in this area?...Oxen....Carts..
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes ✓ € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓ €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Reduce the daily expenses of buying water.	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		NO	
2.	Demolition of structures	YES		Diversion of Water Pipes
3.	Possible Displacement	YES		Compensation of the affected residents
4.	Loss of farmland/Trees/Crops		NO.	
5.	Interruption of Services and public amenities (Road access, electricity)		NO.	
5.	Traffic operations impacts		NO	
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....N.O.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....N.O.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

The Project will help in solving water shortage problem but after completion must be managed properly for efficiency.....

6. Do you have any objection on the proposed project? YES €NO ✓ €

Thank you for your cooperation

Signature..... **Date**...06/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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THE CHIEF
KYENI SOUTH
LOCATION
Date:.....

SECTION 1: RESPONDENTS DETAILS

NAME	SILAS N. MURIBIA			
POSITION/ORGANISATION	INTERNOR (NGAO)			
TELEPHONE NO.	0720430276			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
KASAFARI	CENTRE	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....2..... (3)19-35Yrs.....1

(4) 36-49Yrs.....1.....(5) 50-65Yrs....1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .ADMINISTRATOR / FARMER
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....CEREALS.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Piped Water.....
2. How often do you fetch water?.....~~Daily~~, Weekly.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Oxen Carts, human.
6. How do you dispose off your household waste?.....Composed pit
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii)Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering of the dust
2.	Demolition of structures	✓		Compensation.
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Alternative method provision
5.	Traffic operations impacts	✓		Call for diversion
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

THE CHIEF
KYENI SOUTH
LOCATION
Date.....

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	NAZARIA W. NGARI			
POSITION/ORGANISATION	NGAO			
TELEPHONE NO.	0713005110			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	IGANYONGA	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....7.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....— ..... (3)19-35Yrs.....4.....

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...maize, beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....shallow well.....
2. How often do you fetch water?....daily basis.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes € No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify)...Amoeba
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...Oxcarts.....
6. How do you dispose off your household waste?....Compost pit.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick) Pit latrine
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops			
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Diversion
5.	Traffic operations impacts	✓		Diversion
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**..7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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COMMANDER I/C
KARUMO . .POST.

SECTION 1: RESPONDENTS DETAILS

NAME	HENRY ATAMA			
POSITION/ORGANISATION	NPS			
TELEPHONE NO.	0721223257			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
KARUMO	KARUMO	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household...4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...1..... (3)19-35Yrs...2.....

(4) 36–49Yrs. 5 .....(5) 50-65Yrs... 1 ..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ...NPS / Formal Employment...
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....—.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....—.....

   (d) If Business, what kind of business?.....—.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...PIPED WATER.....
2. How often do you fetch water?....WEEKLY.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...CARTS, Donkeys...
6. How do you dispose off your household waste?.....Dust Pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) Pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Alternative
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Call for diversio
5.	Traffic operations impacts	✓		Call for diversio
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

	N/A

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

... .No.....further Comment.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**...07/09/2023.....

COMMANDER I/C
KARURUMO . .POST.

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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ASSISTANT CHIEF
KARURUMO SUB-LOCATION
DATE:.....

SECTION 1: RESPONDENTS DETAILS

NAME	Augustine M. Njoka			
POSITION/ORGANISATION	NGO			
TELEPHONE NO.	0719357643			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kantah	Kyeni South	Embu-East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....Two (2).....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....— ..... (2) 6-18Yrs.....— ..... (3)19-35Yrs..Two (2)

(4) 36-49Yrs...✓.....(5) 50-65Yrs...✓.... (6) Over 66Yrs...✓....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming €✓(ii) Livestock Farming € (iii)Formal Employment €✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....MAIZE AND BEANS.....

   Large Scale €✓

   (c) If Livestock farming, what type of Livestock?.....✓.....

   (d) If Business, what kind of business?.....✓.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...RIVER.....
2. How often do you fetch water?...WEEKLY.....
3. What is the general quality of water? Good € Fair €✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €✓No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid €✓ (iv) Malaria €

   (v)Others(Specify)..AMOEBA..
4. Do you pay for water? Yes €✓ No €
5. What is the common mode of transporting water in this area?..CART - HORSE.....
6. How do you dispose off your household waste?...COMPOST PIT.....
7. Does the Household have a toilet? Yes €✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine €✓(iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €✓

(c) If yes, how much do you pay?.....✓.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		WATERING
2.	Demolition of structures	✓		REPAIR
3.	Possible Displacement	✓		COMPENSATION
4.	Loss of farmland/Trees/Crops	✓		COMPENSATION
5.	Interruption of Services and public amenities (Road access, electricity)			DIVERSION
5.	Traffic operations impacts			DIVERSION / ALTERNATIVE
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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II HE
COMMANDER VC
KARURUMO . .POST.

SECTION 1: RESPONDENTS DETAILS

NAME	Somo Golo			
POSITION/ORGANISATION	~~TEACHER~~ NPS			
TELEPHONE NO.	0726019607			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
KARURUMO	KARURUMO	KIRIANI SOUTH	KIRIANI EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....Four.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....2..... (3)19-35Yrs.....1.....

(4) 36-49Yrs.....2.....(5) 50-65Yrs.....1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....N-P-S.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....CEREALS.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...piped Water.....
2. How often do you fetch water?.....weekly.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....dust pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? N/A

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES**, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		Composation
3.	Possible Displacement	✓		composation
4.	Loss of farmland/Trees/Crops	✓		alternative methods
5.	Interruption of Services and public amenities (Road access, electricity)	✓		call for devisoni
5.	Traffic operations impacts	✓		call for devision
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

	N/A

2. Are there any culturally sensitive sites within the project vicinity? YES ~~NO~~

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ~~€~~ **No** €

5. Do you have any other comments about the project?

.....No further Comment.....

.....

.....

6. Do you have any objection on the proposed project? YES € ~~NO~~ €

Thank you for your cooperation

COMMANDER I/C
KARURUNO . .POST.

Signature..... **Date**.....07/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	LUCY NJOKI			
POSITION/ORGANISATION	NGAO			
TELEPHONE NO.	0716129398			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KATHUNGURI	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....FIVE.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs...~~FIVE~~ TWO

(4) 36-49Yrs.....(5) 50-65Yrs.THREE (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i)Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?. MAIZE..BEANS..COFFEE.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?. COW..GOAT..SHEEP.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....BOREHOLE.....
2. How often do you fetch water?....TWO..DAYS...PER...WEEK.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?..COMPOST...B.PIT.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) LATRINE

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii)Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		SPRINKLE WATER
2.	Demolition of structures	✓		COMPENSATION
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....No.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No

5. Do you have any other comments about the project?

.....

.....No.....

.....

6. Do you have any objection on the proposed project? YES NO ✓

Thank you for your cooperation

THE CHIEF
KYENI SOUTH
LOCATION

Signature.....NO..... **Date**..07/08/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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S.N. NGINGO
ASST. CHIEF OFFICE
KATHARI SUBLOCATION
Date:.....

SECTION 1: RESPONDENTS DETAILS

NAME	SAVERIO NDWIGA NGINGO			
POSITION/ORGANISATION	NGAO – ASST. CHIEF			
TELEPHONE NO.	0724 421 775			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	NGURARA	KYENIN'EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....04.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....02.... (3)19-35Yrs.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs...02.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...INTERCROPING.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...COWS/SHOATS.....

   (d) If Business, what kind of business?.....

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...SPRING — ABOUT 100METERS.....
2. How often do you fetch water?.....ALWAYS.....
3. What is the general quality of water? Good € Fair €✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No✓€

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No✓€
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes✓€ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine €✓(iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No✓€

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		INFORM THE COMMUNITY
2.	Demolition of structures	YES		COMPENSATION
3.	Possible Displacement	YES		COMPENSATION
4.	Loss of farmland/Trees/Crops	YES		"
5.	Interruption of Services and public amenities (Road access, electricity)	YES		INFORM THE COMMUNITY
5.	Traffic operations impacts	YES		PROVIDE BYPASS
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....NO.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

The Project Should refrain from politics

.....

6. Do you have any objection on the proposed project? YES € NO €

S. N. NGINGO
ASST. CHIEF OFFICER
KATHARI SUBLOCATION
Date

Thank you for your cooperation

Signature..... **Date**.....11/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

1. Details of the Respondent

NAME	ERIC MUNENE MUGO			
POSITION/ORGANISATION	GENERAL MANAGER - KYEWASCO			
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KAWANJARA	RUNYENJES	EMBU-EAST	EMBU

2. What are your institutional roles in the proposed project area?

WATER SUPPLY & SEWERAGE SERVICES.....

.....

.....

.....

3. Does the organization have existing water supply systems in the area? If Yes specify

The current water supply is tapped from River Thuci, Ciangoma and Eng Majorly supplying water in Kyeni North ward, Kyeni South ward, Kagaari South ward and Runyenjes Central ward.

4. What are the land use practices in the area?

FARMING / LIVESTOCK KEEPING

5. Are there challenges faced in the area in regard to water supply? If Yes Specify

Water supply is not adequate making water rationing a day to day activity.

6. a) In your perception/opinion is the project good for the area? YES ÿ NO €

b)) If YES, please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	It will improve livelihood in the area	✓
4)	Provide market for construction materials	✓
5)	Reduce water borne diseases	✓
6)	Any other that is not mentioned above; - - -	

7) In your opinion, which Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures

- Disruption of business will need sensitization of all community members to avoid any conflicts.
- Destruction of crops / environmental issues to be taken care of.

8) Do you foresee any conflict with the community and other community water projects in the area in regard to the water resource? If Yes recommend methods for conflict resolution

Majorly issues with Wayleave where the lines are traversing in private lands.

9) In your opinion/perfection will there be willingness by the community to pay for one time connection?

Yes payments will made

10) Is the one time connection fee paid manageable to the users?

Yes will be a managable fee

11) Are there any culturally sensitive sites within the proposed project area? If yes specify

No

12) Are there any environmentally sensitive sites within the proposed project area? If yes specify

No

13) Do you have any other comment about the proposed project?

—

14) Do you have any objection on the proposed project? YES € NO €

No

Thank you for your cooperation

KYENI WATER & SEWERAGE CO
28 AUG 2023

Signature..... **Date**..26/08/2023....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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1. Details of the Respondent

NAME	Bernard Orinde			
ORGANISATION	Kenya Forest Service			
POSITION	County Conservator			
TELEPHONE NO.	0721 933802			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
			Embu – North	Embu

2. What are your institutional roles in the proposed project area?

Promotion of forest conservation in Riverine areas on farms and Forested Zones

3. What procedures are to be followed to pass a public utility in KFS resources as in this particular case

Request for way-leave license

4. Is KFS liable for compensation from the proponent?

Yes, for trees and land utilized for the project.

5. a) In your perception/opinion is the project good for the area? YES ☑ NO ☐
   b)) If **YES,** please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	Will enhance food security in the neighborhood?	✓
4)	It will improve livelihood in the area	✓
5)	Provide market for construction materials	✓

TANA WATER WORKS DEVELOPMENT AGENCY

6)	Any other that is not mentioned above: - It will avail water for seedly producti - Where nursery is not accesing water from - the river.	

5) In your opinion, which among the following Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures .....

Cutting down trees along the proposed line and Mitigation would be enhancing tree planting on adjacent areas and Rehabilitation of water sources.

7) Do you have any other comments about the project?

It's a positive project

8) Do you have any objection on the proposed project? YES ☐ NO ☑

Thank you for your cooperation

Signature..... Date 27/8/23

KENYA FOREST SERVICE
29 AUG 2023
P.O. BOX 2057-60100, EMBU
COUNTY FOREST CONSERVATOR

SUB-BASIN AREA COORDINATOR
WATER RESOURCE AUTHORITY
2 3 AUG 2023
Meru Sub-Basin Area
P. O. Box 3256 - 60200, MERU

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PRROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project, Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

1. Details of the Respondent

NAME	Alex M Kimotho	
ORGANISATION	WRA	
POSITION	0727459540 Hydrologist	
TELEPHONE NO.	0727459540	
LOCALITY	**Sub-County**	**County**
	IMENTI NORTH	MERU

2. What are your institutional roles in the proposed project area?

- Issuing of Water permit
-
-
-

3. What special requirements need to be fulfilled by the proponent to proceed with the proposed project due interference with the water resource?

- EIA
- Design of works.
- Authority to construct
- Easement from the Forest (KFS)
- Water permit fee.

4. What social conditions need to be fulfilled? Is WRA liable for compensation from the proponent?

- Comment from the WRUA
- No compensation required

5. **a)** In your perception/opinion is the project good for the area? YES ÿ NO €
b)) If YES, please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impact	Tick
1.	Overall Improvement in sanitation due to proper wastewater management	✓
2.	Reduced Cases of waterborne diseases due to reduced contamination of water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation of the waste treatment plant	✓
6.	Increase in land value due to proper sanitation	✓
7.	If any other please state: None.	

TANA WATER WORKS DEVELOPMENT AGENCY

6) In your opinion, which Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures

- Increase of water abstraction hence stress of the Tuuci system
-
- Intake design include a storange component.

7) Do you have any other comments about the project?

The project is good for the Runyenjes residents.

8) Do you have any objection on the proposed project? YES € NO €✓

Thank you for your cooperation

Signature..... **Date.** 23rd Aug 2023

SUB-BASIN AREA COORDINATOR
WATER RESOURCE AUTHORITY
2 3 AUG 2023
Meru Sub-Basin Area
P. O. Box 3256 - 60200, MERU

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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1. **Details of the Respondent**

NAME	JAMES GITONGA NJOKA			
ORGANISATION	UPPER THUCI W.R.U.A.			
POSITION	SECRETARY			
TELEPHONE NO.	0721-916928			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIAMURIUKI	MAGUMONI	OTHAKA	T. NITHI

2. What are your institutional roles in the proposed project area?

- Management of the Catchment of upper Thuci

.....

.....

.....

3. Are there existing community water supply projects in the area? If Yes highlight

Yes
- Kyeni Kagaani water Project
- Ndamuinga water Project
- Kyeni water supply

4. What are the land use practices in the area?

Farming.

5. Are there challenges faced in the area in regard to water supply? If Yes Specify

Yes- The water is not enough to serve the community (domestic) and not safe (untreated)

6. a) In your perception/opinion is the project good for the area? YES ȳ NO €
b)) If **YES,** please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	It will improve livelihood in the area	✓
4)	Provide market for construction materials	✓
5)	Reduce water borne diseases	✓
6)	Any other that is not mentioned above; - - -	

7) In your opinion, which Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures

1. Accidents during Construction - Safety measures be instituted.
2. Vegetation lose - Consult KFC for recomedations.
3 Conflicts amongst Communities - ~~Ass~~ Engage the Community through Public Participation.

8) Do you foresee any conflict with the community and other community water projects in the area in regard to the water resource? If Yes recommend methods for conflict resolution

NO.

.....

.....

9) Are there any culturally sensitive sites within the proposed project area? If yes specify

No:.....

.....

10) Are there any environmentally sensitive sites within the proposed project area? If yes specify

Yes - Forest - Tiangi Forest (Mt Kenya).....

.....

11) Do you have any other comment about the proposed project?

The Project will uplift the livehoods of the Community.....

12) Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature.....

UPPER THUCI ... P.O. BOX 20... DATE....

Date.....18/8/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	BONFACE MUGENDI NJIRU			
POSITION/ORGANISATION	FARMER			
TELEPHONE NO.	0721767271			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	GATINDA	RUNYENJES EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...3..... (3)19-35Yrs....1.....

(4) 36-49Yrs.....(5) 50-65Yrs..2..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ....FARMER.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...MAIZE, BEANS, BANANAS.....

   Large Scale € SMALL SCALE

   (c) If Livestock farming, what type of Livestock?...COWS & GOATS.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..FETCHING FROM STREAMS 1:2 KM.....
2. How often do you fetch water?...FOUR TIMES IN A WEEK.
3. What is the general quality of water? Good € Fair € Bad €✓

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria € NOT COMMONLY

   (v)Others(Specify).....
4. Do you pay for water? Yes €✓ No €
5. What is the common mode of transporting water in this area?...COW CART.....
6. How do you dispose off your household waste?....IN A PIT.....
7. Does the Household have a toilet? Yes €✓ No €

   (a) If Yes, type of toilet(Tick) LATRINE

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine €✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €✓

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption ✓	
2.	Reduced Cases of waterborne diseases due to provision of clean water ✓	
3.	Improved General Hygiene ✓	
4.	Provide market for raw materials during construction	
5.	Employment opportunities during construction & operation ✓	
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering dust Places
2.	Demolition of structures	✓		compesition/Replacer
3.	Possible Displacement	✓		compesition
4.	Loss of farmland/Trees/Crops	✓		compesition
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Alternative.
5.	Traffic operations impacts	✓		Alternative
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....There is a River.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No € ✓

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO € ✓

Thank you for your cooperation

Signature..... **Date**.....5th/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	NTERU NDWIGA			
POSITION/ORGANISATION				
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIGAA	RNY. EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....7.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...3..... (3)19-35Yrs...2...

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?....Maize.....and.....Beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?....Goat.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....River.....
2. How often do you fetch water?...Daily.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?....Human.....
6. How do you dispose off your household waste?....Burning.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		NO	
2.	Demolition of structures		NO	
3.	Possible Displacement		NO	
4.	Loss of farmland/Trees/Crops		NO	
5.	Interruption of Services and public amenities (Road access, electricity)		NO	
5.	Traffic operations impacts		NO	
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....No.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

√Yes € No €

5. Do you have any other comments about the project?

.....

.....The project will be of great importan

.....

6. Do you have any objection on the proposed project? YES €NO€

Thank you for your cooperation

Signature..... **Date**.....5/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	NANCY NJOKI			
POSITION/ORGANISATION	RESIDENT			
TELEPHONE NO.	0713005112			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	MWENENDEGA	RUNYENJES EAST	RUNYENJES	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....9.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs....1..... (2) 6-18Yrs.....3..... (3)19-35Yrs.....4....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs.....(5) 50-65Yrs...1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...MAIZE / BEANS / COFFEE.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...CHICKEN.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....WELL.....NEIGHBOURING.....
2. How often do you fetch water?...DAILY.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?Through jericans
6. How do you dispose off your household waste?.....Latrine.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?....300.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		✓	
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)	✓		
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....N.D.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....streams.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....The project will help the area.....

.....

.....

6. Do you have any objection on the proposed project? YES € ~~NO~~ ✓ €

Thank you for your cooperation

Signature..... **Date**...5/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JOHN KYAGA MVUHGA			
POSITION/ORGANISATION	Businessman / Land Lord			
TELEPHONE NO.	0713138054			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Runyenjes Township	Runyenjes EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..MM. 42 Tenants.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....over 18Yrs

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....Business man.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business €✓ (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....N/A.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?.....N/A.....
   (d) If Business, what kind of business?...Land Lord / Mocro finance.

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Kiggs Water Project and Kyeni Water Project
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair✓€ Bad €
   (a)Are there cases of waterborne diseases in the area? Yes €No✓€
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes✓€ No €
5. What is the common mode of transporting water in this area?...Piping.....
6. How do you dispose off your household waste?..Septic Tank / Pit Latrine
7. Does the Household have a toilet? Yes✓€ No €
   (a) If Yes, type of toilet(Tick)
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €✓
   (iii) Pit Latrine €✓ (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €No €✓

(c) If yes, how much do you pay?.....Kes. 25800/=.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering to reduce dust
2.	Demolition of structures	✓		Proper compensation of demolished structures
3.	Possible Displacement	✓		Proper compensation
4.	Loss of farmland/Trees/Crops	✓		"
5.	Interruption of Services and public amenities (Road access, electricity)			- Give alternative road - redress.
5.	Traffic operations impacts			- Give alternative roads
6.	If any other Please specify			N/A

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify..... Yes, but the most of the designed area will give vbd areas

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

N/A

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

The Project is timely as the town has insufficient water although cost of water must be considered in order to be affordable.

6. Do you have any objection on the proposed project? YES €NO✓

Thank you for your cooperation

Signature..... **Date**.....7/4/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JOHN MURUTHI ALFRED			
POSITION/ORGANISATION				
TELEPHONE NO.	0725117327			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Runyenjes	Runyenjes East	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....30 tenant A over 18yrs

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....Hume V.I.P.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....power Hole.....
2. How often do you fetch water?.....Cart...../...Mukuku.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?....Mukuku../...wheel bellow
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) Flush + pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction			Watering dust
2.	Demolition of structures			
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops			
5.	Interruption of Services and public amenities (Road access, electricity)			
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

N/A

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

✓Yes € No €

5. Do you have any other comments about the project?

.....

.....IT IS a good Project

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.....7/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	CAROLINE MURIUKI			
POSITION/ORGANISATION	BUSINESS			
TELEPHONE NO.	0727858275			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
RUNYENJES TOWN	RUNYENJES	RUNYENJES EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household...20...(TWENTY).....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs. OVER 18 YRS

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business € (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?.....
   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..TANA WATER PIPES.....
2. How often do you fetch water?..DAILY.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes € No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?..PIPING.....
6. How do you dispose off your household waste?..DUMPING.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick)
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay? Ksh 100/= per cubic Mtr

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops			
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Compensation
5.	Traffic operations impacts			
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....NO.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓ €

Thank you for your cooperation

Signature.....**Date**.....7/7/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Charles Mugwima Njeru			
POSITION/ORGANISATION	Hardware			
TELEPHONE NO.	0722356259			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Runyenjes Town	Runyenjes East	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....38 (7 Grants).....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..38..... (3)19-35Yrs.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business ✓ (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?.....
   (d) If Business, what kind of business?.....Hardware.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Kigaa Ikn.....
2. How often do you fetch water?.....Mon - Wed - Fri.....
3. What is the general quality of water? Good € Fair ✓ Bad €
   (a)Are there cases of waterborne diseases in the area? Yes € No ✓
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes ✓ No €
5. What is the common mode of transporting water in this area?.....PIPES.....
6. How do you dispose off your household waste?.....Dust bins.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick)
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank ✓
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes ✓ No €

(c) If yes, how much do you pay?.....2000.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Fair Compensation
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	Yes		Provision of Division
5.	Traffic operations impacts	—		—
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

Engagement of local youths during the Project -

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JULIUS MUTHEE NYAGA			
POSITION/ORGANISATION	PLOT NO. 173 RUNYENJE'S			
TELEPHONE NO.	0707 328444 0738 281505			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	RUNYENJES TOWN	RUNYENJES	EMBU	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... ONE (1) .....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs..... ✓ .....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business € (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?.....
   (d) If Business, what kind of business?.....CEREALS.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....NDAMUGE WATER SERVICES (KIGAA).....
2. How often do you fetch water?.....PIPING.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes €No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....PIPING.....
6. How do you dispose off your household waste?.....PIT.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick)
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? 250/= (Two hundred and fifty per month)

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) **If YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		WATERING
2.	Demolition of structures	✗	✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)	✗	✓	
5.	Traffic operations impacts		✓	
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....NO.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO✓€

Thank you for your cooperation

Signature.....Nyagah..... **Date**.....7th September 2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JAMES MWITI NDERANGU			
POSITION/ORGANISATION	BUSINESS			
TELEPHONE NO.	0798161684			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
		RUNYENJES	RUNYENJES	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....5.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...1..... (3)19-35Yrs.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs...2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?...Spares.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Tap.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Piped.....
6. How do you dispose off your household waste?.....Septic tank.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		NO	
2.	Demolition of structures		NO.	
3.	Possible Displacement		NO.	
4.	Loss of farmland/Trees/Crops		NO.	
5.	Interruption of Services and public amenities (Road access, electricity)	YES.		PUBLIC TO BE NOTIFIED
5.	Traffic operations impacts		NO-	
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

Good project.

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date** 07/09/23.

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

SECTION 1: RESPONDENTS DETAILS

NAME	Lydia Wambathi			
POSITION/ORGANISATION				
TELEPHONE NO.	-			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kirigori B	Runyenjes West	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....5.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs....1...

(4) 36-49Yrs...1.....(5) 50-65Yrs..2..... (6) Over 66Yrs..1.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming ✓€ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Sheep.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Piped Water.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good ✓€ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).Amoeba....
4. Do you pay for water? Yes ✓€ No €
5. What is the common mode of transporting water in this area?...Pipes, Oxcart
6. How do you dispose off your household waste?....composed heap.....
7. Does the Household have a toilet? Yes ✓€ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓€ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓€

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ○
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		apply Water using tanker.
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Replace
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Alert the community
5.	Traffic operations impacts	✓		Road Diversion
6.	If any other Please specify	✓		

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity...N/A.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....NO.....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature.....x x x..... **Date**.....6/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	NICHOLAS NYAGA NJERU			
POSITION/ORGANISATION				
TELEPHONE NO.	0721297454			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	MBIRURI	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....Four (5).....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....1..... (3)19-35Yrs...2..

(4) 36-49Yrs.....1..... (5) 50-65Yrs.....1..... (6) Over 66Yrs.....

3. (a)What is your Occupation Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? Coffee ..... MAIZE & BEANS

   Large Scale € NO

   (c) If Livestock farming, what type of Livestock? N/A.....

   (d) If Business, what kind of business? N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? PIPED ..... IN THE ..... HOMESTEAD .....
2. How often do you fetch water? ..... Daily .....
3. What is the general quality of water? Good € Fair €✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No € ✓

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify) AMOEBA common
4. Do you pay for water? Yes✓€ No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste? ..... COMPOST PIT .....
7. Does the Household have a toilet? Yes✓€ No €

   (a) If Yes, type of toilet(Tick) Improved PIT LATRINE

   (i) Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine✓€ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No € ✓

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Pour water on site
2.	Demolition of structures		✓	REBUILD
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		PAY TREES & CROPS Destroyed
5.	Interruption of Services and public amenities (Road access, electricity)	✓		REPAIR
5.	Traffic operations impacts		✓	
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

THE PROPOSED WATER SHOULD BE WELL STREAD THRO' THE AREA (MBIRURI) SUB LOCATION

6. Do you have any objection on the proposed project? YES € NO € ✓

Thank you for your cooperation

Signature. ..... **Date...** 6/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JOHN MURITHI CIATU			
POSITION/ORGANISATION				
TELEPHONE NO.	0725726337			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	MBIRURI	RUNYENJES WEST	RUNYENJES EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....8.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs....2..... (2) 6-18Yrs....2..... (3)19-35Yrs..... ~~4~~ 2 (TWO)

(4) 36-49Yrs.....(5) 50-65Yrs..2..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   √(i) Crop Farming € √(ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? Maize, Beans, Bananas, Coffee

   Large Scale € small Scale

   (c) If Livestock farming, what type of Livestock? Cattle, Poultry

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? Piped Water
2. How often do you fetch water? Daily
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).. Amoeba
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area? Piping or cart
6. How do you dispose off your household waste? Composed Heap
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? 250 per month

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		apply water using tankers
2.	Demolition of structures	✓		compensation
3.	Possible Displacement	✓		Replace
4.	Loss of farmland/Trees/Crops	✓		compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Alert the community on time
5.	Traffic operations impacts	✓		Road diversion
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

NO

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date** 6th Sept. 2023

	ATTENDANCE REGISTER	Page 1 of 9

RUNYENJES WATER SUPPLY PROJECT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

DATE: 6th September 2023 **VENUE:** GIKUURI CHIEF's OFFICE.

S/No.	NAME	DESIGNATION/INSTITUTION	CONTACT/EMAIL ADDRESS	PWD YES/NO	SIGNATURE
1.	WILLY NJEPU MUTHAURA	Gikuuri Resident	0714977836	NO	
2.	Alexander Muiruri Njiru	Pleasant Farmer	0723707370	YES	
3.	Charles Mugambi	Farmer	0712007227	yes	
4.	PETER NGANDA	Farmer	0723497979	NO	
5.	Simon Njue	Resident	0720386445	N/A	
6.	ELIAS NYAGA	Resident	0700509757	NO	
7.	Nyaga Mwangaria	Resident	0728184019	NO	
8.	Esther Wegoki	Resident	0715368333	NO	wegoki

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RUNYENJES WATER SUPPLY PROJECT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

DATE: **VENUE:**

S/No.	NAME	DESIGNATION/INSTITUTION	CONTACT/EMAIL ADDRESS	PWD YES/NO	SIGNATURE
9.	Laban Njeru Nyaga	Resident	0725632284	NO	
10.	FAITH GICUGU NJIRU	Resident	0723304292	NO	
11.	Duncan Njeru Bedan	Resindente	0722675214	NO	
12.	VALERIANA WERIMBA	Resident	0718818812	NO	
13.	ANN MUTHONI	Resident	0724689695	NO	
14.	Lucy wanjiku K	Resident	0748222970	NO	
15.	Ndwiga Simba	Resident	0703719154	NO.	
16.	Fridah Kanyua Muiruri	Resident	0711973563	NO	

TANA WATER WORKS DEVELOPMENT AGENCY	**ATTENDANCE REGISTER**	**Page 3 of 9**

RUNYENJES WATER SUPPLY PROJECT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

DATE: **VENUE:**

S/No.	NAME	DESIGNATION/INSTITUTION	CONTACT/EMAIL ADDRESS	PWD YES/NO	SIGNATURE
17.	Moses Mwithi	Resident	0746608887	NO	
18.	Esther Gathiri	Resident	0706106761	NO	
19.	Lucy WANJA NJERU	FARMER	0717155573	NO	
20.	MARTHA MUTHONI NGONG	FARMER	0724759292	NO	M Muthoni
21.	MARY MBUYA	FARMER	0728768794	NO	
22	JUDY WAMBUI	FARMER	0700317843	NO	J.W.M.
23	Fridah muthoni	Farmer	0790187005	NO	
24	Innocenca Njoki	Resident	-	NO	

TANA WATER WORKS DEVELOPMENT AGENCY	**ATTENDANCE REGISTER**	**Page 4 of 9**

RUNYENJES WATER SUPPLY PROJECT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

DATE: **VENUE:**

S/No.	NAME	DESIGNATION/INSTITUTION	CONTACT/EMAIL ADDRESS	PWD YES/NO	SIGNATURE
25	Tavastia Wa Mbaigah	Resident	0700725 174	No	
26	Catherine W. Kamwitha	Resident		No	
27	Innocentia Nejiki	Resident	—	No	
28	Catherine G. Muwanji	Resident	—	No	
29					
30					
31					

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TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	MARTHA MUTHONI NGONDI			
POSITION/ORGANISATION	FARMER			
TELEPHONE NO.	0724759294			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	GIKUURI	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....6MEMBERS.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...4..... (3)19-35Yrs.....

(4) 36-49Yrs. 2 (5) 50-65Yrs..... (6) Over 66Yrs. 1

3. (a)What is your Occupation Economic Activity .....
   (i) Crop Farming ✓ € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? maize beans bananas

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? borehole, Ngagaka.....
2. How often do you fetch water?.....
3. What is the general quality of water? Good ✓ € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No ✓ €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes ✓ € No €
5. What is the common mode of transporting water in this area? Piping
6. How do you dispose off your household waste? composite
7. Does the Household have a toilet? Yes ✓ € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank ✓ €

   (iii) Pit Latrine ✓ € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓ €

(c) If yes, how much do you pay?.....250/=.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐

(a) **If YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Sprinkle water
2.	Demolition of structures	✓		Compensate
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Compensate
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Timely restoration of services
5.	Traffic operations impacts	✓		Alternative route
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity....NO.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

.....Support.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓ €

Thank you for your cooperation

Signature..NMmutharia..... **Date**...6/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JUDY WAMBUI			
POSITION/ORGANISATION	FARMER.			
TELEPHONE NO.	0700317843			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Gikuuri	Runyenjes West Gitaraka	Embu East Runyenjes	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 5 .....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs...1..... (3)19-35Yrs....1.....

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....poultry.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....poultry.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....River.....½...kilometre.....
2. How often do you fetch water?.....every day.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....using cans
6. How do you dispose off your household waste?.....pouring to the Kitchen gardens
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: It will save time of Fetching water.	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Sprinkle water
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Compensation.
5.	Interruption of Services and public amenities (Road access, electricity)			Timely restoration of services
5.	Traffic operations impacts			Alternative route
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

Supporting

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**.....6/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Nyaga Muriuki			
POSITION/ORGANISATION	Gikuuri Resident			
TELEPHONE NO.	0712484071			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Gikuuri	Runyenjes West	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....14.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....

(4) 36-49Yrs.....(5) 50-65Yrs.....(6) Over 65Yrs.....

3. (a)What is your Occupation/Economic Activity

(i) Crop Farming € (ii) Livestock Farming € (iii) Casual Employment €

(iv)Business € (v) Mining € (vi) Others Specify.....

(b) If Crop farming, what type crops?.....

Large Scale €

(c) If Livestock farming, what type of Livestock?.....

(d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....
2. How often do you fetch water?.....
3. What is the general quality of water? Good € Fair € Bad €

(a)Are there cases of waterborne diseases in the area? Yes € No €

(i)Diarrhea € (ii) Cholera € (iii) Typhoid € (iv) Malaria €

(v)Others(Specify).....

4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes € No €

(a) If Yes, type of toilet(Tick)

(i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

(iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

(b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	Yes		
2.	Demolition of structures	NO		
3.	Possible Displacement	Yes		
4.	Loss of farmland/Trees/Crops	Yes		
5.	Interruption of Services and public amenities (Road access, electricity)	Yes		
5.	Traffic operations impacts	Yes -		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO -

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

Project is Good

.....

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**.....6/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	WILLY NJERU MUTHARA			
POSITION/ORGANISATION	CHAIRMAN GETARI Group			
TELEPHONE NO.	0714979636			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Gitwondi	Runyenjes West	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs...5..... (2) 6-18Yrs...2..... (3)19-35Yrs...7.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....maize and beans mirra

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Hens.....

   (d) If Business, what kind of business?.....N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...Wet land flowing water distance 100 meters
2. How often do you fetch water?.....100 Meters.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....typhoid
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Fech and Carry
6. How do you dispose off your household waste?.....pour (throw away)
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		
2.	Demolition of structures		NO	
3.	Possible Displacement		NO	
4.	Loss of farmland/Trees/Crops			
5.	Interruption of Services and public amenities (Road access, electricity)	YES		
5.	Traffic operations impacts	YES		
6.	If any other Please specify N/A			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....No.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

Good for the Project

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓ €

Thank you for your cooperation

Signature..... **Date**...6/6/2022.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Alexander Muriithi Njiru			
POSITION/ORGANISATION	Peasant farmer			
TELEPHONE NO.	0723707370			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Gikuri	Runyenjes West	Embu East	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....13.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs....TWO.. (2) 6-18Yrs..5..... (3)19-35Yrs..6...

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs...3.....(5) 50-65Yrs...2... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ...Peasant farmer...
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Maize and Beans...Miraa coffee

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Goats Chickens.....

   (d) If Business, what kind of business?.....N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...Wet land flowing water.....
2. How often do you fetch water?.....daily.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)...Typhoid
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...Carry.....
6. How do you dispose off your household waste?...throw water out
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		
2.	Demolition of structures		NO	
3.	Possible Displacement		NO	
4.	Loss of farmland/Trees/Crops	YES		
5.	Interruption of Services and public amenities (Road access, electricity)	YES		
5.	Traffic operations impacts	YES		
6.	If any other Please specify	N/A		

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....NO.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

N/A

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

Good for the project

.....W.W.D.A.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.....6/9/2023.....

SNR ASST CHIEF
Mbiruri Sub-location
P.o. Box 152 - 60103
Date 06/01/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	DANIEL MURIUKI NYAGA			
POSITION/ORGANISATION	NGAO (ASSISTANT CHIEF)			
TELEPHONE NO.	0725204742			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	MBIRURI B	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household... 4 ...Persons.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs... NIL ... (2) 6-18Yrs... 2 ..... (3)19-35Yrs... ~~[illegible]~~ NIL

(4) 36-49Yrs...1.....(5) 50-65Yrs....1..... (6) Over 66Yrs..Nil

3. (a)What is your Occupation/Economic Activity ...Administrator / Farmer
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Goats rearing.....

   (d) If Business, what kind of business?.....n/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....~~about~~ Piped water.....
2. How often do you fetch water?.....I use from the pipe(Coal enough
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?:...Piped CARTS / vehicles / bikes
6. How do you dispose off your household waste?....Waste disposal Pit / Composed pit
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay? N/A

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption ✓	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		PUBLIC AWARENESS
2.	Demolition of structures	YES		Compensation
3.	Possible Displacement	YES		"
4.	Loss of farmland/Trees/Crops	YES		"
5.	Interruption of Services and public amenities (Road access, electricity)	YES		RECTIFICATION
5.	Traffic operations impacts	YES		PUBLIC AWARENESS
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....N/A.....

.....N/A.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....YES ..like ..churches.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

Possibly be extended to farmers water for irigation.

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**.....06/09/2023

SNR ASST CHIEF
Mbiruri Sub-location
P.o. Box 132, 60103
Date: 06/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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CHIEF
RUNYENJES WEST LC
P.O. BOX 45-60103, RUN
Date

SECTION 1: RESPONDENTS DETAILS

NAME	LYDIA . N MUTURI			
POSITION/ORGANISATION	CHIEF / INTERIOR			
TELEPHONE NO.	0717 738981			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
GITARE SUBLOC	IRIARI	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....1..... (3)19-35Yrs....3...

(4) 36-49Yrs.....(5) 50-65Yrs..2.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ...CROP FARMING.....
   (i) Crop Farming ☑ (ii) Livestock Farming ☒ (iii)Formal Employment ☑

   (iv)Business ☐ (v) Mining ☐ (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....TEA/COFFEE.....

   Large Scale ☐

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....TAP WATER.....
2. How often do you fetch water?...N.A.....
3. What is the general quality of water? Good ☐ Fair ☑ Bad ☐

   (a)Are there cases of waterborne diseases in the area? Yes ☑ No ☐

   (i)Diarrhea ☐ (ii) Cholera ☐ (iii)Typhoid ☑ (iv) Malaria ☐

   (v)Others(Specify).....
4. Do you pay for water? Yes ☑ No ☐
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes ☑ No ☐

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line ☐ (ii) Flush system with Septic Tank ☑

   (iii) Pit Latrine ☑ (iv) Mobile Toilet ☐ (v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes ☐ No ☑

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**
   (b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	It will improve livelihood in the area	✓
4)	Reduced Cases of waterborne diseases due to provision of treated water	✓
5)	Any other that is not mentioned above; - - -	

2. Are there any culturally sensitive sites within the project vicinity? YESÿ NOÿ

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

TANA WATER WORKS DEVELOPMENT AGENCY

5. Do you have any other comments about the project?

.....

To implement immediately Sewerage System is needed urgently in Runyenjes town

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

CHIEF RUNYENJES WEST LOC P.O. BOX 45 60103 RUNY... Code...

Signature..... **Date** 06/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	CHARLES KIBE IRUNGU			
POSITION/ORGANISATION	CHIEF / KAGARI SOUTH WEST			
TELEPHONE NO.	0727424287			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	IVARI	KAGAARI SOUTH WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....EIGHT.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs...3..... (2) 6-18Yrs...2..... (3)19-35Yrs.....1....

(4) 36-49Yrs...2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming ✓ (iii)Formal Employment ✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Miraa,...Maize,..Beans...and Bananas

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Dairy..Goat,..Dairy cows

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Stream,...Rivers...Irrigation.....Water.....
2. How often do you fetch water?.....Daily.....basis.....
3. What is the general quality of water? Good € Fair ✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓ No €

   (i)Diarrhea ✓ (ii) Cholera ✓ (iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes ✓ No €
5. What is the common mode of transporting water in this area?..Human,..Animal
6. How do you dispose off your household waste?...Dust.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick) - ~~pit latrine~~.

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption ✓	
2.	Reduced Cases of waterborne diseases due to provision of clean water ✓	
3.	Improved General Hygiene ✓	
4.	Provide market for raw materials during construction ✓	
5.	Employment opportunities during construction & operation ✓	
6.	If any other please state: - Increase food security. - Raise living standard.	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Prior information to people for awareness
2.	Demolition of structures			
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		Replacement after it is over
5.	Interruption of Services and public amenities (Road access, electricity)	✓		look for alternatives especially to roads.
5.	Traffic operations impacts			
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

...Let the Contrator use the Local Labour.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date**..08/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

CHIEF KYENI CENTRAL
LOCATION

SECTION 1: RESPONDENTS DETAILS

NAME	EMMA WANJIRA			
POSITION/ORGANISATION	CHIEF			
TELEPHONE NO.	0703260333			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIRIGIAMBO	KYENI CENTRAL	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs....1..... (3)19-35Yrs....2...

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs....2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming ✓ (iii)Formal Employment ✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Maize, Beans, Bananas, Macadamia

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Cow, Poultry, goat

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Kathathani.....Spring.....500 metres.....
2. How often do you fetch water?....Daily.....
3. What is the general quality of water? Good ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea ✓(ii) Cholera ✓(iii)Typhoid ✓ (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No € no but pay a person to fetch.
5. What is the common mode of transporting water in this area?..Person.....
6. How do you dispose off your household waste?..In..a..Pit.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction			
2.	Demolition of structures	✓		Leave them as they wer
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Diversion of the route
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs....2.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ../.....
   (i) Crop Farming ✓ (ii) Livestock Farming € (iii)Formal Employment €✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Maize, Beans, Bananas, Macadamia

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Cow, Poultry, goat

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Kathathan Spring ~ 500 metres
2. How often do you fetch water?....Daily.....
3. What is the general quality of water? Good ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea ✓(ii) Cholera ✓(iii)Typhoid ✓ (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No € not but Pay a person to fetch.
5. What is the common mode of transporting water in this area?..Person.....
6. How do you dispose off your household waste?..In a Pit.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction			
2.	Demolition of structures	✓		Leave them as they wer
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Diversion of the route
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes✓ No €

5. Do you have any other comments about the project?

...Hope That The Project will be

....Sustainable and affordable.

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature.....Zakuh..... **Date**.....07/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County.** As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

ASST. CHIEF
NYAGARI SUB-LOCATION
P. O. Box 25-60103, RUNYENJES
DATE: 07/09/23

SECTION 1: RESPONDENTS DETAILS

NAME	EPHANTUS MYAGA NDWIGA			
POSITION/ORGANISATION	ASST. CHIEF			
TELEPHONE NO.	0724338407			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	IGAMJATA	KYENI CENTRAL	EMBU-EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....3.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....1..... (3)19-35Yrs....1.....

(4) 36-49Yrs....1.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ € (ii) Livestock Farming € (iii)Formal Employment ✓ €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Maize and Beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....well.....
2. How often do you fetch water?....daily.....
3. What is the general quality of water? Good € Fair ✓ € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓ €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)..Amoeba
4. Do you pay for water? Yes € No ✓ €
5. What is the common mode of transporting water in this area?...Oxen....Carts..
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes ✓ € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓ €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Reduce the daily expenses of buying water.	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		NO	
2.	Demolition of structures	YES		Diversion of Water Pipes
3.	Possible Displacement	YES		Compensation of the affected residents
4.	Loss of farmland/Trees/Crops		NO.	
5.	Interruption of Services and public amenities (Road access, electricity)		NO.	
5.	Traffic operations impacts		NO	
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....N.O.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....N.O.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

The Project will help in solving water shortage problem but after completion must be managed properly for efficiency.....

6. Do you have any objection on the proposed project? YES €NO ✓ €

Thank you for your cooperation

Signature..... **Date**...06/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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THE CHIEF
KYENI SOUTH
LOCATION
Date:.....

SECTION 1: RESPONDENTS DETAILS

NAME	SILAS N. MURIBIA			
POSITION/ORGANISATION	INTERNOR (NGAO)			
TELEPHONE NO.	0720430276			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
KASAFARI	CENTRE	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....SIX.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....2..... (3)19-35Yrs.....1

(4) 36-49Yrs.....1.....(5) 50-65Yrs....1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .ADMINISTRATOR / FARMER
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....CEREALS.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Piped Water.....
2. How often do you fetch water?.....~~Daily~~, Weekly.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Oxen Carts, human.
6. How do you dispose off your household waste?.....Composed pit
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii)Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering of the dust
2.	Demolition of structures	✓		Compensation.
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Alternative method provision
5.	Traffic operations impacts	✓		Call for diversion
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

THE CHIEF
KYENI SOUTH
LOCATION
Date.....

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	NAZARIA W. NGARI			
POSITION/ORGANISATION	NGAO			
TELEPHONE NO.	0713005110			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	IGANYONGA	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....7.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....— ..... (3)19-35Yrs.....4.....

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...maize, beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....shallow well.....
2. How often do you fetch water?....daily basis.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes € No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify)...Amoeba
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...Oxcarts.....
6. How do you dispose off your household waste?....Compost pit.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick) Pit latrine
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Watering
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement			
4.	Loss of farmland/Trees/Crops			
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Diversion
5.	Traffic operations impacts	✓		Diversion
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**..7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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COMMANDER I/C
KARUMO . .POST.

SECTION 1: RESPONDENTS DETAILS

NAME	HENRY ATAMA			
POSITION/ORGANISATION	NPS			
TELEPHONE NO.	0721223257			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
KARUMO	KARUMO	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household...4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...1..... (3)19-35Yrs...2.....

(4) 36–49Yrs. 5 .....(5) 50-65Yrs... 1 ..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ...NPS / Formal Employment...
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....—.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....—.....

   (d) If Business, what kind of business?.....—.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...PIPED WATER.....
2. How often do you fetch water?....WEEKLY.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...CARTS, Donkeys...
6. How do you dispose off your household waste?.....Dust Pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) Pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Alternative
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Call for diversio
5.	Traffic operations impacts	✓		Call for diversio
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

	N/A

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

... .No.....further Comment.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**...07/09/2023.....

COMMANDER I/C
KARURUMO . .POST.

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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ASSISTANT CHIEF
KARURUMO SUB-LOCATION
DATE:.....

SECTION 1: RESPONDENTS DETAILS

NAME	Augustine M. Njoka			
POSITION/ORGANISATION	NGO			
TELEPHONE NO.	0719357643			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kantah	Kyeni South	Embu-East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....Two (2).....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....— ..... (2) 6-18Yrs.....— ..... (3)19-35Yrs..Two (2)

(4) 36-49Yrs...✓.....(5) 50-65Yrs...✓.... (6) Over 66Yrs...✓....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming €✓(ii) Livestock Farming € (iii)Formal Employment €✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....MAIZE AND BEANS.....

   Large Scale €✓

   (c) If Livestock farming, what type of Livestock?.....✓.....

   (d) If Business, what kind of business?.....✓.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...RIVER.....
2. How often do you fetch water?...WEEKLY.....
3. What is the general quality of water? Good € Fair €✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €✓No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid €✓ (iv) Malaria €

   (v)Others(Specify)..AMOEBA..
4. Do you pay for water? Yes €✓ No €
5. What is the common mode of transporting water in this area?..CART - HORSE.....
6. How do you dispose off your household waste?...COMPOST PIT.....
7. Does the Household have a toilet? Yes €✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine €✓(iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €✓

(c) If yes, how much do you pay?.....✓.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		WATERING
2.	Demolition of structures	✓		REPAIR
3.	Possible Displacement	✓		COMPENSATION
4.	Loss of farmland/Trees/Crops	✓		COMPENSATION
5.	Interruption of Services and public amenities (Road access, electricity)			DIVERSION
5.	Traffic operations impacts			DIVERSION / ALTERNATIVE
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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II HE
COMMANDER VC
KARURUMO . .POST.

SECTION 1: RESPONDENTS DETAILS

NAME	Somo Golo			
POSITION/ORGANISATION	~~TEACHER~~ NPS			
TELEPHONE NO.	0726019607			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
KARURUMO	KARURUMO	KIRIANI SOUTH	KIRIANI EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....Four.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....2..... (3)19-35Yrs.....1.....

(4) 36-49Yrs.....2.....(5) 50-65Yrs.....1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....N-P-S.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....CEREALS.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...piped Water.....
2. How often do you fetch water?.....weekly.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....dust pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) pit latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? N/A

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES**, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		Composation
3.	Possible Displacement	✓		composation
4.	Loss of farmland/Trees/Crops	✓		alternative methods
5.	Interruption of Services and public amenities (Road access, electricity)	✓		call for devisoni
5.	Traffic operations impacts	✓		call for devision
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

	N/A

2. Are there any culturally sensitive sites within the project vicinity? YES ~~NO~~

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ~~€~~ **No** €

5. Do you have any other comments about the project?

.....No further Comment.....

.....

.....

6. Do you have any objection on the proposed project? YES € ~~NO~~ €

Thank you for your cooperation

COMMANDER I/C
KARURUNO . .POST.

Signature..... **Date**.....07/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	LUCY NJOKI			
POSITION/ORGANISATION	NGAO			
TELEPHONE NO.	0716129398			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KATHUNGURI	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....FIVE.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs...~~FIVE~~ TWO

(4) 36-49Yrs.....(5) 50-65Yrs.THREE (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i)Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?. MAIZE..BEANS..COFFEE.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?. COW..GOAT..SHEEP.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....BOREHOLE.....
2. How often do you fetch water?....TWO..DAYS...PER...WEEK.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?..COMPOST...B.PIT.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick) LATRINE

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii)Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		SPRINKLE WATER
2.	Demolition of structures	✓		COMPENSATION
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....No.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No

5. Do you have any other comments about the project?

.....

.....No.....

.....

6. Do you have any objection on the proposed project? YES NO ✓

Thank you for your cooperation

THE CHIEF
KYENI SOUTH
LOCATION

Signature.....NO..... **Date**..07/08/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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S.N. NGINGO
ASST. CHIEF OFFICE
KATHARI SUBLOCATION
Date:.....

SECTION 1: RESPONDENTS DETAILS

NAME	SAVERIO NDWIGA NGINGO			
POSITION/ORGANISATION	NGAO – ASST. CHIEF			
TELEPHONE NO.	0724 421 775			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	NGURARA	KYENIN'EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....04.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....02.... (3)19-35Yrs.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs...02.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €✓

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...INTERCROPING.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...COWS/SHOATS.....

   (d) If Business, what kind of business?.....

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...SPRING — ABOUT 100METERS.....
2. How often do you fetch water?.....ALWAYS.....
3. What is the general quality of water? Good € Fair €✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No✓€

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No✓€
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes✓€ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine €✓(iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No✓€

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		INFORM THE COMMUNITY
2.	Demolition of structures	YES		COMPENSATION
3.	Possible Displacement	YES		COMPENSATION
4.	Loss of farmland/Trees/Crops	YES		"
5.	Interruption of Services and public amenities (Road access, electricity)	YES		INFORM THE COMMUNITY
5.	Traffic operations impacts	YES		PROVIDE BYPASS
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....NO.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

The Project Should refrain from politics

.....

6. Do you have any objection on the proposed project? YES € NO €

S. N. NGINGO
ASST. CHIEF OFFICER
KATHARI SUBLOCATION
Date

Thank you for your cooperation

Signature..... **Date**.....11/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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1. Details of the Respondent

NAME	ERIC MUNENE MUGO			
POSITION/ORGANISATION	GENERAL MANAGER - KYEWASCO			
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KAWANJARA	RUNYENJES	EMBU-EAST	EMBU

2. What are your institutional roles in the proposed project area?

WATER SUPPLY & SEWERAGE SERVICES.....

.....

.....

.....

3. Does the organization have existing water supply systems in the area? If Yes specify

The current water supply is tapped from River Thuci, Ciangoma and Eng Majorly supplying water in Kyeni North ward, Kyeni South ward, Kagaari South ward and Runyenjes Central ward.

4. What are the land use practices in the area?

FARMING / LIVESTOCK KEEPING

5. Are there challenges faced in the area in regard to water supply? If Yes Specify

Water supply is not adequate making water rationing a day to day activity.

6. a) In your perception/opinion is the project good for the area? YES ÿ NO €

b)) If YES, please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	It will improve livelihood in the area	✓
4)	Provide market for construction materials	✓
5)	Reduce water borne diseases	✓
6)	Any other that is not mentioned above; - - -	

7) In your opinion, which Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures

- Disruption of business will need sensitization of all community members to avoid any conflicts.
- Destruction of crops / environmental issues to be taken care of.

8) Do you foresee any conflict with the community and other community water projects in the area in regard to the water resource? If Yes recommend methods for conflict resolution

Majorly issues with Wayleave where the lines are traversing in private lands.

9) In your opinion/perfection will there be willingness by the community to pay for one time connection?

Yes payments will made

10) Is the one time connection fee paid manageable to the users?

Yes will be a managable fee

11) Are there any culturally sensitive sites within the proposed project area? If yes specify

No

12) Are there any environmentally sensitive sites within the proposed project area? If yes specify

No

13) Do you have any other comment about the proposed project?

—

14) Do you have any objection on the proposed project? YES € NO €

No

Thank you for your cooperation

KYENI WATER & SEWERAGE CO
28 AUG 2023

Signature..... **Date**..26/08/2023....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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1. Details of the Respondent

NAME	Bernard Orinde			
ORGANISATION	Kenya Forest Service			
POSITION	County Conservator			
TELEPHONE NO.	0721 933802			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
			Embu – North	Embu

2. What are your institutional roles in the proposed project area?

Promotion of forest conservation in Riverine areas on farms and Forested Zones

3. What procedures are to be followed to pass a public utility in KFS resources as in this particular case

Request for way-leave license

4. Is KFS liable for compensation from the proponent?

Yes, for trees and land utilized for the project.

5. a) In your perception/opinion is the project good for the area? YES ☑ NO ☐
   b)) If **YES,** please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	Will enhance food security in the neighborhood?	✓
4)	It will improve livelihood in the area	✓
5)	Provide market for construction materials	✓

TANA WATER WORKS DEVELOPMENT AGENCY

6)	Any other that is not mentioned above: - It will avail water for seedly producti - Where nursery is not accesing water from - the river.	

5) In your opinion, which among the following Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures .....

Cutting down trees along the proposed line and Mitigation would be enhancing tree planting on adjacent areas and Rehabilitation of water sources.

7) Do you have any other comments about the project?

It's a positive project

8) Do you have any objection on the proposed project? YES ☐ NO ☑

Thank you for your cooperation

Signature..... Date 27/8/23

KENYA FOREST SERVICE
29 AUG 2023
P.O. BOX 2057-60100, EMBU
COUNTY FOREST CONSERVATOR

SUB-BASIN AREA COORDINATOR
WATER RESOURCE AUTHORITY
2 3 AUG 2023
Meru Sub-Basin Area
P. O. Box 3256 - 60200, MERU

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PRROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project, Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

1. Details of the Respondent

NAME	Alex M Kimotho	
ORGANISATION	WRA	
POSITION	0727459540 Hydrologist	
TELEPHONE NO.	0727459540	
LOCALITY	**Sub-County**	**County**
	IMENTI NORTH	MERU

2. What are your institutional roles in the proposed project area?

- Issuing of Water permit
-
-
-

3. What special requirements need to be fulfilled by the proponent to proceed with the proposed project due interference with the water resource?

- EIA
- Design of works.
- Authority to construct
- Easement from the Forest (KFS)
- Water permit fee.

4. What social conditions need to be fulfilled? Is WRA liable for compensation from the proponent?

- Comment from the WRUA
- No compensation required

5. **a)** In your perception/opinion is the project good for the area? YES ÿ NO €
b)) If YES, please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impact	Tick
1.	Overall Improvement in sanitation due to proper wastewater management	✓
2.	Reduced Cases of waterborne diseases due to reduced contamination of water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation of the waste treatment plant	✓
6.	Increase in land value due to proper sanitation	✓
7.	If any other please state: None.	

TANA WATER WORKS DEVELOPMENT AGENCY

6) In your opinion, which Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures

- Increase of water abstraction hence stress of the Tuuci system
-
- Intake design include a storange component.

7) Do you have any other comments about the project?

The project is good for the Runyenjes residents.

8) Do you have any objection on the proposed project? YES € NO €✓

Thank you for your cooperation

Signature..... **Date.** 23rd Aug 2023

SUB-BASIN AREA COORDINATOR
WATER RESOURCE AUTHORITY
2 3 AUG 2023
Meru Sub-Basin Area
P. O. Box 3256 - 60200, MERU

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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1. **Details of the Respondent**

NAME	JAMES GITONGA NJOKA			
ORGANISATION	UPPER THUCI W.R.U.A.			
POSITION	SECRETARY			
TELEPHONE NO.	0721-916928			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIAMURIUKI	MAGUMONI	OTHAKA	T. NITHI

2. What are your institutional roles in the proposed project area?

- Management of the Catchment of upper Thuci

.....

.....

.....

3. Are there existing community water supply projects in the area? If Yes highlight

Yes
- Kyeni Kagaani water Project
- Ndamuinga water Project
- Kyeni water supply

4. What are the land use practices in the area?

Farming.

5. Are there challenges faced in the area in regard to water supply? If Yes Specify

Yes- The water is not enough to serve the community (domestic) and not safe (untreated)

6. a) In your perception/opinion is the project good for the area? YES ȳ NO €
b)) If **YES,** please *tick one or many* of the following: **(positive impacts)**

S/No.	Positive Impacts	Tick
1)	Create employment	✓
2)	It will create access to clean water for consumption	✓
3)	It will improve livelihood in the area	✓
4)	Provide market for construction materials	✓
5)	Reduce water borne diseases	✓
6)	Any other that is not mentioned above; - - -	

7) In your opinion, which Negative Impacts will possibly arise from the proposed project and suggest possible mitigation measures

1. Accidents during Construction - Safety measures be instituted.
2. Vegetation lose - Consult KFC for recomedations.
3 Conflicts amongst Communities - ~~Ass~~ Engage the Community through Public Participation.

8) Do you foresee any conflict with the community and other community water projects in the area in regard to the water resource? If Yes recommend methods for conflict resolution

NO.

.....

.....

9) Are there any culturally sensitive sites within the proposed project area? If yes specify

No:.....

.....

10) Are there any environmentally sensitive sites within the proposed project area? If yes specify

Yes - Forest - Tiangi Forest (Mt Kenya).....

.....

11) Do you have any other comment about the proposed project?

The Project will uplift the livehoods of the Community.....

12) Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature.....

UPPER THUCI ... P.O. BOX 20... DATE....

Date.....18/8/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Peter Ngamu Mbiti			
POSITION/ORGANISATION	Mr Village Headder			
TELEPHONE NO.	0703430536			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kariuki	Kyeni S.	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....— (2) 6-18Yrs....1..... (3)19-35Yrs...7.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..... maize and beans .....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?..... cows, goats, Sheep .....

   (d) If Business, what kind of business?..... —

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..... 5 hundred mts .....
2. How often do you fetch water?..... 5 times ~~a~~ per week .....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay? .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If YES, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES ✓	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Hygiene
5.	Traffic operations impacts			
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....The project is very important.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**....2/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	James Fundi Simon			
POSITION/ORGANISATION	WRUA – ITIMBOGO			
TELEPHONE NO.	0720 844 194			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	RIANGILA	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 12

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... 2 ..... (2) 6-18Yrs..... 5 ..... (3)19-35Yrs..... 3 .....



TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the projeet?

I fully support the Project Since it is economically viable

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date** 7/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME				
POSITION/ORGANISATION				
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household ..... members

2. How many members in your household fall under the following Age Groups"

(i) 0-5Yrs ..... (ii) 6-18Yrs ..... (iii) 19-35Yrs .....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..maize, beans, Tree fruits.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?Kaurie River.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair € ✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € ✓ No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € ✓ (iv) Malaria €

   (v)Others(Specify)...Ameoba
4. Do you pay for water? Yes € ✓ No €
5. What is the common mode of transporting water in this area?...Oxen Cart.....
6. How do you dispose off your household waste?.....Compost...Pit.....
7. Does the Household have a toilet? Yes € ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € ✓ No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Pouring water on dust
2.	Demolition of structures	✓		Repair and compensation
3.	Possible Displacement	✓		Diversion
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		other roads or diversion
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....None.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....N/A.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Fesus Njiru Njama			
POSITION/ORGANISATION	Village elder			
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KINTHITHE	~~Mbeni~~ South	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....6.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....1..... (3)19-35Yrs.....4.....

(4) 36–49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation Economic Activity .....
   (i) Crop Farming € ✓ (ii) Livestock Farming € ✓ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Maize + Beans.....

   Large Scale € ✓

   (c) If Livestock farming, what type of Livestock?.....Cow.....

   (d) If Business, what kind of business?.....—.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Taf water.....
2. How often do you fetch water?.....Weekly.....
3. What is the general quality of water? Good € ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € ✓ No €

   (i)Diarrhea € (ii) Cholera € (iii) ✓ Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € ✓ No €
5. What is the common mode of transporting water in this area?.....—.....
6. How do you dispose off your household waste?.....Compaste pit...
7. Does the Household have a toilet? Yes € ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line € (ii) Flush system with Septic Tank €

   (iii) Pit Latrine € ✓ (iv) Mobile Toilet € (v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No € ✓

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		watering
2.	Demolition of structures	✓		repairing
3.	Possible Displacement	✓		compensiou
4.	Loss of farmland/Trees/Crops	✓		compensiou
5.	Interruption of Services and public amenities (Road access, electricity)			DIVERSION
5.	Traffic operations impacts			Diversou
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Flora Muthanje Njiru			
POSITION/ORGANISATION	farmer Riangiri			
TELEPHONE NO.	0717 458 413			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
Kyeni south	Riangiri	Kyeni/South	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....6.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...1..... (3)19-35Yrs...5.....

(4) 36-49Yrs.....(5) 50-65Yrs...1..... (6) Over 66Yrs....1....

3. (a)What is your Occupation/Economic Activity ...R.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..Maize..beans...bananas..Pawpaw.

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...cows...goats.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Well.....
2. How often do you fetch water?.....2..times....per...day.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)...Amoeba..
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?....Cart.....
6. How do you dispose off your household waste?..Composed....pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	Yes
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Put water
2.	Demolition of structures	✓		repair and compencite
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		diversion
5.	Traffic operations impacts	✓		
6.	If any other Please specify	during operation Maintanance		

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....None.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

~~Yes~~ ✓ € No €

5. Do you have any other comments about the project?

It.....will.....be.....very.....useful.....

.....

.....

6. Do you have any objection on the proposed project? YES €~~NO~~ ✓ €

Thank you for your cooperation

Signature..... **Date**...7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	PATRICK BENSON NJAGI			
POSITION/ORGANISATION	CHAIR NYUMBA KUMI - KARUKUMO			
TELEPHONE NO.	0728654464			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Karukumo	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....FOUR.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....✓..... (2) 6-18Yrs.....✓..... (3)19-35Yrs.....~~FOUR~~ (1)

(4) 36-49Yrs...1.....(5) 50-65Yrs...2.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming €✓ (ii) Livestock Farming €✓ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?....MAIZE,....BEANS,..MANGOES

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...GOAT.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...SHALLOW WELL ..within compound 3 mtrs
2. How often do you fetch water?.....
3. What is the general quality of water? Good €✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €✓

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)....Amoebiasis
4. Do you pay for water? Yes € No €✓
5. What is the common mode of transporting water in this area?...N/A.....
6. How do you dispose off your household waste?....Compost.....
7. Does the Household have a toilet? Yes✓€ No €

   (a) If Yes, type of toilet(Tick) pit

   (i)Flush system connected to the sewer line N/A€(ii) Flush system with Septic Tank € N/A

   (iii) Pit Latrine✓€ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No✓€ Nt

(c) If yes, how much do you pay?.....N.A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	Yes		Provide water for killing the dust.
2.	Demolition of structures	Yes		compensation
3.	Possible Displacement	Yes		Compensation
4.	Loss of farmland/Trees/Crops	Yes		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	Yes		Deviation
5.	Traffic operations impacts	Yes		provide Alternative
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes **No**

5. Do you have any other comments about the project?
The community will benefit with the project because kitchen gardens will be done by the locals and our people will benefit

6. Do you have any objection on the proposed project? YES NO

Thank you for your cooperation

Signature..... **Date**....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Raphael Njeru Nyaga			
POSITION/ORGANISATION	Dimeliori			
TELEPHONE NO.	0729836528			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Dundun	KYENI North East	Runyenjes North East	

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs....1..... (3)19-35Yrs.....2..

(4) 36-49Yrs.....(5) 50-65Yrs.....1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?....coffee....bonas....maize....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?....cows and goats

   (d) If Business, what kind of business?.....

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...water....from....kyeuasco.....
2. How often do you fetch water?....tap.....water.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....pipe.....
6. How do you dispose off your household waste?.....pit.....pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO ✓	PROPOSED MITIGATION
1.	Dust and Noise During construction		NO	
2.	Demolition of structures	Yes Compensation		
3.	Possible Displacement		NO	
4.	Loss of farmland/Trees/Crops	Yes Compensation		
5.	Interruption of Services and public amenities (Road access, electricity)	yes		
5.	Traffic operations impacts	YES		
6.	If any other Please specify		NO	

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....yes.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

the project is good

.....

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**....1/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	HUMPHREY MUTO KAITHUKU			
POSITION/ORGANISATION	RESIDENT / BUSINESSMEN			
TELEPHONE NO.	0721 708508			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KAITHARI	KYENI NORTH EAST	RUNYENJES EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... SIX (6) .....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs..... 2

(4) 36-49Yrs..[illegible]..(5) 50-65Yrs..25... (6) Over 66Yrs..2...

3. (a)What is your Occupation/Economic Activity ..CROP FARMING.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business € (v) Mining € (vi) If Others Specify.....BUSINNESS
   (b) If Crop farming, what type crops?.....BANANAS, MACADAMIA & TREES
   Large Scale €
   (c) If Livestock farming, what type of Livestock?..GOATS & CHICKEN
   (d) If Business, what kind of business?..BAR/SALON & BUTCHERY. & RENTAL HOUSES

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..WATER FROM KIEWASCO & BORE HOLE
2. How often do you fetch water?..WITHIN MY HOME (water tap)
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes €No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....PIPE WATER
6. How do you dispose off your household waste?.....DUSTBIN/PLASTIC COMPOSED PIT
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick) PIT LATRIN
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? N/A

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS ✓

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Flesh water is treated water & it appears Good Services	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		✓	
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)		✓	
5.	Traffic operations impacts		✓	
6.	If any other Please specify N/A			

	/

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify....NO.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....YES.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

THE PROJECT IS VERY GOOD

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.....11/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JOEL NYAGA			
POSITION/ORGANISATION	RESIDENT (NDUNDURI)			
TELEPHONE NO.	0702446261			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	NDUNDURI	KYENI NORTH EAST	RUNYENJES EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.✓.....

3. (a)What is your Occupation/Economic Activity .....
   ✓(i) Crop Farming € ✓(ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? BANANAS MACADAMIA & COFFEE

   Large Scale €

   (c) If Livestock farming, what type of Livestock? COWS & CHICKEN

   (d) If Business, what kind of business? N/A

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? WATER FROM ✓ KYEWASCO
2. How often do you fetch water? TAP WATER ✓
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓€No €

   (i)Diarrhea ✓€(ii) Cholera €(iii)Typhoid ✓€ (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes ✓€ No €
5. What is the common mode of transporting water in this area? NONE (TAP WATER
6. How do you dispose off your household waste? COMPOSED PIT
7. Does the Household have a toilet? Yes ✓€ No €

   (a) If Yes, type of toilet(Tick) PIT LATRIN

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓€ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓€

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		✓	
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)		✓	Compensation
5.	Traffic operations impacts		✓	
6.	If any other Please specify N/A			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....NO.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....YES.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

THE PROJECT IS VERY GOOD

.....

.....

6. Do you have any objection on the proposed project? YES €NO ✓ €

Thank you for your cooperation

Signature.....Hal..... **Date**.....11/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Sarah Njura Njagi			
POSITION/ORGANISATION	Community Health Worker			
TELEPHONE NO.	0718145498			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kiagumo/Kyeni		Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....5.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs...2..... (2) 6-18Yrs.....1..... (3)19-35Yrs.....2.

(4) 36-49Yrs..2....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?....Coffee.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?....Cow.....

   (d) If Business, what kind of business?.....

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Kwaska.....Not enough.....
2. How often do you fetch water?.....once per week.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Pipe.....
6. How do you dispose off your household waste?.....Use Pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		X NO	
2.	Demolition of structures	✓	~~NO~~	Compensation
3.	Possible Displacement	yes		Resettlement
4.	Loss of farmland/Trees/Crops	yes		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)			urgent connection ~~interruption~~
5.	Traffic operations impacts			Diversion
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES ✓ NO

If YES, Specify.....Mt....Kenya.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity....destroy....of....trees.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....It....will....add....more....water....to....serve.....
both....human....beings....and....livestock.....
.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**.....21/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JOHN KARIUKI NJIRU			
POSITION/ORGANISATION				
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KATHAGERI	KYENI EAS	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....5.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs.....1..... (3)19-35Yrs.....2.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs……..,(5) 50-65Yrs……2…… (6) Over 66Yrs……

3. (a)What is your Occupation/Economic Activity ……
   ✓ (i) Crop Farming €✓(ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify……

   (b) If Crop farming, what type crops?……TEA……

   Large Scale €

   (c) If Livestock farming, what type of Livestock?……COW……

   (d) If Business, what kind of business?……

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?……~~Stand~~ SALL WELL……
2. How often do you fetch water?……
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)……
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?……bype……
6. How do you dispose off your household waste?……compositpit……
7. Does the Household have a toilet? Yes €✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine €✓(iv) Mobile Toilet €(v)Any Other (Specify)……

   (b) Do you engage Exhauster Services? Yes €No €✓

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		wetting.
2.	Demolition of structures	✓		Compensation
3.	Possible Displacement	✓		Compensation
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		urgent restoration
5.	Traffic operations impacts	✓		diversion
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES ✓ NO

If YES, Specify.....MT. KENYA.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....Destory of TREES.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....It will add more water for both Human beings and livestock.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature....Kamili..... **Date**...1/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

SECTION 1: RESPONDENTS DETAILS

NAME	JOHN ERICK MURIMI			
POSITION/ORGANISATION	YOUTH LEADER (RESIDENT)			
TELEPHONE NO.	0724229395			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIVUMBURI	KYENI NORTH E	~~EMBU EAST~~ KATHAGE	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....12.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....2..... (3)19-35Yrs...1.....

(4) 36-49Yrs...4.....(5) 50-65Yrs...2..... (6) Over 66Yrs.....2

3. (a)What is your Occupation/Economic Activity .....Employment & Farming.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Subsistence (mixed).....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Dairy cows.....

   (d) If Business, what kind of business?.....N/A.....

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Pipeline, 2kms.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Pipeline.....
6. How do you dispose off your household waste?.....Pit dispose/latrine.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....forest.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

This is a Good Project, Aimed at ensuring we get

enough domestic water.

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.....11/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	NTHIGA MIMIRU NJAGI			
POSITION/ORGANISATION	FARMER			
TELEPHONE NO.	0720973081			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	NTHAGAIYA	KAGAARI SOUTH WEST	RUNYENJES	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....9.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....3

(4) 36-49Yrs...4.....(5) 50-65Yrs..... (6) Over 66Yrs...2...

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? MUGUKA, MAIZE, BANANAS TREES
   Large Scale €

   (c) If Livestock farming, what type of Livestock? DAIRY

   (d) If Business, what kind of business? N/A

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? IRRIGATION WATER WITHIN THE SHAMBA
2. How often do you fetch water? None
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No € Not Known

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area? RIVER FETCHING
6. How do you dispose off your household waste? within the shamba
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Improve the area image and development to visitors and ourselves	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Be minimised
2.	Demolition of structures	✓		Can be take Rare
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)	✓	✓	
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify..... Not that I am aware of.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity..... Maybe .....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No € This should happen

5. Do you have any other comments about the project?

It is important to keep the costs within the reach of the common Mwananchi / Wanjiku. Otherwise it would be a white Elephant.

6. Do you have any objection on the proposed project? YES €NO €

No.

Thank you for your cooperation

Signature..... **Date**..... 8/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONNAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	GERALD MUNENE			
POSITION/ORGANISATION				
TELEPHONE NO.	0711221437			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	NTHAGAIY	KAGARI SOUTH	RUNYENJES	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household ..... 7 .....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs ..... (2) 6-18Yrs ..... (3)19-35Yrs 5

(4) 36-49Yrs..2.....(5) 50-65Yrs..... (6) Over 66Yrs..1.....

3. (a)What is your Occupation/Economic Activity .....
   (i)Crop Farming € (ii)Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? Maize Beans, Bananas Arrowroots

   Large Scale €

   (c) If Livestock farming, what type of Livestock? Cows, goats, Chicken.

   (d) If Business, what kind of business? —

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? Wells
2. How often do you fetch water? every day
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area? Cows
6. How do you dispose off your household waste? Compost pits
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Good Management
2.	Demolition of structures	✓		If any, compensation
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops	✓		If any, compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Good Management
5.	Traffic operations impacts	✓		Good Management
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No.

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes No

5. Do you have any other comments about the project?

No.

6. Do you have any objection on the proposed project? YES NO

Thank you for your cooperation

Signature..... **Date** 9/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JEREMIAH N. KAMUKEMA			
POSITION/ORGANISATION	CHAIRMAN UGWERI MARKET			
TELEPHONE NO.	0720420368			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	UGWERI	KAGAARI SOUTH	EMBU EAST	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....Six.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....4.

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....No.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....No.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

.....It will save time for going for water.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**...8/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	CECILY WANJIRA MUCHIRA			
POSITION/ORGANISATION	PEASANT FARMER			
TELEPHONE NO.	0703811132			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIANGUCHU	NTHAGATIA	KAGAAZI SW6	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 8 .....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs....2..... (2) 6-18Yrs....1..... (3)19-35Yrs....2....

(4) 36-49Yrs.....(5) 50-65Yrs....1..... (6) Over 66Yrs....2....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...CHICKEN KEEPING

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....borehole.....
2. How often do you fetch water?.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?..Pulling cart
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Reduce Wastage of time due to Fetching Water and Energy	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		Watering.
2.	Demolition of structures	NO		
3.	Possible Displacement	NO		
4.	Loss of farmland/Trees/Crops	NO		
5.	Interruption of Services and public amenities (Road access, electricity)	NO		
5.	Traffic operations impacts			
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES (NO)

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

... Get workers from our area.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**.....8-9-2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	MOSES MUTHIRI MURITHI			
POSITION/ORGANISATION	~~TEACHER~~ RESIDENT			
TELEPHONE NO.	0746637467			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIANGUCHU	KACIARI SOUTH WEST	EMBU - EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....6.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....4...

(4) 36-49Yrs....1.....(5) 50-65Yrs.....1.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....Farm Formal Employment
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Maize & Beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Cow's & Chicken

   (d) If Business, what kind of business?.....N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Borehole / Well = 100metres.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Human Labour
6. How do you dispose off your household waste?.....Paving in the Farm.
7. Does the Household have a toilet? Yes € No € Yes

   (a) If Yes, type of toilet(Tick) Pit Latrine

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ∈

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		NO	
2.	Demolition of structures		NO	
3.	Possible Displacement		NO	
4.	Loss of farmland/Trees/Crops	Yes		Should compensate for the loss of trees Crops
5.	Interruption of Services and public amenities (Road access, electricity)		NO	
5.	Traffic operations impacts		NO	
6.	If any other Please specify			



TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	PASILIO MUIRU			
POSITION/ORGANISATION	RESIDENT			
TELEPHONE NO.	0715272600/0733267318			
LOCALITY Mthangaya MKT.	**Village**	**Location**	**Sub-County**	**County**
	Mthangaya	Kagaari S/W	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....5 five.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs....3..

(4) 36-49Yrs.....(5) 50-65Yrs...2.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....Crop Farming.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...Maize...Beans.....Avocado.. Mango

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...River.....1/2 Km.....
2. How often do you fetch water?.....Weekly.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...Cart...Bull pulled
6. How do you dispose off your household waste?.....Waste pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		human Labour
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops	✓		use Road Reserve
5.	Interruption of Services and public amenities (Road access, electricity)			
5.	Traffic operations impacts	✓	✓	underground Tunnels
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity..... N/A .....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

✓Yes € No €

5. Do you have any other comments about the project?

To be done in such a way that it will not be in position to be affected By any other future development in the Area

6. Do you have any objection on the proposed project? YES € NO ✓€

Thank you for your cooperation

Signature..... **Date** 08/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	JEREMIAH N. KARUKEAJA			
POSITION/ORGANISATION	CHAIRMAN UGWERI MARKET			
TELEPHONE NO.	0720420368			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	UGWERI	KAGAARI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household....Six.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.....4.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business € (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?.....
   (d) If Business, what kind of business?...Hardware.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...Shallow...wells.....one Kilometer.....
2. How often do you fetch water?....Daily.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes €No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...Boda Boda/one cart
6. How do you dispose off your household waste?....Burn.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick) Pit Latrine
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐

(a) If **YES**, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		✓	
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/ Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)		✓	
5.	Traffic operations impacts		✓	
6.	If any other Please specify		N/A	

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....No.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....No.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

... .

.....It will save time for going for water.....

6. Do you have any objection on the proposed project? YES €NO ✓€

Thank you for your cooperation

Signature..... **Date**...8/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME: EZEKIEL MURIUKI

POSITION/ORGANIZATION:

TELEPHONE NO: 0722 [illegible]

LOCALITY: **Village** **Location** **Sub-County** **County**

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household? Three

2. How many members of your household fall under the following Age Groups?

(1) 0-5Yrs (2) 6-18Yrs (3) 19-35Yrs 3

(4) 36-49Yrs...1.....(5) 50-65Yrs.2..... (6) Over 66Yrs..1.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment € ✓
   (iv)Business € (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....N/A.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?...N/A.....
   (d) If Business, what kind of business?....N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....½..2...Kilometre.....
2. How often do you fetch water?.....Always.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes €No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?..use of carts & motorbikes Puse of cows
6. How do you dispose off your household waste?..By..digging...dumping...etc
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick) Slab floor with roasters at sides and roofing
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....N/A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: It will also help those who keep cows/ Dairy farming	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Try to use water to ziord dust
2.	Demolition of structures	✓		Try to ziord demolition for the small houses
3.	Possible Displacement		✓	shall access as we have never had water
4.	Loss of farmland/Trees/Crops		✓	Avoid felling of trees and crops
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Consult the required owners.
5.	Traffic operations impacts		✓	N/A
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify..... N/A .....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity..... N/A .....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

..... Try and add the volume of water in .....
..... future as the population grows year after .....
..... another .....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**..... 8th/Oct 2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	CECILY WANJIRA MUTHORA			
POSITION/ORGANISATION	PEASANT FARMER			
TELEPHONE NO.	0703811132			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIANJUCU	NTHAGATHA	KAGAAKI SWL	EMBU.

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 8

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs....2..... (2) 6-18Yrs.....1..... (3)19-35Yrs.....2.....

(4) 36-49Yrs.....(5) 50-65Yrs....1..... (6) Over 66Yrs....2....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...Chicken...Ve=Pigs

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....bore hole.....
2. How often do you fetch water?.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?..Pulling Cart.
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Reduce Wastage of time due to Fetching Water and energy	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		Watering.
2.	Demolition of structures	NO		
3.	Possible Displacement	NO		
4.	Loss of farmland/Trees/Crops	NO		
5.	Interruption of Services and public amenities (Road access, electricity)	NO		
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES (NO)

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

... Get workers from our area.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**...8-9-2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	MOSES MUTHUI MWAITHI			
POSITION/ORGANISATION	~~TRADER~~ RESIDENT			
TELEPHONE NO.	0746637467			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KAGUCHU	KAGAAL SOUTH WEST	EMBU-EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 6

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3) 19-35Yrs 4

(4) 36-49Yrs....1.....(5) 50-65Yrs.....1.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....Farm Formal Employment.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Maize & Beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....Cow: & Chicken.....

   (d) If Business, what kind of business?.....N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Borehole / Well = 100metres.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....Human Labour
6. How do you dispose off your household waste?.....Paving in the Farm.
7. Does the Household have a toilet? Yes € No € yes

   (a) If Yes, type of toilet(Tick) Pit Latrine.

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		No	
2.	Demolition of structures		No	
3.	Possible Displacement		No	
4.	Loss of farmland/Trees/Crops	Yes		Should compensate for the loss of trees Crops
5.	Interruption of Services and public amenities (Road access, electricity)		No	
5.	Traffic operations impacts		No	
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES (NO)

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No.

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € (✓) **No €**

5. Do you have any other comments about the project?

Yes. The Project should source Labourers from within the area to benefit the resident. Thanks.

6. Do you have any objection on the proposed project? YES €NO € (✓)

Thank you for your cooperation

Signature..... **Date**.....8/9/2023.

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	PASILIO MUIRU			
POSITION/ORGANISATION	RESIDENT			
TELEPHONE NO.	0715272600/0733267318			
LOCALITY Mthagaiya Mkt.	**Village**	**Location**	**Sub-County**	**County**
	Mthagaiya	Kagaari South	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 5 Five .....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs.... 3 ..

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Human Labour
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops	✓		Use Road Reserve
5.	Interruption of Services and public amenities (Road access, electricity)			
5.	Traffic operations impacts	✓	✓	underground Tunnels
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....N/A.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

✓Yes € No €

5. Do you have any other comments about the project?

To be done in such a way that it will not be imposition to be affected By any other future development in the Area

6. Do you have any objection on the proposed project? YES € NO✓ €

Thank you for your cooperation

Signature..... **Date**.....08/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	HESBON MUKUKU MWANIKI			
POSITION/ORGANISATION	RESIDENT			
TELEPHONE NO.	0728230173			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KASHANGARI	KYENI C	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....THREE.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....1..... (3)19-35Yrs.....1.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs....2

3. (a)What is your Occupation/Economic Activity .....
   ✓ (i) Crop Farming € ✓(ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....MAIZE.....BEANS,.....COFFEE

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....GOATS & HENS

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....RIVER.....
2. How often do you fetch water?...DAILY.....
3. What is the general quality of water? Good € Fair ✓€ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid ✓€ (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....HUMAN TRANSPORT
6. How do you dispose off your household waste?.COMPOSTING.....PIT.....
7. Does the Household have a toilet? Yes ✓€ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   ✓(iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓€

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ☐

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		✓	
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)		✓ ✓	
5.	Traffic operations impacts		✓	
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity....N.D.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

✓Yes € No €

5. Do you have any other comments about the project?

..J.....SUPPORT.....IT.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	EGLA MARIAN NTHIGA			
POSITION/ORGANISATION	Lesdence			
TELEPHONE NO.	0701330475			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Nyagari	Kyeni Central	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....9.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs....1..... (3)19-35Yrs.....2.....

(4) 36-49Yrs.....(5) 50-65Yrs...../..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops? Beans, Maize, Macadamia

   Large Scale €

   (c) If Livestock farming, what type of Livestock? Goats

   (d) If Business, what kind of business? N/A.

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area? Kyowasco
2. How often do you fetch water? Piping
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area? Piping / Human
6. How do you dispose off your household waste? Pit
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	Yes		Sprinkling of water
2.	Demolition of structures	NO		Compensate
3.	Possible Displacement	NO		Compensate for loss
4.	Loss of farmland/Trees/Crops	Yes.		Restore to Original
5.	Interruption of Services and public amenities (Road access, electricity)	Yes.		Provide alternative Route
5.	Traffic operations impacts			
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

NO.

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

... Project is good will help Kyeni - Kathanjiri - Nyagari to Develop

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**.....7/09/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Pascal Njagi			
POSITION/ORGANISATION	Resident			
TELEPHONE NO.	0720829893			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Nyagari	Kyeni ~~East~~ Central	Embu East Runyenjes	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..7.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs...1..... (3)19-35Yrs..2.....

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs...1.....

3. (a)What is your Occupation/Economic Activity .....
   ✓(i) Crop Farming €✓(ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify...-.....

   (b) If Crop farming, what type crops?...Maize..., beans, bananas, avocados

   Large Scale €

   (c) If Livestock farming, what type of Livestock?..Cattle,..goats,...poultry

   (d) If Business, what kind of business?...-.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..Shallow....well.....-...near.....
2. How often do you fetch water?...When....needed.....
3. What is the general quality of water? Good € Fair ✓€ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓€No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid ✓€ (iv) Malaria €

   (v)Others(Specify)...Amoeba
4. Do you pay for water? Yes € No ✓€
5. What is the common mode of transporting water in this area?..human...transport
6. How do you dispose off your household waste?..compost.....pit.....
7. Does the Household have a toilet? Yes ✓€ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   ✓(iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓€

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	YES		Water, Modern technology
2.	Demolition of structures	YES		Compensation Resettlement
3.	Possible Displacement	YES		Resettlement
4.	Loss of farmland/Trees/Crops	YES		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	YES		Public notice
5.	Traffic operations impacts	YES		Traffic Controller
6.	If any other Please specify	-		

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify. NO.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

to involve the citizens in the project labour.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature..... **Date**....17/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	DUNCAN NYAGA			
POSITION/ORGANISATION				
TELEPHONE NO.	0713774674			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	MUTUURI	KYENJS-	EMBU E-T	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....5.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs....3..... (3)19-35Yrs....2....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?... MAIZE MACADAMIA.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?... CATTLE POULTRY

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..... PIPED WATER HEIER.....
2. How often do you fetch water?..... WHEN NEEDED.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify). AMOEBA
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?... CART.....
6. How do you dispose off your household waste?... COMPOST PIT.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ✓

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓YES		WATER MODERN-M
2.	Demolition of structures	YES		COMPENSATION RESETTLEMENT
3.	Possible Displacement	YES		RESETTLEMENT
4.	Loss of farmland/Trees/Crops	YES		COMPENSATION
5.	Interruption of Services and public amenities (Road access, electricity)	YES		NOTICE
5.	Traffic operations impacts	YES		TRAFFIC CONTROLLER
6.	If any other Please specify	—		

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify ..... N/A .....

3. Are there any environmentally sensitive sites in the proposed project vicinity ..... N/A .....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

..... N/A .....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

NAME	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Village	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

1. How many members do you have in your household [illegible]

2. How many members in your household fall under the following [illegible]

[illegible]

(4) 36-49Yrs. 4 ....(5) 50-65Yrs.....2..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?. MAIZE, COFFEE, MACADAMIA, BEANS

   Large Scale €

   (c) If Livestock farming, what type of Livestock?. CHICKEN, GOAT.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....NGUIRI Stream.....
2. How often do you fetch water?..DAILY.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area? Carry using jericans
6. How do you dispose off your household waste?....Burning..., pit latrine...
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ○

(a) If **YES**, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Pouring water
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)	✓		RETURN TO ORIGINAL STATE
5.	Traffic operations impacts	✓		TRAFFIC MGT PLAN
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify..... N/A .....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity..... N/A .....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ☑ No ☐

5. Do you have any other comments about the project?

... ...Nil..... P.O. Box Garissa .....

.....

.....

6. Do you have any objection on the proposed project? YES ☐ NO ☑

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONNAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	ROSEMILLA [illegible]			
POSITION/ORGANISATION	Resident			
TELEPHONE NO.	0703638263			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kathangari	Kiani central	Mt Kenya East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. *How many members do you have in your household*.....5.....

2. *How many members in your household fall under the following Age Groups?*

(1) 0-5Yrs..... (2) 6-18Yrs...1..... (3)19-35Yrs...1.....

(4) 36-49Yrs..1.....(5) 50-65Yrs...1..... (6) Over 66Yrs...1.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming✓ (ii) Livestock Farming✓ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..MAIZE, BEANS, COFFEE.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?..Cow, chicken, goats....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Well.....
2. How often do you fetch water?...daily.....
3. What is the general quality of water? Good✓ € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No✓

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No✓
5. What is the common mode of transporting water in this area?..using..jerricans...
6. How do you dispose off your household waste?.....Burning.....
7. Does the Household have a toilet? Yes✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Pouring water
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops		✓	
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Return /rehabilitate
5.	Traffic operations impacts	✓		manage the traffic Properly
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES ~~NO~~

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....NO.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € ~~**No €**~~

5. Do you have any other comments about the project?

... The project will be good and helpful to the area

.....

.....

6. Do you have any objection on the proposed project? YES €~~NO~~ €

Thank you for your cooperation

Signature.....Rose..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	AGNES WANJA IRERI			
POSITION/ORGANISATION	RESIDENT VILLAGE ELDER			
TELEPHONE NO.	0711986729			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Gitare	Runyenjes west	Embu east	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs..2.....

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?...coffee, maize, beans.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...cow.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...tap water.....
2. How often do you fetch water?...N/A.....
3. What is the general quality of water? Good ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓ No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction		✓	
2.	Demolition of structures		✓	
3.	Possible Displacement		✓	
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES ~~NO~~

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....NO.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

.....NO.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature.....AGNES..... **Date**.....6/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION I: RESPONDENTS DETAILS

NAME	JAPHET MWANIKI NJAGA			
POSITION/ORGANISATION	Gitare Resident			
TELEPHONE NO.	0711453359			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Gitare	Runyenjes West	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....4.....

2. How many members in your household fall under the following Age Groups?

   (1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs...1.....

(4) 36-49Yrs...1.....(5) 50-65Yrs...1..... (6) Over 66Yrs...1.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming ✓ (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Tea farming.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....N/A.....

   (d) If Business, what kind of business?.....N/A.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Ndomongo water Project.....
2. How often do you fetch water?.....Daily from Tap.....
3. What is the general quality of water? Good ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No ✓

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes ✓ No €
5. What is the common mode of transporting water in this area?.....Piping.....
6. How do you dispose off your household waste?.....Pit / Kiosk / Other Collector
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓

(c) If yes, how much do you pay?..... N/A .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	Yes.		Sprinkle Mitigation.
2.	Demolition of structures	Yes		Compensation.
3.	Possible Displacement	No.		
4.	Loss of farmland/Trees/Crops	Yes.		Compensation.
5.	Interruption of Services and public amenities (Road access, electricity)	Yes		Inform people
5.	Traffic operations impacts	Yes		Put Cautionary
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....NO.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

.....Bring Project with haste.....

.....

6. Do you have any objection on the proposed project? YES €NO ✓

Thank you for your cooperation

Signature.....Japhet..... Date.....6/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	ELIAS KITHINJI NDUNGA			
POSITION/ORGANISATION				
TELEPHONE NO.	0702070858			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KIMURI	GITARE	Runyenjes	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household... 4.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs... 2..... (2) 6-18Yrs... 2..... (3)19-35Yrs... 0.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity ...farmer...
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business € (v) Mining € (vi) If Others Specify.....
   (b) If Crop farming, what type crops?.....Small.....Scale.....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?.....zero.....grazing
   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..Stream.....half.....KM.....
2. How often do you fetch water?....twice.....week.....
3. What is the general quality of water? Good € Fair € Bad €
   (a)Are there cases of waterborne diseases in the area? Yes €No €
   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €
   (v)Others(Specify).....Amoeba
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?..wheel barrow
6. How do you dispose off your household waste?..Hole.....
7. Does the Household have a toilet? Yes € No €
   (a) If Yes, type of toilet(Tick)
   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay? No

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No ✓
   (a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption yes	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water yes	✓
3.	Improved General Hygiene yes	✓
4.	Provide market for raw materials during construction yes	✓
5.	Employment opportunities during construction & operation yes	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	Yes		Sprinkling, watering
2.	Demolition of structures			
3.	Possible Displacement	Yes		Compensation
4.	Loss of farmland/Trees/Crops			
5.	Interruption of Services and public amenities (Road access, electricity)			Timely notification
5.	Traffic operations impacts	Yes		Alternative route
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify..... No .....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

No

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

..... I Support .....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**..... 6/9/2023 .....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	EDWARD MUGENDI NJAGI			
POSITION/ORGANISATION	DIGIDIA INVESTMENT RESEARCH AND NURSERY			
TELEPHONE NO.	0798582290			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	GITARE	RUNYENJES EAST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....THREE.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs. 2..... (3)19-35Yrs..1.....

TANA WATER WORKS DEVELOPMENT AGENCY

(4) 36-49Yrs...1.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €
   (iv)Business € (v) Mining € (vi) If Others Specify ENVIRONMENTALIST
   (b) If Crop farming, what type crops?..... NURSERIES SEEDLING .....
   Large Scale €
   (c) If Livestock farming, what type of Livestock?..... // .....
   (d) If Business, what kind of business?..... SEEDLINGS .....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..... tap water .....
2. How often do you fetch water?..... Daily .....
3. What is the general quality of water? Good € Fair € ~~Bad~~ €
   (a)Are there cases of waterborne diseases in the area? ~~Yes~~ €No €
   (i)~~Diarrhea~~ €(ii) Cholera €(iii)~~Typhoid~~ € (iv) ~~Malaria~~ €
   (v)Others(Specify).....
4. Do you pay for water? ~~Yes~~ € No €
5. What is the common mode of transporting water in this area? Motorbike / carts DK
6. How do you dispose off your household waste?.. In pits .....
7. Does the Household have a toilet? ~~Yes~~ € No €
   (a) If Yes, type of toilet(Tick) Pit latrine.
   (i)Flush system connected to the sewer line €(ii) ~~Flush system~~ with Septic Tank €
   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....
   (b) Do you engage Exhauster Services? Yes €~~No~~ €

(c) If yes, how much do you pay?..... N .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state: Increas absorbtion on capital grass root uptake.	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		practical involvement with persons involved on the grass root
2.	Demolition of structures	✓		
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	X		
5.	Traffic operations impacts	/		
6.	If any other Please specify	Carbon/sulphur from operating machines		

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.... Forested areas where the initial project intake will take place

* Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

There is no clear cut note on this question and hence conservation has not been addressed.

5. Do you have any other comments about the project?

The element of environmental conservation should be left to tana water works development agency and stakeholders who own nurseries and use the services

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.. 6/09/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	EMJAH NJIRU			
POSITION/ORGANISATION	CHAIR CHVS, SEC CASC			
TELEPHONE NO.	0702094955			
LOCALITY	**Village** GITARE	**Location**	**Sub-County**	**County**
	MGUU1	RUNYENJES WEST	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....5.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....0..... (2) 6-18Yrs...2..... (3)19-35Yrs...2.....

(4) 36–49Yrs...2....(5) 50-65Yrs..... (6) Over 66Yrs....1..

3. (a)What is your Occupation Economic Activity ....FARMING.....
   (i) Crop Farming ✓ (ii) Livestock Farming ✓ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..COFFEE/TEA/MAIZE/BANANAS..

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...CATTLE/POULTRY..

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....TAPPED WATER.....
2. How often do you fetch water?..DAILY...during dry season
3. What is the general quality of water? Good € Fair ✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes ✓No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria ✓

   (v)Others(Specify).....
4. Do you pay for water? Yes ✓ No €
5. What is the common mode of transporting water in this area?...Jerry cans.....
6. How do you dispose off your household waste?...plastics are collected by KTDA - we have a refuse pit
7. Does the Household have a toilet? Yes ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No ✓



	measure ⇒ set a fee the common consumer will be able to meet.

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity... Natural trees, streams and rivers.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

- During implementation the project should have community reps in the boards.
- Distribution of labour to the community surrounding the projects.

6. Do you have any objection on the proposed project? YES € NO €

NO.

Thank you for your cooperation

Signature..... **Date**.....6/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES SEWERAGE PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act(EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Sewerage Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

SECTION 1: RESPONDENTS DETAILS

NAME	JOHN PAUL KIRUJA NJERU			
POSITION/ORGANISATION	BOM GITARE MIXED DAY & BOARDING SEC'S CH.			
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	GITARE	RUNYENJES TOWN	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..4.50 LEARNERS

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs..... (3)19-35Yrs..✓...

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....SCHOOL.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3: WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...PIPED WATER.....
2. How often do you fetch water?...MANY TIMES.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?...PIPED WATER
6. How do you dispose off your household waste?...BURNING.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay? N/A

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES**, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	Overall Improvement in sanitation due to proper wastewater management	✓
2.	Reduced Cases of waterborne diseases due to reduced contamination of water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation of the waste treatment plant	✓
6.	Increase in land value due to proper sanitation	✓
7.	If any other, please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		
3.	Possible Displacement		✓	
4.	Loss of farmland Trees/Crops	✓		

TANA WATER WORKS DEVELOPMENT AGENCY

5.	Interruption of Services and public amenities (Road access, electricity)	✓	
5.	Traffic operations impacts	✓	
6.	If any other Please specify		

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity....N/A.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ € No €

5. Do you have any other comments about the project?

THE PROJECT IS VIABLE.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓ €

Thank you for your cooperation

Signature..... Date 6/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Peter Ngamu Mbiti			
POSITION/ORGANISATION	Mr Village Headder			
TELEPHONE NO.	0703430536			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Kariuki	Kyeni S.	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....— (2) 6-18Yrs....1..... (3)19-35Yrs...7.....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..... maize and beans .....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?..... cows, goats, Sheep .....

   (d) If Business, what kind of business?..... —

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?..... 5 hundred mts .....
2. How often do you fetch water?..... 5 times ~~a~~ per week .....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?.....
6. How do you dispose off your household waste?.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No €

(c) If yes, how much do you pay? .....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If YES, please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES ✓	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		
2.	Demolition of structures	✓		
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		Hygiene
5.	Traffic operations impacts			
6.	If any other Please specify			

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....The project is very important.....

.....

.....

6. Do you have any objection on the proposed project? YES €NO €

Thank you for your cooperation

Signature..... **Date**....2/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

The (Environmental Impact Assessment and Audit) Regulations (2003) require that all projects listed in the second schedule of the Environmental Management and Coordination Act (EMCA) must undertake an (Environmental and Social Impacts Assessment (ESIA) and submit the report to the National Environment Management Authority (NEMA) for review and approval. In relation to this, **Tana Water Works Development Agency** is conducting an ESIA for the proposed **Construction of Runyenjes Water Supply Project in Embu County**. As an important part of this exercise, consultations are held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project. As a key stakeholder, we seek for your views /opinions on the proposed project, impacts and possible mitigation measures. The information provided herein solely for submission of the report to NEMA.

SECTION 1: RESPONDENTS DETAILS

NAME	James Fundi Simon			
POSITION/ORGANISATION	WRUA – ITIMBOGO			
TELEPHONE NO.	0720 844 194			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	RIANGILA	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household..... 12

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... 2 ..... (2) 6-18Yrs..... 5 ..... (3)19-35Yrs..... 3 .....



TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the projeet?

I fully support the Project Since it is economically viable

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date** 7/9/2023

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME				
POSITION/ORGANISATION				
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household ..... members

2. How many members in your household fall under the following Age Groups"

(i) 0-5Yrs ..... (ii) 6-18Yrs ..... (iii) 19-35Yrs .....

(4) 36-49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..maize, beans, Tree fruits.....

   Large Scale €

   (c) If Livestock farming, what type of Livestock?.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?Kaurie River.....
2. How often do you fetch water?.....Daily.....
3. What is the general quality of water? Good € Fair € ✓ Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € ✓ No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € ✓ (iv) Malaria €

   (v)Others(Specify)...Ameoba
4. Do you pay for water? Yes € ✓ No €
5. What is the common mode of transporting water in this area?...Oxen Cart.....
6. How do you dispose off your household waste?.....Compost...Pit.....
7. Does the Household have a toilet? Yes € ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € ✓ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € ✓ No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Pouring water on dust
2.	Demolition of structures	✓		Repair and compensation
3.	Possible Displacement	✓		Diversion
4.	Loss of farmland/Trees/Crops	✓		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	✓		other roads or diversion
5.	Traffic operations impacts	✓		
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....None.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....N/A.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes ✓ No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO ✓

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Fesus Njiru Njama			
POSITION/ORGANISATION	Village elder			
TELEPHONE NO.				
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	KINTHITHE	~~Mbeni~~ South	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....6.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....1..... (2) 6-18Yrs.....1..... (3)19-35Yrs.....4.....

(4) 36–49Yrs.....(5) 50-65Yrs..... (6) Over 66Yrs.....

3. (a)What is your Occupation Economic Activity .....
   (i) Crop Farming € ✓ (ii) Livestock Farming € ✓ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?.....Maize + Beans.....

   Large Scale € ✓

   (c) If Livestock farming, what type of Livestock?.....Cow.....

   (d) If Business, what kind of business?.....—.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?.....Taf water.....
2. How often do you fetch water?.....Weekly.....
3. What is the general quality of water? Good € ✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes € ✓ No €

   (i)Diarrhea € (ii) Cholera € (iii) ✓ Typhoid € (iv) Malaria €

   (v)Others(Specify).....
4. Do you pay for water? Yes € ✓ No €
5. What is the common mode of transporting water in this area?.....—.....
6. How do you dispose off your household waste?.....Compaste pit...
7. Does the Household have a toilet? Yes € ✓ No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line € (ii) Flush system with Septic Tank €

   (iii) Pit Latrine € ✓ (iv) Mobile Toilet € (v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes € No € ✓

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		watering
2.	Demolition of structures	✓		repairing
3.	Possible Displacement	✓		compensiou
4.	Loss of farmland/Trees/Crops	✓		compensiou
5.	Interruption of Services and public amenities (Road access, electricity)			DIVERSION
5.	Traffic operations impacts			Diversou
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes € No €

5. Do you have any other comments about the project?

.....

.....

.....

6. Do you have any objection on the proposed project? YES € NO €

Thank you for your cooperation

Signature..... **Date**.....7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	Flora Muthanje Njiru			
POSITION/ORGANISATION	farmer Riangiri			
TELEPHONE NO.	0717 458 413			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
Kyeni south	Riangiri	Kyeni/South	Embu East	Embu

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....6.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs..... (2) 6-18Yrs...1..... (3)19-35Yrs...5.....

(4) 36-49Yrs.....(5) 50-65Yrs...1..... (6) Over 66Yrs....1....

3. (a)What is your Occupation/Economic Activity ...R.....
   (i) Crop Farming € (ii) Livestock Farming € (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?..Maize..beans...bananas..Pawpaw.

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...cows...goats.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?....Well.....
2. How often do you fetch water?.....2..times....per...day.....
3. What is the general quality of water? Good € Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)...Amoeba..
4. Do you pay for water? Yes € No €
5. What is the common mode of transporting water in this area?....Cart.....
6. How do you dispose off your household waste?..Composed....pit.....
7. Does the Household have a toilet? Yes € No €

   (a) If Yes, type of toilet(Tick)

   (i)Flush system connected to the sewer line €(ii) Flush system with Septic Tank €

   (iii) Pit Latrine € (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No €

(c) If yes, how much do you pay?.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes € No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	Yes
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	✓		Put water
2.	Demolition of structures	✓		repair and compencite
3.	Possible Displacement	✓		
4.	Loss of farmland/Trees/Crops	✓		
5.	Interruption of Services and public amenities (Road access, electricity)	✓		diversion
5.	Traffic operations impacts	✓		
6.	If any other Please specify	during operation Maintanance		

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO ✓

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....None.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

~~Yes~~ ✓ € No €

5. Do you have any other comments about the project?

It.....will.....be.....very.....useful.....

.....

.....

6. Do you have any objection on the proposed project? YES €~~NO~~ ✓ €

Thank you for your cooperation

Signature..... **Date**...7/9/2023.....

TANA WATER WORKS DEVELOPMENT AGENCY

PUBLIC PARTICIPATION/CONSULTATION QUESTIONAIRE

PROPOSED RUNYENJES WATER SUPPLY PROJECT

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SECTION 1: RESPONDENTS DETAILS

NAME	PATRICK BENSON NJAGI			
POSITION/ORGANISATION	CHAIR NYUMBA KUMI - KARUKUMO			
TELEPHONE NO.	0728654464			
LOCALITY	**Village**	**Location**	**Sub-County**	**County**
	Karukumo	KYENI SOUTH	EMBU EAST	EMBU

SECTION 2: BASIC HOUSEHOLD SETUP

1. How many members do you have in your household.....FOUR.....

2. How many members in your household fall under the following Age Groups?

(1) 0-5Yrs.....✓..... (2) 6-18Yrs.....✓..... (3)19-35Yrs.....~~FOUR~~ (1)

(4) 36-49Yrs...1.....(5) 50-65Yrs...2.... (6) Over 66Yrs.....

3. (a)What is your Occupation/Economic Activity .....
   (i) Crop Farming €✓ (ii) Livestock Farming €✓ (iii)Formal Employment €

   (iv)Business € (v) Mining € (vi) If Others Specify.....

   (b) If Crop farming, what type crops?....MAIZE,....BEANS,..MANGOES

   Large Scale €

   (c) If Livestock farming, what type of Livestock?...GOAT.....

   (d) If Business, what kind of business?.....

SECTION 3:WATER AND SANITATION

1. What is the common Source of water and how far is it from your homestead in this area?...SHALLOW WELL ..within compound 3 mtrs
2. How often do you fetch water?.....
3. What is the general quality of water? Good €✓ Fair € Bad €

   (a)Are there cases of waterborne diseases in the area? Yes €No €✓

   (i)Diarrhea €(ii) Cholera €(iii)Typhoid € (iv) Malaria €

   (v)Others(Specify)....Amoebiasis
4. Do you pay for water? Yes € No €✓
5. What is the common mode of transporting water in this area?...N/A.....
6. How do you dispose off your household waste?....Compost.....
7. Does the Household have a toilet? Yes✓€ No €

   (a) If Yes, type of toilet(Tick) pit

   (i)Flush system connected to the sewer line N/A€(ii) Flush system with Septic Tank € N/A

   (iii) Pit Latrine✓€ (iv) Mobile Toilet €(v)Any Other (Specify).....

   (b) Do you engage Exhauster Services? Yes €No✓€ Nt

(c) If yes, how much do you pay?.....N.A.....

Section 4: ENVIRONMENTAL AND SOCIAL ASPECTS

1. In your perception/Opinion is the project good for the area? Yes ✓ No €

(a) If **YES,** please *tick one or many* of the following **Positive Impacts**

S/No.	Positive Impact	Tick
1.	It will create access to clean water for consumption	✓
2.	Reduced Cases of waterborne diseases due to provision of clean water	✓
3.	Improved General Hygiene	✓
4.	Provide market for raw materials during construction	✓
5.	Employment opportunities during construction & operation	✓
6.	If any other please state:	

(b) In your opinion, which among the following **Negative Impacts** will possibly arise from the proposed project and suggest possible mitigation measures

S/No.	Possible Impact	YES	NO	PROPOSED MITIGATION
1.	Dust and Noise During construction	Yes		Provide water for killing the dust.
2.	Demolition of structures	Yes		compensation
3.	Possible Displacement	Yes		Compensation
4.	Loss of farmland/Trees/Crops	Yes		Compensation
5.	Interruption of Services and public amenities (Road access, electricity)	Yes		Deviation
5.	Traffic operations impacts	Yes		provide Alternative
6.	If any other Please specify			

TANA WATER WORKS DEVELOPMENT AGENCY

2. Are there any culturally sensitive sites within the project vicinity? YES NO

If YES, Specify.....

.....

3. Are there any environmentally sensitive sites in the proposed project vicinity.....No.....

.....

4. Generally, will the completion of the proposed Works under Tana Water Works Development Agency help in the Conservation of the environment in the area?

Yes **No**

5. Do you have any other comments about the project?
The community will benefit with the project because kitchen gardens will be done by the locals and our people will benefit

6. Do you have any objection on the proposed project? YES NO

Thank you for your cooperation

Signature..... **Date**....7/9/2023.....

HYDROLOGICAL ASSESSMENT REPORT
FOR
RUNYENJES WATER SUPPLY PROJECT IN EMBU EAST SUB-COUNTY, EMBU COUNTY.
FINAL COPY



Prepared by:
Ewaso Ng'iro North Basin Area,
Water Resources Authority,
P.O. Box 1331 – 10400,
Nanyuki.
Email: wra.ewasongiro@gmail.com

Submitted to:
Tana Water Works Development Agency,
P.O. Box 1292 – 10100,
Nyeri.
Email: info@tanawwda.go.ke

Date: 16th February 2024

CERTIFICATE

WATER RESOURCES AUTHORITY – EWASO NG'IRO NORTH BASIN AREA confirms that it undertook the Hydrological Assessment Report for the **RUNYENJES WATER SUPPLY PROJECT** in line with the provisions of Regulation 16 of the Water Resources Regulations 2021.

Reviewed & Approved By: John Ngila Munyao

Signature: .....

Designation Basin Area Coordinator

Date: 16/02/2024

WATER RESOURCES AUTHORITY
EWASO NG'IRO REGIONAL OFFICE
P. O. BOX 1331 TEL: 32510 NANYUKI

Client Approval

I **Eng. Philip Gichuki, CEO Tana Water Works Development Authority** have legal authority to sign on behalf of **Tana Water Works Development Agency**. I have read and understood the Hydrological Assessment Report and approve it for submission to the Water Resources Authority.

Signature: .....

Date: 19/02/2024

Hydrological Assessment Report i

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1. BACKGROUND

1.1. Introduction

Tana Water Works Development Agency (TWWDA) is a National Government Agency mandated to develop, maintain, and manage National Public Water Works within its area of jurisdiction, which comprises Embu, Kirinyaga, Meru, Nyeri and Tharaka Nithi Counties.

To improve water supply, sanitation and sewerage services in the target urban, peri-urban and rural populations surrounding Runyenjes in Embu County, the Agency has proposed the design and implementation of Runyenjes Water Supply. This is on behalf of the National Government of Kenya and through the Ministry of Water, Sanitation, and Irrigation.

1.2. Overview of Project

The proposed project is in Runyenjes Consituency, Embu County and is expected to supplement the existing water delivery services run by Kyeni Water and Sanitation Company (KYEWASCO) and other rural water community projects to provide water to the project area. KYEWASCO is the Water and Sanitation Services Provider mandated to carry out water and sanitation services to the residents of Runyenjes Town and its environs within Embu East Sub-County commanding a total area of 171km^2.

KYEWASCO water supply currently has a production capacity of 6,742m^3/day of potable water against a demand of 13,000 m^3/day. Water from the existing supply system undergoes partial treatment by chlorination before distribution. The supplies provided by the rural community water projects are untreated.

The proposed works are expected to increase KYEWASCO's production capacity to allow supply to its larger target population within the set Water Services Provision Area (SPA). The cumulative total number of potential beneficiaries is estimated at 115,778 persons.

The works shall consist of:

- Construction of a new intake weir across the Thuchi River.
- Construction of a new 14km long DN 450mm HDPE PN20 raw water gravity mains.
- Construction of new treatment works with a design capacity of 15,000m^3/day at Munyutu.
- Construction of 38km of new treated water transmission and distribution mains diameter varying in size from DN 450mm to 150mm HDPE.
- Construction of 10(No.) masonry storage tanks of capacities: 5(No.) - 500m^3; 3(No.) - 225m^3; and 2(No.) - 135m^3.

1.3. Objective

The proposed water supply intervention aims to further the National Government's objectives outlined in the social pillar of Vision 2030 which is to establish *"a just, coherent, and equitable social development in a clean and secure environment."*.

The project intends to achieve the following targets:

- Supply water without daily rationing through providing adequate water storage for current demands.
- Reduce Non-Revenue Water (NRW) and maintenance expenses.
- Improve revenue and tax collection.
- Provide a plentiful supply of hygienic drinking water to the people of Runyenjes and the entire Embu East Sub-County.
- Foster regional economic development through provision of employment opportunities to locals.
- Decrease cases of waterborne illness and improve the population's general health.

1.4. This Report

This report is a Hydrological Assessment Report for construction of Runyenjes Water Supply Project as required by the Water Resources Regulations (2021), Regulation 14. It has been prepared by a professional hydrologist, registered by the Ministry of Water, Sanitation, and Irrigation. The report is based on site visits, desk study of relevant documents, assessment of hydrological and allocation data provided by WRA, rainfall data, climate data, and technical dimensions derived for the engineering design of the intake works. The format of the report is consistent with the format set out in the Fourth Schedule of the Water Resources Regulations (2021).

1.5. Legal Requirements

The Water Act (2016) gives the WRA the mandate to authorize water use, which is handled through a system of water permits. Regulation 7 of the Water Resources Regulations (2021) requires a person intending to undertake an activity involving the use of water from a water resource to apply to the Authority for a permit before commencing the activity. Additionally, the First Schedule of the Regulations specifies that the abstraction from surface water requires approval from the WRA. Part III of the Regulations provides details on the water permitting process. It specifies that the water permit application requires a Hydrological Assessment Report, prepared by a qualified water resource professional, in a format set out in the Fourth Schedule of the Regulations. The required format is:

1. Name and details of Applicant;
2. Location and Description of Proposed Activity;
3. Details of Climate;
4. Details of river or water body (name, nearest Regular Gauging Station, Sub-catchment);

5. Details of catchment (area, slopes, soils);
6. Details of vegetation and land use;
7. Details of Registered and Non-Registered Abstraction on the resource;
8. Details of all other permits related to this application;
9. Hydrological characteristics and analysis (annual, monthly, extreme events. Flow duration or probability of events occurring);
10. Hydrochemistry;
11. Analysis of the Reserve;
12. Assessment of availability of flow;
13. Impact of proposed activity on flow regime, water quality, other abstractors;
14. Recommendations on Proposed Activity;

2. INTRODUCTION

2.1. Name of Applicant

The name of the applicant is:

Tana Water Works Development Agency,
P.O. Box 1292 – 10100,
Nyeri, Nyeri County.

The project proponent (applicant) is a National Government Agency mandated to develop, maintain, and manage National Public Water Works within its area of jurisdiction, which comprises Embu, Kirinyaga, Meru, Nyeri and Tharaka Nithin counties.

2.2. WRUA Information

The proposed water supply project's intake lies on the Thuchi River within the Mutonga Catchment Management Unit. The proposed intake lies in an area managed by the Upper Thuchi WRUA.

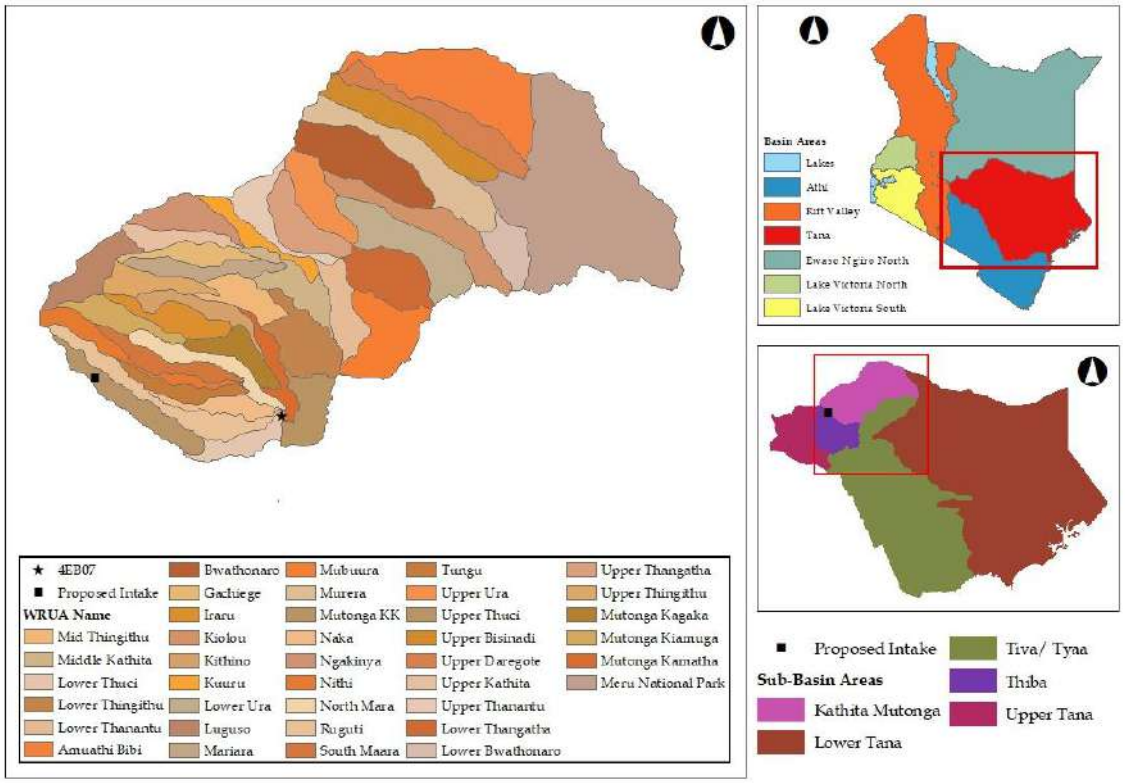


Figure 2-1: Sub-catchment location of the proposed abstraction point

3. LOCATION AND DESCRIPTION OF THE PROJECT

3.1. Location

The proposed project is primarily domiciled in Runyenjes Constituency, Embu East Sub-County of Embu County approximately 165km from the capital Nairobi. The proposed intake works will be located along the Thuchi River at GPS Coordinates Longitude 37.445080^0 E, Latitude 00.275618°S and altitude 2,248m ASL in Kanja North Sub-Location, Kagaari North East Location, of Runyenjes Ward. The intake comprises of a 10m long reinforced concrete weir. The treatment works are proposed at Munyutu within Kanja North Sub-Location.

The project intends to supply water to the following administrative locations in Embu County:

- Runyenjes West Location
- Runyenjes East Location
- Kagaari Southwest Location
- Kagaari Southeast Location
- Kagaari Northeast Location
- Kyeni South Location
- Kyeni Northwest Location

Administratively, the proposed intake works are located as follows:

County:	Embu
Constituency:	Runyenjes
Sub-County:	Embu East
Ward:	Runyenjes
Location:	Kagaari North East
Sub-Location:	Kanja North

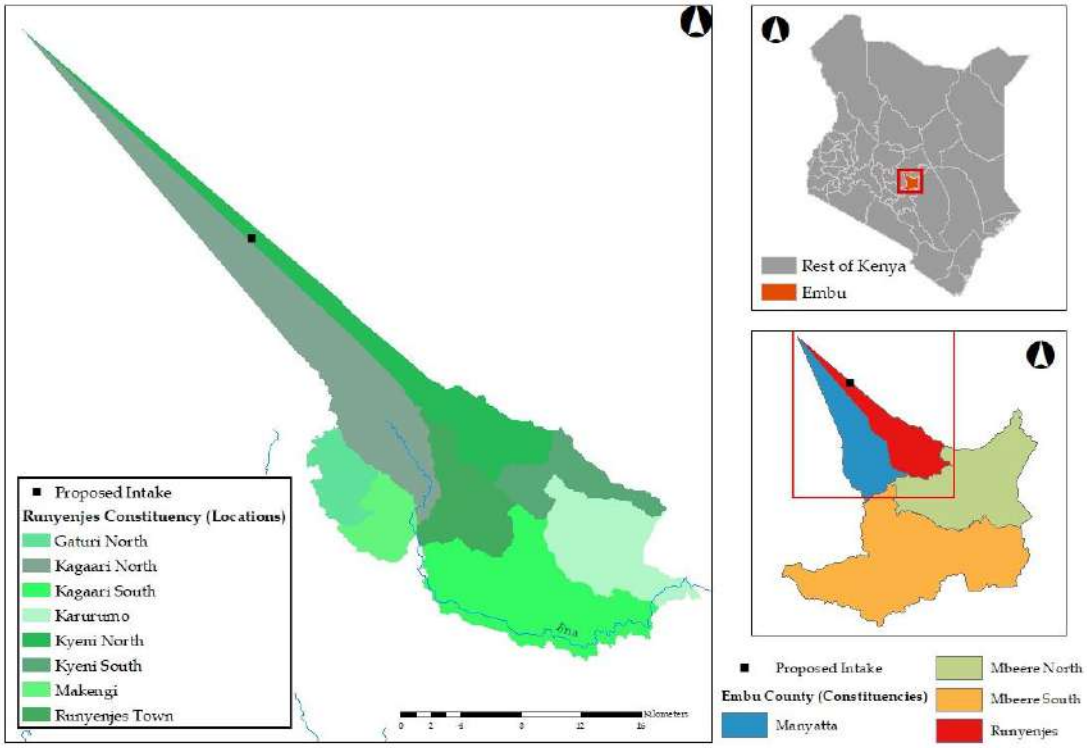


Figure 3-1: Administrative location of the proposed abstraction site

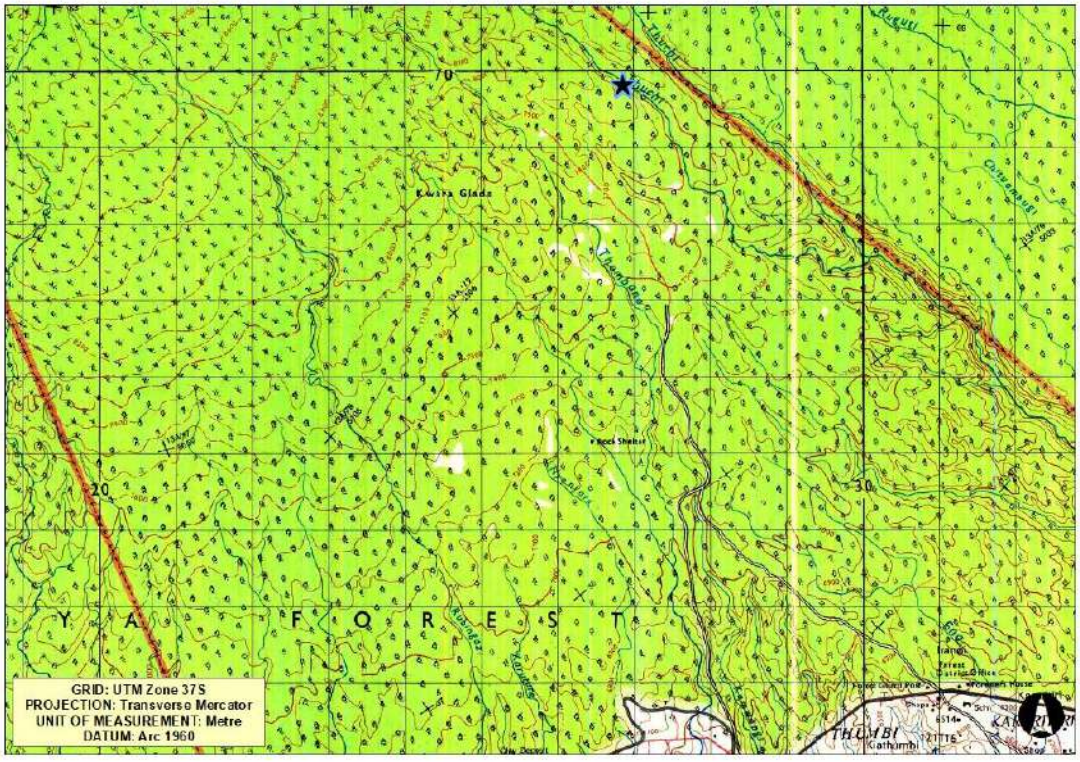


Figure 3-2: Location of abstraction point on SoK Toposheet 121/4 (Kerugoya)

3.2. Project Purpose

The proposed water supply and sanitation interventions aim to further the National Government's objectives outlined in the social pillar of Vision 2030 which is to establish *"a just, coherent, and equitable social development in a clean and secure environment"*.

The project intends to achieve the following objectives:

- Supply water without daily rationing through providing adequate water storage for current demands.
- Reduce Non-Revenue Water (NRW) and maintenance expenses.
- Improve revenue and tax collection.
- Provide plentiful supply of hygienic drinking water to the people of Runyenjes and the entire Embu East Sub-County
- Foster regional economic development through provision of employment opportunities to locals
- Reduce cases of waterborne illnesses and improve the population's general health.

3.3. Project Activities

The proposed Runyenjes Water Supply System intends to supplement the existing water services provided by KYEWASCO by increasing their production capacity to allow supply to its larger target population. The works shall consist of:

- Construction of a new intake weir across Thuchi River
- Construction of a new 14km long DN 450mm HDPE PN20 raw water gravity mains
- Construction of new treatment works with a design capacity of 15,000m^3/day at Munyutu
- Construction of 38km of new treated water transmission and distribution mains diameter varying in size from DN 450mm to 150mm HDPE
- Construction of 10no. masonry storage tanks of capacities: 5(No. - 500m^3; 3(No.) - 225m^3; and 2(No.) - 135m^3.

4. DETAILS OF CLIMATE

4.1. Precipitation

The proposed intake lies along the Thuchi River, within sub-basin 4EB of the Mutonga Catchment Management Unit. Daily precipitation data obtained from WORLDCLIM satellite imagery data shows precipitation within the watershed is bimodal with the long rains occurring in the months of March to May and the short rains from October to December. The average monthly precipitation variability across watershed varies between lows of 0 mm and highs of 362mm.

The spatial variability within the watershed indicates the central region receives most of the precipitation, while the lower (south-eastern) side receives the least precipitation.

Daily precipitation data was obtained from the WORLCLIM satellite imagery data for the watershed. Monthly spatial-temporal data for the years 2000 to 2018 were obtained and clipped for the proposed intake's watershed and the average monthly rainfall calculated for the 19-year period. Figure 4-1 shows the spatial-temporal variation of mean monthly precipitation for the watershed.

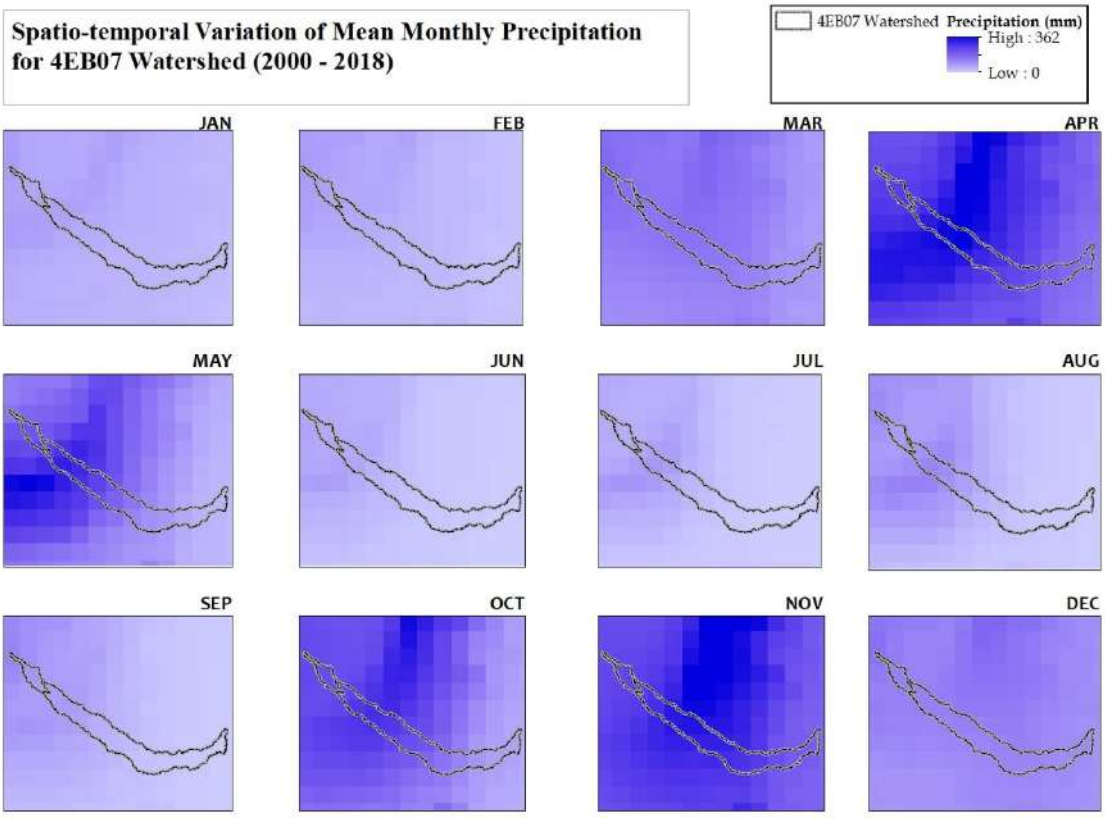


Figure 4-1: Mean Monthly Precipitation for 4EB07 watershed

4.2. Temperature

Monthly minimum temperatures indicate the upper (north-western) part of the watershed receives the lowest temperatures. The months of June to August appear to

record the lowest temperatures overall. Figure 4-2 shows the spatial-temporal variation of the mean monthly minimum temperature for the watershed.

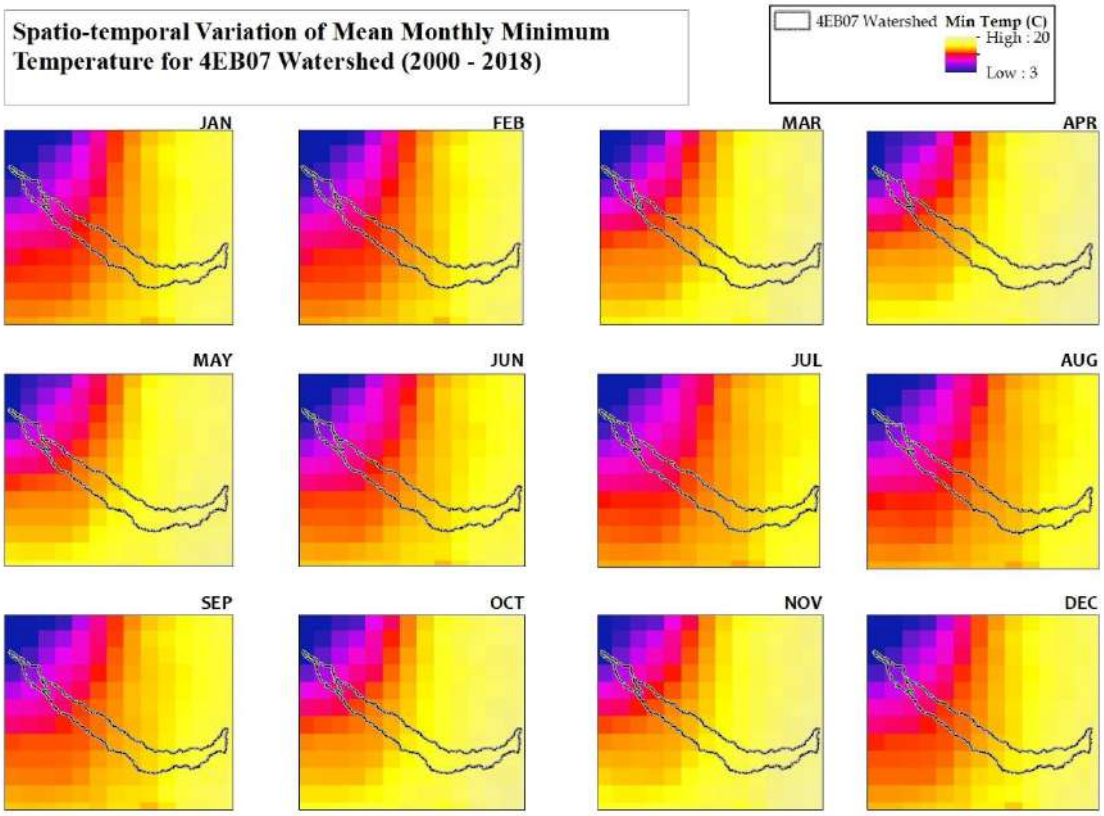


Figure 4-2: Mean Monthly Minimum Temperature for proposed work's watershed

Monthly maximum temperature indicates the lower (south-eastern) part of the sub-catchment records the highest temperatures. The months of January to March appear to record the highest temperatures overall. Figure 4-3 shows the spatial-temporal variation of the mean monthly maximum temperature for the sub-catchment.

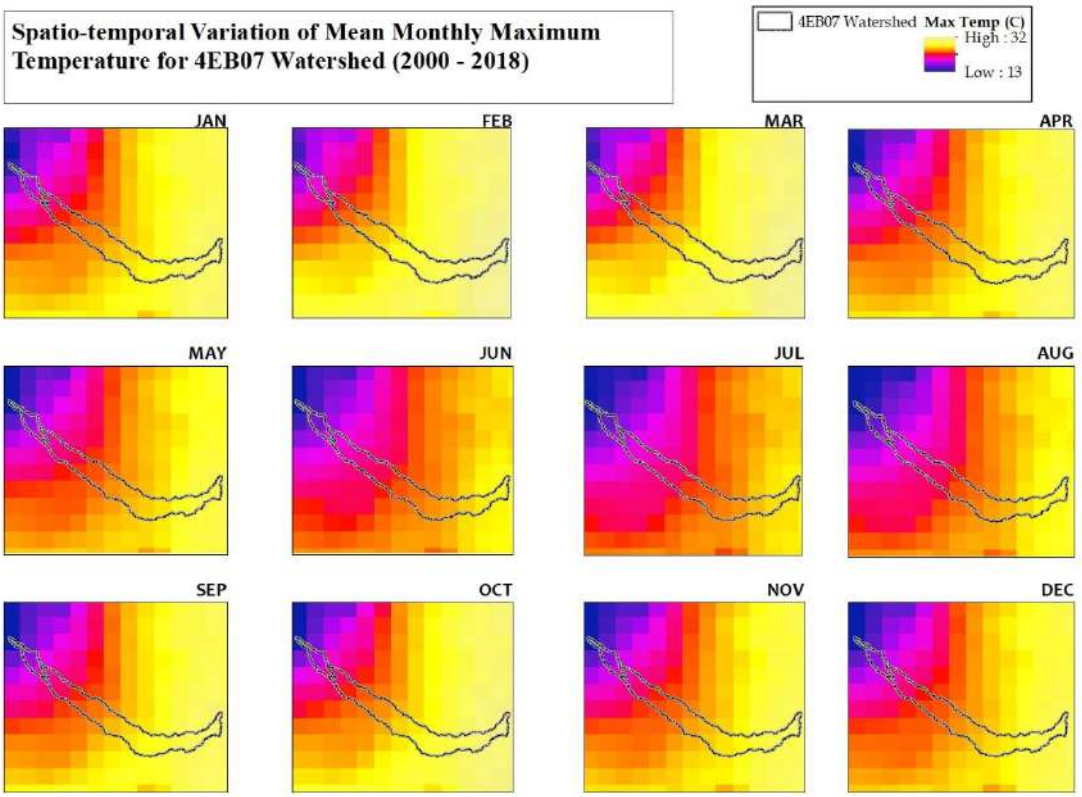


Figure 4-3: Mean Monthly Maximum Temperature for proposed work's watershed

5. DETAILS OF RIVER OR WATER BODY

5.1. Name and Description

The proposed project intends to abstract water from the Thuchi River with a catchment area of 30.307km^2. This river is among a series of tributaries that feed into the Mutonga River and is part of the 4EB sub-basin within the Mutonga Catchment Management Unit (CMU). Rivers within sub-basin 4EB flow from the north-west to the south-east of the sub-basin.

The location of the proposed intake is shown on the map in Figure 5-1.

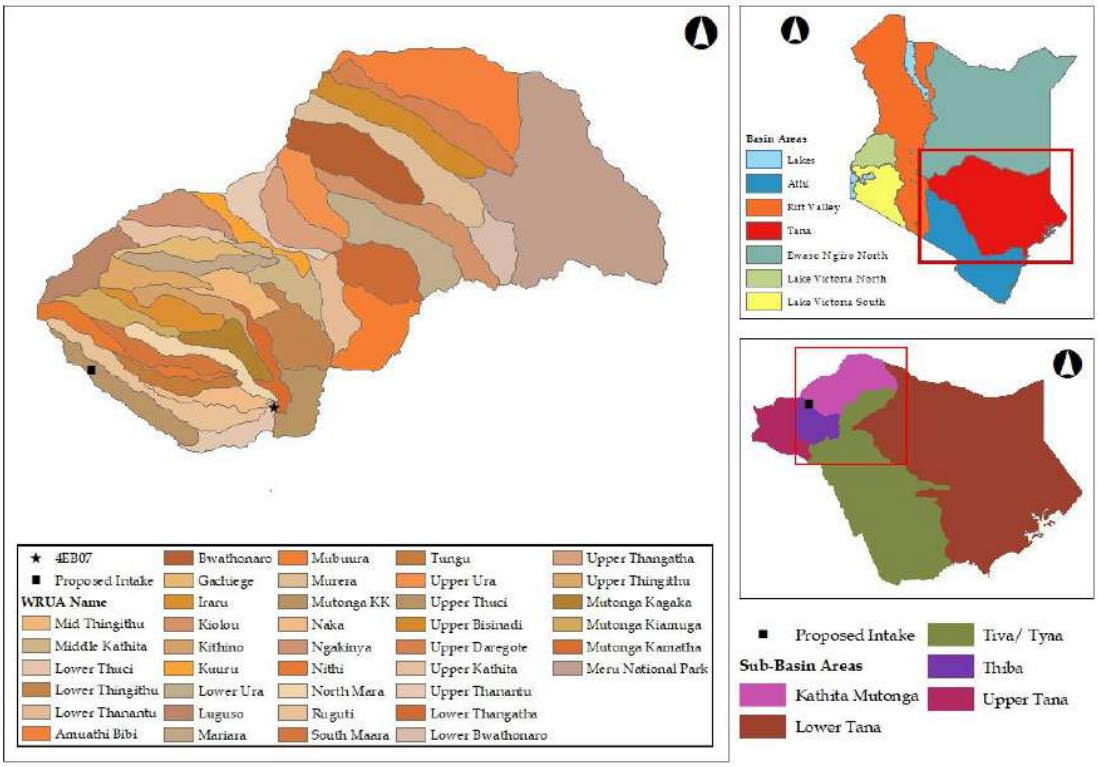


Figure 5-1: Location of the proposed intake within Kathita Mutonga Sub-Basin

5.2. Gauging Stations

The Water Resources Authority has 1(No.) operational gauging station along the Thuchi River (i.e. 4EB07) downstream just before its confluence with the Ruguti River. This station is located 61.31 km downstream of the proposed abstraction point at GPS coordinates; Latitude 0.0.36194^{0}S and Longitude 37.87139^{0}E. Data from this station has been used in the hydrological analysis for the proposed intake works. The location and details of the RGSs are provided in Figure 9-1 and Table 9-1 respectively.

6. DETAILS OF CATCHMENT

6.1. Catchment Description

The proposed intake point is located along the Thuchi River with a catchment area of 30.307km^2. The proposed intake is 61.31 km upstream of the RGS on the Thuchi river operated by WRA. The catchment area of the proposed intake constitutes 10.21% of the larger sub-catchment of the RGS as shown in Table 6-1 below.

Table 6-1: Intake's Catchment Area

Catchment	Catchment Area (km^2)	Proposed Intake's Catchment as a percentage of combined catchment
WRA RGS on Thuchi River	296.970	10.21

Basic details of the proposed intake's catchment are given in Table 6-2.

Table 6-2: Basic Details of Intake's Catchment Area

Item	Value
Catchment Area (km^2)	30.307
Maximum Elevation (m.a.s.l)	4245
Minimum Elevation (m.a.s.l)	2248
Intake Elevation	2248

6.2. Soils

The dominant soil class in the proposed intake's watershed is Umbric Andosols. Andosols are deep clayey soils with moderate to high organic matter content in the topsoil. They also have a high-water holding capacity and are very fertile with good drainage and workability.

The dominant soil class in the larger 4EB07 watershed Humic Nitosols with bands of Ferralic Cambisols, Rhodic Ferrasols and Haplic Nitosols as you approach the lower parts of the 4EB07 watershed. Nitosols are almost similar to the Andosols in characteristics but have a moderate water holding capacity and are also moderately fertile. Cambisols on the other hand have variable depths with varying soil textures. Their organic matter content in the topsoil, water holding capacity, fertility, drainage and workability are all variable. Ferralsols are almost similar to the Nitosols with the exception of variable clay depth and organic matter content as well as low fertility.

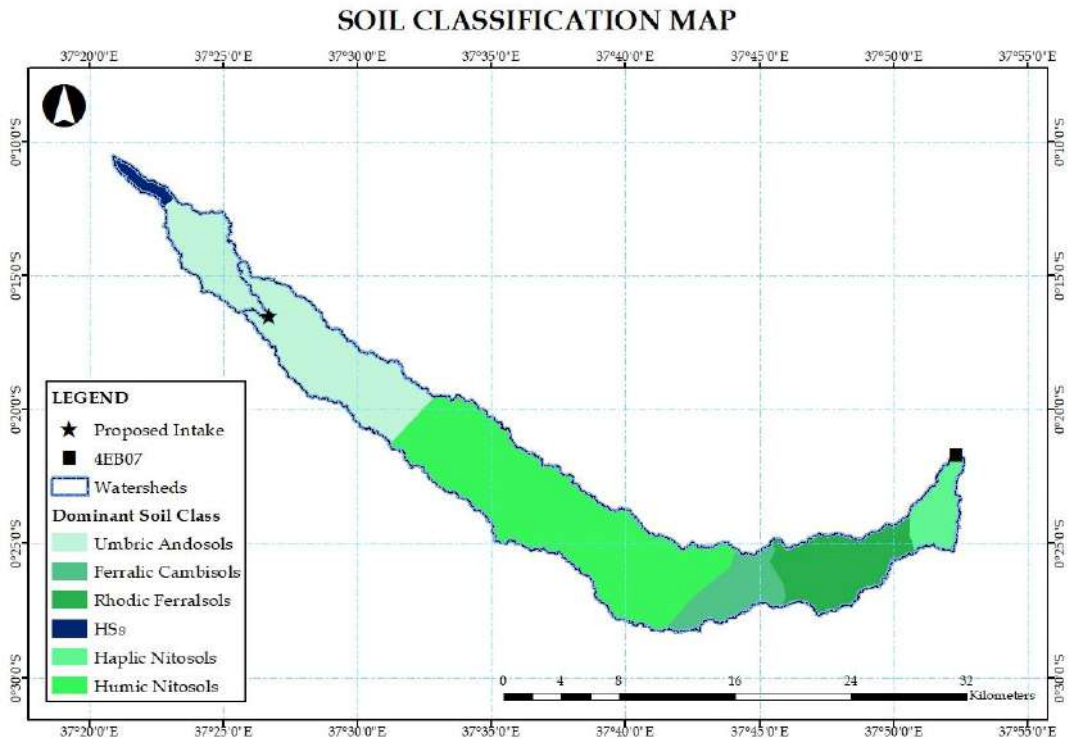


Figure 6-1: Soil Classification Map for Proposed Work's Watershed

6.3. Land Use & Land Cover

Land use within the proposed intake's watershed can be broadly categorized as forest reserve with 96% of the land being under tree cover upstream of the proposed intake. However, downstream of the intake, approximately 53% of the land is under crop cover with the dominant crop being tea in the upper altitudes and maize in the lower altitudes.

Table 6-3: Land Cover distribution within Proposed Work's Watershed

S/No	Landcover	4EB07 Watershed		Proposed Intake's Watershed	
		Area (km^2)	Ratio (%)	Area (km^2)	Ratio (%)
1	**Tree Cover**	114.093	38.410	28.931	95.763
2	**Shrubs**	6.096	2.052	0.240	0.794
3	**Grassland**	17.113	5.761	0.702	2.324
4	**Cropland**	158.446	53.342	0.155	0.513
5	**Aquatic Vegetation**	0.009	0.003	-	-
6	**Bare Areas**	0.230	0.077	0.183	0.606
7	**Built Up Areas**	1.049	0.353	-	-
	Total	297.036	99.998	30.211	100

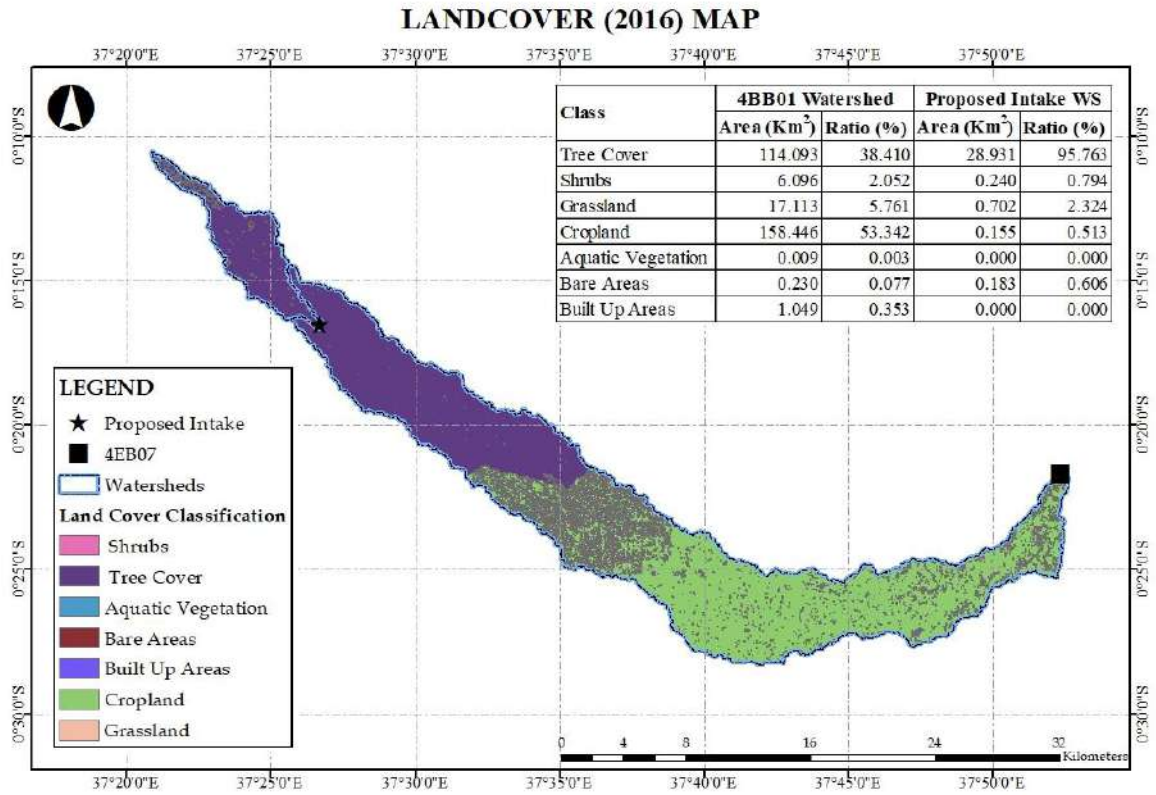


Figure 6-2: Land Cover for Proposed Work's Watershed

6.4. Land Use Potential

The proposed work's watershed has a mean annual rainfall of between 650mm and 1970mm. The proposed intake's watershed cuts across land use potential zone TA2, UH1 and UH0. The larger watershed for the RGS 4EB07 cuts across additional land use potential zones of LH0, LH1, UM1, UM2, UM3, LM3, LM4, LM5 and IL5 as shown in figure 6-3 below.

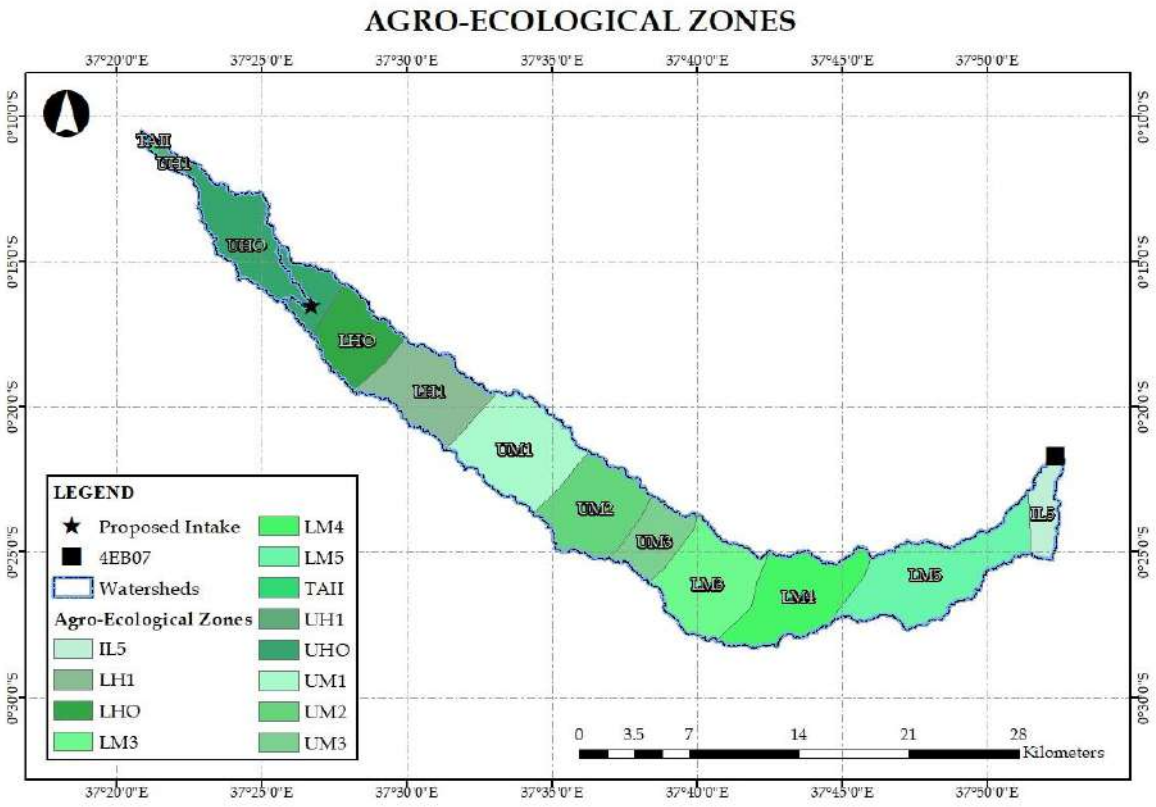


Figure 6-3: Agro-ecological zones within proposed work's watershed

The proposed intake lies within the UH0 zone. Table 6-4 provides a brief description of the zones found within the watershed and the potential crops that can be grown within them.

Table 6-4: Agroecological zones and potential crops

AEZ No.	Agro-ecological Zone	Belts of Zone	Zone	Possible Crops and Cropping Systems
0	Per Humid	UH0	-	-
	Per Humid	LH0	-	
I	Humid	UH1	Sheep-Dairy	
	Humid	UM1	Coffee-Tea	
	Humid	LH1	Tea-Dairy	
II	Subhumid	UM2	Main Coffee	
	Subhumid	TA2	Cattle-Sheep	
III	Semi-Humid	UM3	Marginal Coffee	
	Semi-Humid	LM3	Cotton	
IV	Transitional	LM4	Marginal Cotton	
V	Semi- Arid	LM5	Lower Midland Livestock-Millet	
	Semi-Arid	IL5	Lowland Livestock-Millet	

6.5. Geology

The project area being part of the Mt. Kenya Highland Zones, its geological structure is a product of volcanic activities and faulting. The dominant rock formation comprises a series of Volcanic and Pre-Cenozoic Sedimentary Rock. Instances of Metamorphic and Intrusive Rock are present in the lower altitudes of the 4EB07 watershed.

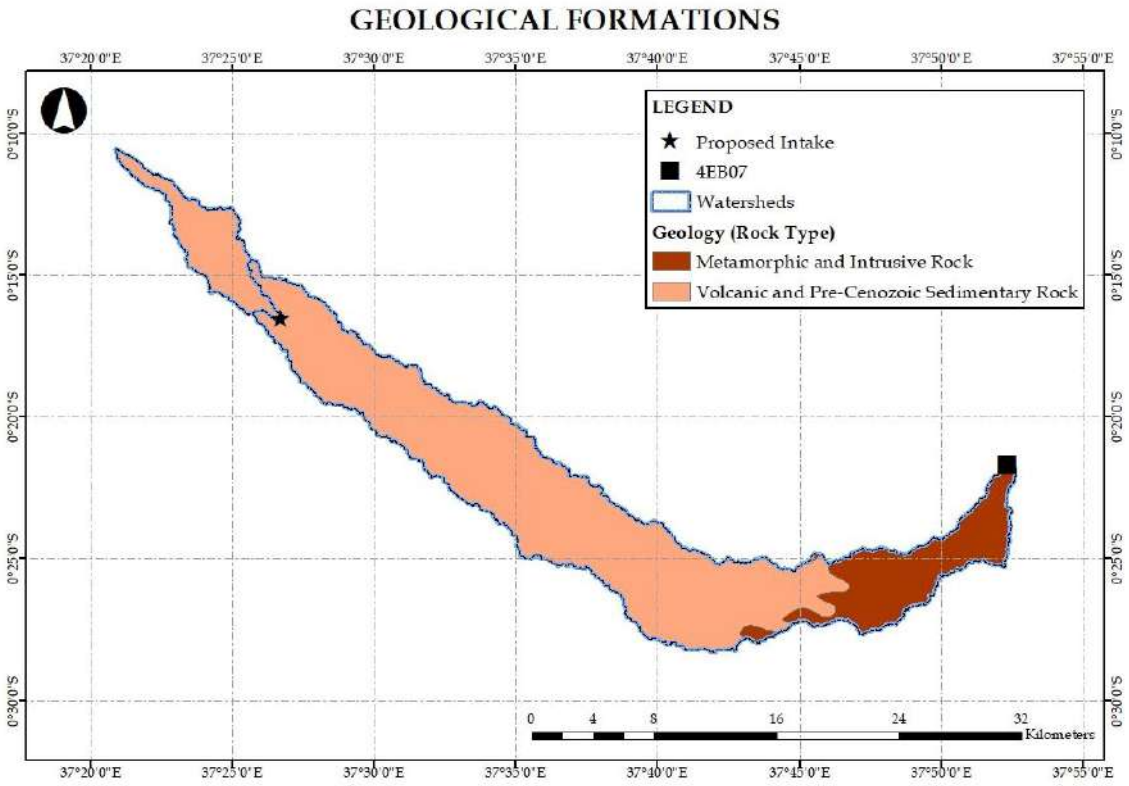


Figure 6-4: Geology map of proposed work's watershed

7. DETAILS OF REGISTERED AND NON-REGISTERED ABSTRACTION

7.1. Registered Abstractions

Data from WRA – TBA basin area office indicates that there are 16no authorizations/ permits issued for surface water abstractions/ storage within the Thuchi sub-catchment. 4no of these abstractors are located along independent tributaries of the Thuchi River and shall not be impacted by the proposed activities on Thuchi River. 11(No.) of these abstractors are located along the main Thuchi River and downstream of the proposed intake and include:

1) Kamarandi Irrigation Community Based Organisation
2) Tana Water Services Board (Embu-Mbeere Water Supply)
3) Rukuriri Tea Factory Co. Ltd
4) Kigumo Njuri Self Help Group
5) Kangai Sky Limit Self Help Group
6) Patrick Kiringa Mugeru
7) Kavando Water Project
8) Kanyuambora Irrigation Project Self Help Group
9) Kiambindu Bidii Self Help Group
10) Ndamunge Water Project CBO
11) Green Paradise Project Now

It should be noted that 1(No.) Class D application is for hydropower production. This is a non-consumptive water use hence it is expected at least 90% of the flows shall be returned back to the river. This therefore means that such a project may have minimal impact on water users downstream of their turbines. However, any water users upstream of the hydro-power intake will significantly reduce the allocation and hence power output at the station.

Table 7-1: Surface Water Permit Categories and the Amounts abstracted along Thuchi River

Category	Public	Domestic	Livestock	Subsistence Irrigation	Commercial Irrigation	Industrial/ Commercial	Others
A	0.00	0.00	0.00	16.00	0.00	0.00	0.00
B	0.00	2,358.63	440.00	7,430.00	8,526.00	0.00	288.00
C	0.00	0.00	0.00	565.40	14,256.00	0.00	0.00
D	0.00	0.00	0.00	0.00	0.00	0.00	140,745.00
Total (m^3/day)	**0.00**	**2,358.63**	**440.00**	**8,011.40**	**22,782.00**	**0.00**	**141,033.00**

Table 7-2: Water Allocation by Category

Category	M^3/Day	M^3/Year
A	16.00	5,840.00
B	19,042.63	6,950,559.95
C	14,821.40	5,409,811.00
D	141,033.00	51,477.045.00

7.2. Non-Registered Abstractions

Given the extensive small-holder farming activities along the Thuchi River riparian, it is expected that during the dry season, small scale illegal abstractions may take place for irrigation purposes.

8. PROPONENT PERMITS

8.1. Existing Permits

The project proponent currently has 3(No.) valid permit for water abstraction within the sub-basins 4EC and 4EB of the Tana Basin Area. These are:

Table 8-1: Proponent's Existing Water Permits

Application Ref. No	Quantity of Water	Water Use Purpose
WRMA/40/KRG/4EC/170/S	392 m^3/day	Public
WRMA/TC/07793	392 m^3/day	Public
WRMA/TC/07791/8	392 m^3/day	Public

8.2. Proposed Permits

The applicant wishes to abstract **15,000m^3/day** from the river for a public water supply. The bulk of this water is expected to be abstracted from the river's normal flow with any deficits being served by flood volume allocations.

9. HYDROLOGICAL CHARACTERISTICS AND ANALYSIS

9.1. Data Availability

The proposed intake site is ungauged and so an analysis of the hydrology of the intake was based on an evaluation of the flow measurements at an RGS operated by WRA on the Thuchi River which is 61.31 km downstream of the proposed intake. Details of the RGS station are shown in Table 9-1 and the location is shown in Figure 9-1.

Table 9-1: Details for RGS 4EB07

RGS	4EB07
River	Thuchi
Catchment Area (km^2)	296.970
Latitude	00.36194°S
Longitude	37.87139°E
Start	01/10/1956
End	31/12/2021

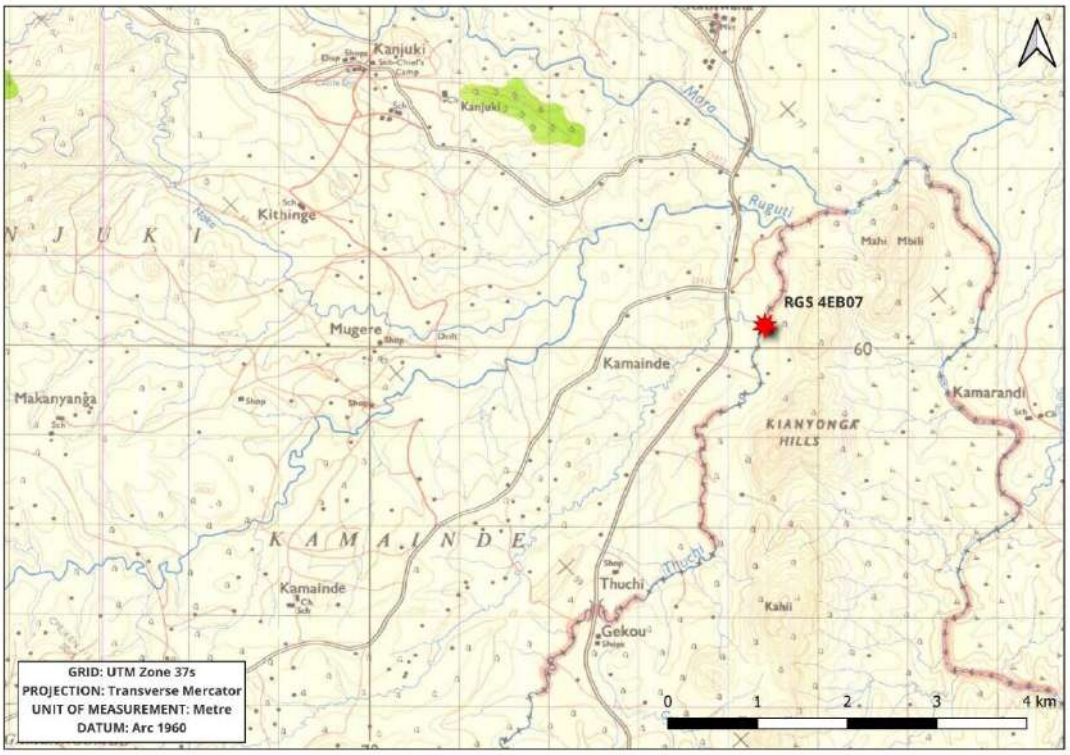


Figure 9-1: Location of RGSs on SoK Toposheets 135/1(Muranga)

The WRA RGS 4EB07 located along the Thuchi River has daily discharge data for 65 years from the year 1956 to 2021. However, several data gaps exist especially between 14/05/1997 – 27/10/2000 and 01/05/2007 – 31/08/2021.

The hydrograph below has been drawn using naturalized flows for the entire timeframe for the station.

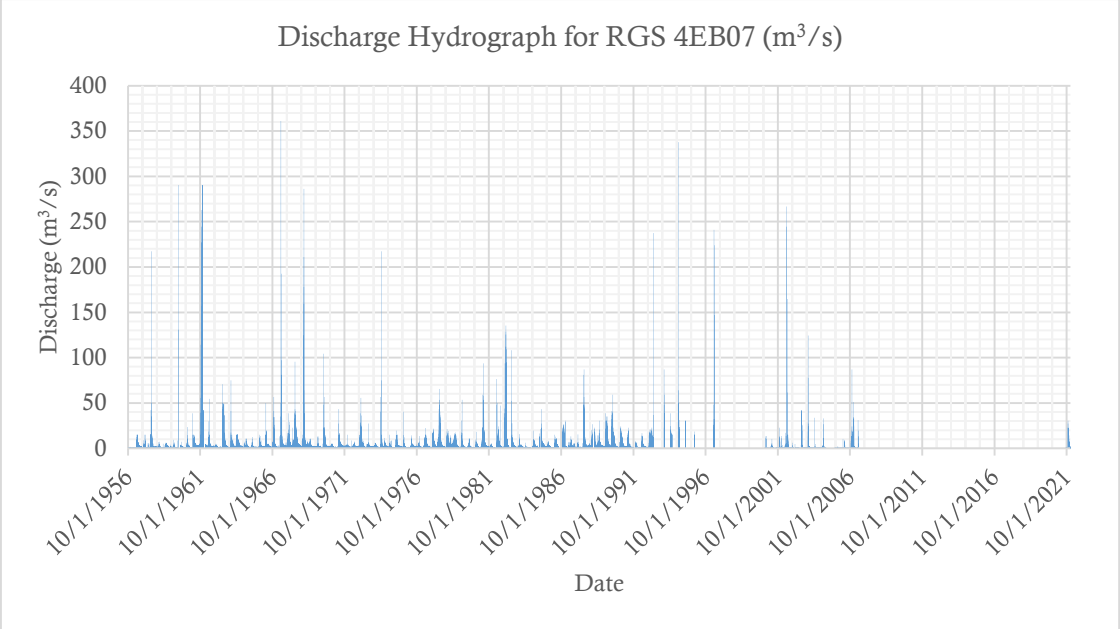


Figure 9-2: Discharge hydrograph for Thuchi River at WRA RGS 4EB07

The WRA RGS 4EB07 located along the Thuchi River has discharge data for 65 years from the year 1956 to 2021. The Flow Duration Curve (FDC) below for the station has been drawn using naturalized flows for the entire timeframe.

From the FDC below for the station 4EB07 along the Thuchi River, the flood flows, normal flows and reserve flows values were established as below:

Table 9-2: Reserve, Normal and Flood Flow Values

Station	**Reserve (Q_{95}) in m^3/s**	**Normal (Q_{80}) in m^3/s**	**Flood (Q_{50}) in m^3/s**
4EB07	0.0359	0.690	1.9146

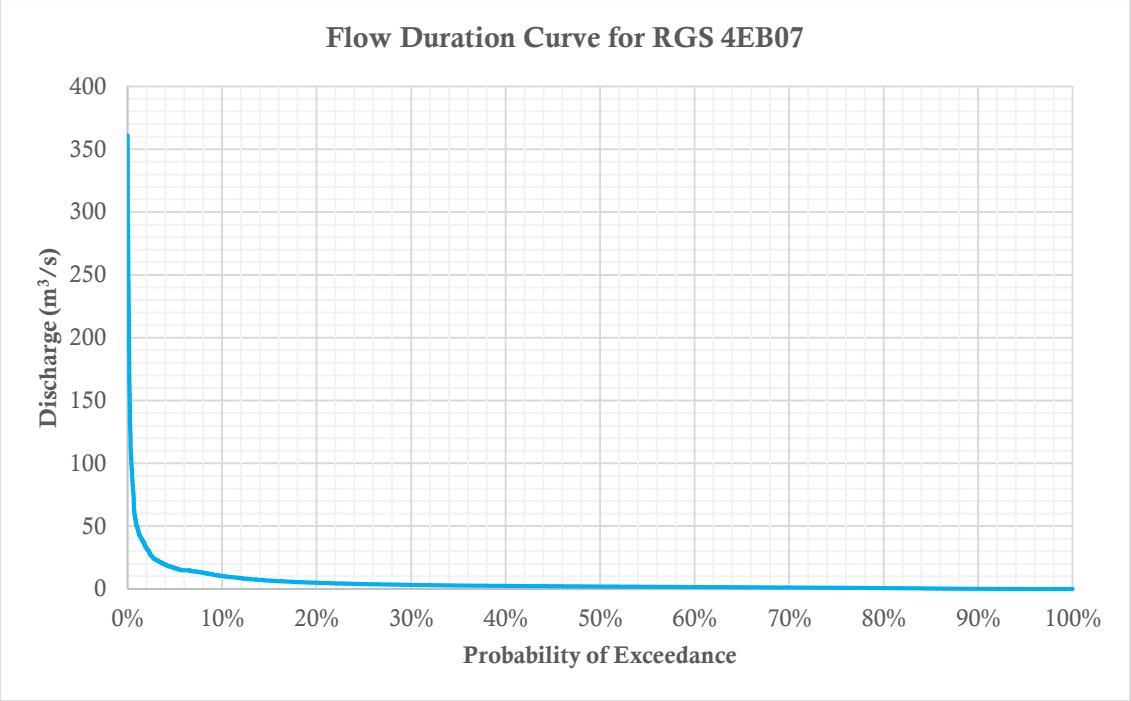


Figure 9-3: Flow Duration Curve for Thuchi River at 4EB07

10. HYDROCHEMISTRY

The basic requirements for domestic (drinking) water are that it should be:

a) Free from pathogenic (disease causing) organisms.
b) Containing no compounds that have adverse acute or long-term effect on human health.
c) Fairly clear/ colorless (i.e., low turbidity)
d) Not saline (salty)
e) Containing no compounds that cause an offensive taste or smell.
f) Not causing corrosion or encrustation of the water supply system; not staining clothes washed in it.

Surface water generally should be known from the physical, chemical, and bacteriological points of view. The following list is given as an indication of the most important parameters that should be known for the complete assessment of water quality:

a) Physical Characteristics – colour; odour; taste; turbidity; temperature; pH; conductivity; suspended and settleable solids.
b) Chemical Characteristics – alkalinity; acidity; hardness; Biological Oxygen Demand (BOD); Chemical Oxygen Demand (COD); ammonia, nitrite, and nitrate nitrogen; Total Dissolved Solids (TDS); and the ionic contents of calcium, magnesium, sodium, potassium, manganese, iron, chlorides, sulphates, carbonates, bicarbonates, fluorides.
c) Bacteriological Characteristics – bacteriological counts of total and faecal coliforms.

The analysis of water samples to assess these parameters and the interpretation of their results should be made by specialists. Generally, all domestic (drinking) water should conform to the KEBS EAS 12:2018 standards and/or WHO's Guidelines for Drinking Water Quality.

Table 10-1: Domestic water quality thresholds as per the KEBS EAS 12:2018 standards

Characteristic	**Parameter**	**Unit**	**KS EAS 12:2018 Standards (Max)**
Physical - Chemical	Temperature	°C	
	pH	pH Scale	5.5 – 9.5 (6.5 – 8.5)*
	Colour	mgPt L^{-1}	50 (15)*
	Turbidity	N.T.U	25 (5)*
	Conductivity	µS cm^{-1}	2500 (1500)*
	Iron	mg L^{-1}	0.3
	Manganese	mg L^{-1}	0.1

	Calcium	mg L^{-1}	150
	Magnesium	mg L^{-1}	100
	Sodium	mg L^{-1}	200
	Potassium	mg L^{-1}	50
	Total Hardness	mg$CaCO_3L^{-1}$	600 (300)*
	Total Alkalinity	mg$CaCO_3L^{-1}$	500**
	Chloride	mg L^{-1}	250
	Fluoride	mg L^{-1}	1.5
	Nitrate	mgNO_3^- L^{-1}	45
	Nitrite	mgNO_2^-N L^{-1}	0.9
	Sulphate	mg L^{-1}	400
	Total Dissolved Solids	mg L^{-1}	1500 (1000)*
Biological	Total Coliforms	MPN 100 mL^{-1}	Not detectable
	E. Coli	MPN 100 mL^{-1}	Not detectable
	Legionella ssp	CFU 100 mL^{-1}	Not detectable
	Free residual chlorine	mg L^{-1}	0.2 – 0.5

Bacteriological quality is essential and should be tested before the selection of the source and during the operation of a water supply scheme. A good bacteriological quality is best obtained by selecting a source without contamination, by protecting the intake and by adequate treatment.

Water from the source river during the site assessment was clear with a temperature of 18°C. This, however, was a spot measurement and may not be used to give an overall assessment of the river's water quality. Such spot measurements should be conducted over a longer period under varying flow regimes before an overall assessment can be given. Laboratory testing of the water quality is therefore proposed before construction works begin to ascertain the biological and chemical composition of the water. Periodic laboratory testing of the same parameters should be carried out after commissioning of the works to note any changes that may have arisen from the development of the works.

The quality of raw water may be difficult to assess even if many samples have been analyzed and considered before the design of the system. There is always a possibility that the worst conditions are yet to be discovered. Seasonal variations as well as the possibility of radical long-term changes due to the development or alteration of the catchment area may impact the water quality.

11. ANALYSIS OF THE RESERVE

Regionalization method has been used to estimate the flows for Thuchi River at the proposed abstraction point. The regionalization of stream flow characteristic is based on the premise that the areas of similar geology, vegetation, land use and topography will respond to similar weather patterns (i.e., a weather pattern which produces large floods or droughts in one catchment will likely have the same effects on the nearby ones). This method is useful as a means of estimating flow characteristics at ungauged sites. For such ungauged sites, rough estimates of the flow can be made from a nearby gauged site by simply adjusting the difference in one area e.g.,

Equation 11-1: Regionalization of hydrological data

$$x_1 = x_2 \frac{A_1}{A_2}$$

where

x_1 = flow (m^3/s) for the ungauged site
x_2 = flow (m^3/s) for the gauged site
A_1 = area of the ungauged catchment
A_2 = area of the gauged catchment

The proposed abstraction point located 61.31 km upstream of the RGS 4EB07 is within its catchment area. The proposed abstraction point under consideration has a catchment area of 30.307 km^2 while the RGS 4EB07 has a total catchment of 296.970 km^2. The catchment area of the proposed intake constitutes 10.21% of the larger sub-catchment of the RGS 4EB07. Therefore, the flows at the proposed abstraction point are estimated to be flood flow (Q_{50}) of **0.1954 m^3/s**, normal flow (Q_{80}) of **0.0704 m^3/s**, and reserve flow (Q_{95}) of **0.0037 m^3/s**.

The table below shows the estimated flow duration for the proposed abstraction point compared with the flow duration at RGS 4EB07.

Table 11-1: Reserve, Normal and Flood Flow Analysis for abstraction point

Analysis Point	Catchment Area (km^2)	Flood Flow (Q_{50}) in m^3/s	Normal Flow (Q_{80}) in m^3/s	Reserve Flow (Q_{95}) in m^3/s
At RGS 4EB07	296.970	1.9146	0.690	0.0359
At abstraction point	30.307	0.1954	0.0704	0.0037

12. ASSESSMENT OF AVAILABILITY OF FLOW

12.1. Water Balance

To determine the availability of water for the proposed activity, discharge measurements for the river near the abstraction point are required. A flow duration curve was developed through statistical analysis of the daily river discharge records. Based on the analysis, the reserve flow, normal flow, and flood flow thresholds were determined. The water available for allocation is determined based on the following formulas derived from the Water Resources Regulations 2021.

$$\text{Allocation from Normal Flow} = Q_{80} - Q_{95} - \text{existing allocations/ permits}$$

The flow duration analysis for the RGS 4EB07 results in the following values for Q_{95} (reserve) and Q_{80} (normal flow) as shown in Table 12.1. The water available for allocation from normal flow is **0.6541 m^3/s** which is equivalent to **56,514.24 m^3/day**.

Table 12-1: FDC Analysis Results

Item	**Cumulative for RGS 4EB07 (Discharge in m^3/s)**	**Cumulative for RGS 4EB07 (Discharge in m^3/day)**	**At Abstraction Point (Discharge m^3/s)**	**At Abstraction Point (Discharge m^3/day)**
Normal Flow	0.6900	56,514.24	0.0704	6,082.56
Reserve Flow	0.0359	3101.76	0.0037	319.68

Existing normal flow allocations along the Thuchi River amount to **3,941.13 m^3/day** against an existing allocable flow of **56,514.24 m^3/day**. This indicates that there is **52,573.11 m^3/day** that is available for allocation from the normal flows.

13. RECOMMENDATIONS

A hydrological assessment of the Thuchi River System at the proposed abstraction point indicates an available allocable flow of **52,573.11 m^3/day** from the normal flows. The proposed water supply project intends to serve a domestic water demand of **15,000m^3/day**. This demand can be met from the normal flows.

This report therefore recommends for the allocation of **15,000 m^3/day** from allocable normal flows. For the efficient utilization of water, the client is also advised to:

- Ensure reserve flows are available along the river channel during all flow periods.
- Install measuring and controlling device at the intake to record the water abstracted for a sustainable management of water resources.

14. REFERENCES

1. MWI (2005). Practice Manual for Water Supply Services in Kenya
2. WRMA Guidelines for Water Allocation, March 2010
3. WRA (2021). The Water Resources Regulations L.N. 170 of 2021
4. WRA (2016). The Water Act 2016. Kenya Gazette Supplement No. 164 (Act No. 43)

WATER RESOURCES AUTHORITY

Tana Basin Area
Along Embu - Meru Highway, Behind Embu Law Courts
P.O. Box 1930 – 60100
EMBU

Tel: 061 2309370
Email:tba@wra.go.ke
Website: www.wra.go.ke

Physical Chemical Laboratory and bacteriological Results Certificate

Report Issue Date:	**15/03/2024**	**Sample No:**	**138/2023-2024**
Name of Customer:	TANA WATER WORKS DEVELOPMENT AGENCY	**Received By:**	JORAM
Address:	P.O BOX 1292 10100	**Date Received:**	12/03/2024
Email:		**Type of Sample:**	SURFACE WATER
Telephone Number:	0724259891	**Source of Sample:**	PROPOSED RUNYENJES WATER SUPPLY PROJECT INTAKE AT THUCI RIVER
Sampled/submitted by:	ESTHER	**County:**	EMBU
Purpose of Sampling:	BASELINE QUALITY MONITORING	**GPS:**	
		Latitude:	
Date of Sampling:	12/03/2024	**Longitude:**	

PARAMETERS	UNIT	RESULTS	WHO GUIDELINES	KEBS(KS 459-1:2007) STANDARDS.
pH	pH Scale	**10.68**	6.5-8.5	6.5-8.5
Temperature	°C	**13.18**	Ambient	Ambient
Dissolved Oxygen	mgO_2/l	**2.34**	--	--
Turbidity	N.T.U	**1.5**	Max 5	Max 5
Conductivity (25^0 C)	µS/cm	**24**	Max 2500	-
Total Dissolved Solid	Mg/l	**12**	Max 1500	Max 1000
Total Coliforms	MPN /100ml	**93**	Shall be Absent	Shall be Absent
Faecal Coliforms (E. Coli)	MPN /100ml	**93**	Shall be Absent	Shall be Absent

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Comments:

This is water sampled at the proposed Runyenjes water supply project intake inside Irangi forest along Thuci river.The water is clear with a slightly high PH value turning the water to be alkaline. The water is bacteriologically contaminated and requires treatment before human consumption

J. KIHUMBA
Laboratory Analyst

WATER RESOURCES AUTHORITY
REGIONAL MANAGER
TEL: 061-2309370
Email: tanawraro@gmail.com
P.O. Box 7050-60100, EMBU

J. KIHUMBA
PWQ&PCO

Disclaimer:

The results contained herein apply to the particular sample(s) tested, whose sample number and tests carried out as detailed in these results. The information contained here reflects the laboratory's findings at the time of analysis and based on the samples submitted by the customer.

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FORM F/9/1/5a

WATER RESOURCES AUTHORITY

Ewaso Ng'iro North Basin Area,
Nyeri – Nairobi Highway, Opposite CMS Petrol Station
P.O. BOX 1331 – 10400,
NANYUKI

Tel: 062-32510
Email: wra.ewasongiro@gmail.com
Website: www.wra.go.ke

PHYSICAL CHEMICAL ANALYSIS RESULTS CERTIFICATE

Report issue date: 29th February 2024	**Sample no:** 5581 **Year:** 2024
Name of customer: Tana Water Works Development Agency Runyenje's Water Supply **Address:** P. O. Box 1292 – 10100, Nyeri **Sample submitted by:** Cynthia Odhiambo **Purpose of sampling:** Baseline Data **County:** Embu	**Date Received:** 12th February 2024 **Type of sample:** Natural portable water **Date Sampled:** 11th February 2024 **Source of sample:** Intake on Thuci river **Received by:** James Icika

PARAMETERS	UNIT	RESULTS	WHO GUIDELINES	KEBS (KS 459-1:2007) STANDARDS.
pH	pH Scale	7.2	6.5-8.5	6.5-8.5
Temperature	^{0}C	25.7	± 3 Ambient temp	± 3 Ambient temp
Colour	mgPt/l	nd*	Max 15	Max 15
Turbidity	N.T.U	4.0	Max 5	Max 5
Conductivity (25^0 C)	µS/cm	25.6	Max 2500	-
Iron	mg/l	0.08	Max 0.3	Max 0.3
Manganese	mg/l	-	Max 0.1	Max 0.5
Calcium	mg/l	nd*	Max 100	Max 150
Magnesium	mg/l	3.89	Max 100	Max 100
Sodium	mg/l	-	Max 200	Max 200
Potassium	mg/l	0.5	Max 50	-
Total Hardness	mg$CaCO_3$/l	16	Max 500	Max 300
Total Alkalinity	mg$CaCO_3$/l	22	Max 500	-
Chloride	mg/l	2.99	Max 250	Max 250
Fluoride	mg/l	0.02	Max 1.5	Max 1.5
Nitrate	mg/l	nd*	Max 50	Max 50
Nitrate Nitrogen	mg/l	nd*	Max 10	-
Nitrite	mg/ l	-	Max 3	-
Ammonia	mg/l	-	-	-
Phosphorous	mg/l	nd*	-	-
Phosphate	mg/l	nd*	-	
Phosphorous Pentoxide	mg/l	nd*	-	-
Sulphate	mg/l	0.86	Max 450	Max 400
Total Dissolved Solids	mg/l	16.64	Max 1500	Max 1000
Arsenic	µg/l	-	Max 10	Max10

Comment: Water is suitable for human consumption.

Signature of Laboratory Analyst: JIka
Name of Laboratory Analyst: James Icika
Title of Laboratory Analyst: Senior Water Quality & PCO

Signature of Head of Laboratory:
Name of Head of the laboratory: Judy N. Kigamba
Title of Head of Laboratory: Principal WQ & PCO

nd* - not detected

Disclaimer: The results contained herein apply to this particular sample number and tests carried out. The information contained here reflects the laboratory's findings as at the time of analysis and based on the sample submitted by the client. This certificate has been issued without any alteration whatsoever.

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MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 6TH SEPTEMBER 2023 AT GIKUURI CHIEFS OFFICE FROM 10.00 AM TO 11.30 AM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Lydia Nyaga	Chief Runyenjes West	0721670993
2.	Patrick Njiruh	Assistant Chief Gikuuri	0700141669
3.	Willy Njeru	Gikuuri Resident	0714977836
4.	Ester Wagoki	Gikuuri Resident	0715368333
5.	Ndwiga Simba	Gikuuri Resident	0703719154
6.	Faith Gicugu	Gikuuri Resident	0723304292
7.	Moses Muriithi	Gikuuri Resident	0740609887
8.	Duncan Njeru	Gikuuri Resident	0722675214
9.	Laban Njeru	Gikuuri Resident	0725632284
10	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
11	Evans Collins Kageche	Environmentalist TWWDA	0721665027
12	Mirriam Kariuki	Environmentalist TWWDA	0702010853

See Attached Attendance Register for other Residents in Attendance

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/6/9/2023	**Opening Prayer** The Chief called the meeting to order at 10.00 am and a word of prayer was led by Laban Njeru.	**Chief**
MIN.2/6/9/2023	**Introductions** The Chief, Madam Lydia Ngari invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/6/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	**TWWDA**

MIN.4/6/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Embu County. The officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	**TWWDA**
MIN.5/6/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	**Residents**
MIN.6/6/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and appreciated the proposed project **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environment clarified that the proposed pipelines targets to utilize road reserve and therefore would not interfere with private property. • The residents recommended that the proponent ensures compensation is done in case of interference with private property **Interference with existing Water Projects in the area** • Residents enquired whether the proposed project	**Residents**

	would merge with the existing water project in the area. The environmentalist explained that the proposed water project would run independently and would not merge with the existing water project in the area. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project. **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills.	
MIN.7/6/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief, the Assistant Chief for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/6/9/2023	**Closing Prayers** There being no other business the meeting ended at 11.30am with a word of prayer led by Faith Gicugu.	**Resident**

Confirmation of True Record of the Meeting:

C. KAGECHE L. EVANS COLLINS — **TWWDA Representative** — **Signature** — 22/09/2023 — **Date**

FOR: JOINA NGENDO — **Administration Representative** — **Signature** — 22/09/2023 — **Date**

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 8TH SEPTEMBER 2023 AT RUKURIRI CHIEF'S OFFICE FROM 9.00 AM TO 10.30 AM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Emily Wangari	Chief Kyeni North West	0721100586
2.	Gerald Muturi	Rukuriri Resident	0729439086
3.	Ephantus Mugendi	Rukuriri Resident	0714019557
4.	Ann Ndia	Rukuriri Resident	0741040379
5.	Serah Karimi	Kariari Resident	0716284911
6.	Jane Igandu	Kariari Resident	0712324961
7.	David Mugendi	Kariari Resident	0740049507
8.	Leah Mukami	Mutira Resident	0720001696
9.	Kellen Wanja	Gichegeni Resident	0746392274
10	Rose Wanja	Mufu Resident	-
11	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
12	Evans Collins Kageche	Environmentalist TWWDA	0721665027

13	Mirriam Kariuki	Environmentalist TWWDA	0702010853
See Attached Attendance Register for other Residents in Attendance			

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/8/9/2023	**Opening Prayer** The Chief called the meeting to order at 9.00 am and a word of prayer was led by Ephantus Mugendi.	**Chief**
MIN.2/8/9/2023	**Introductions** The Chief invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/8/9/2023	**Background Information** The Environmentalist from TWWDA explained to the	

	residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	TWWDA
MIN.4/8/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	TWWDA
MIN.5/8/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	Residents
MIN.6/8/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and did not have any objection on implementation of the proposed project **Modalities of Connection** • The resident enquired whether the resident with connections from other Water Service providers could connect to the proposed water project and whether the water would be metered. • The Environmentalist clarified that the water	Residents TWWDA

	would be metered and anyone willing to be connected would fill an application through the WSP that will manage the proposed project upon completion. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve. **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project. **Coverage of the Water Project** • The resident of the upper part of Rukuriri requested that the project considers a wide coverage within the location as many people within the location did not have enough water.	
MIN.7/8/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/8/9/2023	**Closing Prayers** There being no other business the meeting ended at `10.30am with a word of prayer led by Ephantus Mugendi.	**Resident**

Confirmation of True Record of the Meeting:

EVANS COLLINS KASECHE — **TWWDA Representative**

[signature] — **Signature**

22/09/2023. — **Date**

FOR: SINA R.G. NJERU — **Administration Representative**

[signature] — **Signature**

22/09/2023 — **Date**

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 6TH SEPTEMBER 2023 AT MBIRURI ASSISTANT CHIEF'S OFFICE FROM 12.00 PM TO 1.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Lydia Nyaga	Chief Runyenjes West	0717738981
2.	Nicholas Nyaga	Mbiruri Resident	0721297454
3.	Lawrence Muthee	Mbiruri Resident	0726316574
4.	John Ireri	Mbiruri Resident	0723150139
5.	Cathrine Wawira	Mbiruri Resident	0704357622
6.	Jane Muthoni	Mbiruri Resident	0728077447
7.	Joyce Muthoni	Mbiruri Resident	0725632284
8.	Sarah Kigamba	Mbiruri Resident	0717029959
9.	Jim Njeru	Sub County Water Officer Runyenjes	0700093779
10	Evans Collins Kageche	Environmentalist TWWDA	0721665027
11	Mirriam Kariuki	Environmentalist TWWDA	0702010853

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/6/9/2023	**Opening Prayer** The Chief called the meeting to order at 12.00 pm and a word of prayer was led by Laban Njeru.	**Chief**
MIN.2/6/9/2023	**Introductions** The Chief, Madam Lydia Ngari invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/6/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	**TWWDA**
MIN.4/6/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The	**TWWDA**

	officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	
MIN.5/6/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	**Residents**
MIN.6/6/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and appreciated the proposed project **Coverage of the Water Project** • The resident requested that the project considers a wide coverage within the location as many people within the location did not have enough water. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environment clarified that the proposed pipelines targets to utilize road reserve and therefore would not interfere with private property. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project. **Water Charges** • The residents recommended the water charges be	**Residents**

	user-friendly as many people struggle in paying water bills.	
MIN.7/6/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief, the Assistant Chief for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/6/9/2023	**Closing Prayers** There being no other business the meeting ended at 1.30pm with a word of prayer led by Joyce Muthoni.	**Resident**

Confirmation of True Record of the Meeting:

EVANS COLLINS KASECHE — **TWWDA Representative**

[signature] — **Signature**

22/09/2023 — **Date**

FOR: JIM R.G. HIERU — **Administration Representative**

[signature] — **Signature**

22/09/2023 — **Date**

TANA WATER WORKS DEVELOPMENT AGENCY

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 7TH SEPTEMBER 2023 AT KARURUMO POLICE POST FROM 2.30 PM TO 3.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Silas N. Muribia	Chief Kyeni South	0728430276
2.	Lucy Njoki	Assistant Chief	0716129398
3.	Augustine Njeru	Assistant Chief Karurumo Sub location	0719357643
4.	Nazaria Ngari	Assistant Chief	0713005110
5.	Henry Araya	NPS	0721223257
6.	Solomon Golo	NPS	0726019607
7.	Patrick Njagi	Nyumba Kumi Chair Karurumo	0728654464
8.	Patrick Namu	Karurumo Resident	0703430556
9.	James Fundi	Itimbogo WRUA/ Karurumo Resident	0719201989
10	Anderson Ireri	Karurumo Resident	0721966002
11	Flora Njiru	Kasafari Resident	0717458413
12	Festus Njiru	Karurumo Resident	0715558024

13	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
14	Evans Collins Kageche	Environmentalist TWWDA	0721665027
15	Mirriam Kariuki	Environmentalist TWWDA	0702010853
See Attached Attendance Register for other Residents in Attendance			

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/7/9/2023	**Opening Prayer** The Chief called the meeting to order at 2.30 pm and a word of prayer was led by Patrick Namu.	Chief

MIN.2/7/9/2023	**Introductions** The Chief requested the Assistant Chiefs present to introduce themselves and later invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	Chief TWWDA Sub-Coun Wate Officer
MIN.3/7/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	TWWDA
MIN.4/7/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	TWWDA
MIN.5/7/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	Residents

MIN.6/7/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and did not have any objection on implementation of the proposed project **Modalities of Connection** • The resident enquired whether the resident with connections from other Water Service providers could connect to the proposed water project and whether the water would be metered. • The Environmentalist clarified that the water would be metered and anyone willing to be connected would fill an application through the WSP that will manage the proposed project upon completion. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project.	**Residents** **TWWDA**
MIN.7/7/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief and the Assistant Chiefs for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/7/9/2023	**Closing Prayers** There being no other business the meeting ended at 3.30pm with a word of prayer led by Flora Njiru.	**Resident**

Confirmation of True Record of the Meeting:

MIRRIAM KARIUKI — **TWWDA Representative** | Signature | 22/9/2023 — **Date**

JIM R.C. NJERU — FOR: **Administration Representative** | Signature | 22/09/2023 — **Date**

TANA WATER WORKS DEVELOPMENT AGENCY

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 7TH SEPTEMBER 2023 AT RUNYENJES CHIEF'S OFFICE FROM 9.00 AM TO 10.30 AM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Lydia Nyaga	Chief Runyenjes West	0717738981
2.	John Nyaga	Runyenjes Town	0713138054
3.	John Muriithi	Runyenjes Town	0725117327
4.	Caroline Muriuki	Runyenjes Town	0727858275
5.	Charles Mugwima	Runyenjes Town	0722356259
6.	Julius Muthee	Runyenjes Town	0707328444
7.	James Mwiti	Runyenjes Town	0798161684
8.	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
9.	Evans Collins Kageche	Environmentalist TWWDA	0721665027
10	Mirriam Kariuki	Environmentalist TWWDA	0702010853
See Attached Attendance Register for other Residents in Attendance			

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/7/9/2023	**Opening Prayer** The Chief called the meeting to order at 9.00 am and a word of prayer was led by Julius Muthee.	**Chief**
MIN.2/7/9/2023	**Introductions** The Chief, Madam Lydia Ngari requested the members present to introduce themselves and later invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/7/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	**TWWDA**
MIN.4/7/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The	**TWWDA**

	officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	
MIN.5/7/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	**Residents**
MIN.6/7/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and did not have any objection on implementation of the proposed project **Modalities of Connection** • The resident enquired whether the resident with connections from other Water Service providers could connect to the proposed water project and whether the water would be metered. • The Environmentalist clarified that the water would be metered and anyone willing to be connected would fill an application through the WSP that will manage the proposed project upon completion. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve and engagements would be done with the relevant	**Residents**

	Roads Authority and therefore would not interfere with private property. **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills.	
MIN.7/7/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/7/9/2023	**Closing Prayers** There being no other business the meeting ended at 10.30am with a word of prayer led by James Mwiti	**Resident**

Confirmation of True Record of the Meeting:

EVANS COLLINS KASECHE	C.K	22/09/2023.
TWWDA Representative	**Signature**	**Date**
JIM R.G. MBURU		22/09/2023
FOR: **Administration Representative**	**Signature**	**Date**

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 7TH SEPTEMBER 2023 AT KATHANJURI CHIEF'S OFFICE FROM 11.00 AM TO 1.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Emma Wanjira	Chief Kyeni Central	0703260335
2.	Ephantus Nyaga	Assistant Chief Nyagari	0724338407
3.	Rosemilia Muthoni	Kathanjuri Resident	0703538265
4.	Stephen Muriuki	Kathanjuri Resident	0792380337
5.	Agnes Munyi	Kathanjuri Resident	0712382086
6.	Bancy Murugi	Kathanjuri Resident	0795112661
7.	Humphrey Muriithi	Kathanjuri Resident	0719201989
8.	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
9.	Evans Collins Kageche	Environmentalist TWWDA	0721665027
10	Mirriam Kariuki	Environmentalist TWWDA	0702010853
See Attached Attendance Register for other Residents in Attendance			

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/7/9/2023	**Opening Prayer** The Chief called the meeting to order at 11.00 am and a word of prayer was led by Agnes Munyi.	**Chief**
MIN.2/7/9/2023	**Introductions** The Chief requested the Assistant Chief to introduce himself and later invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/7/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	**TWWDA**
MIN.4/7/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The	**TWWDA**

	officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	
MIN.5/7/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	**Residents**
MIN.6/7/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area is supplied water by KYEWASCO but continues to experience water shortages. The residents pointed out the some pipes are old and dilapidated hence many cases of leakages and long term lack of water • The residents stated that they did not have any objection on implementation of the proposed project **Modalities of Connection** • The resident enquired whether the resident with connections from other Water Service providers could connect to the proposed water project and whether the water would be metered. • The Environmentalist clarified that the water would be metered and anyone willing to be connected would fill an application through the WSP that will manage the proposed project upon completion.	**Residents**

	Pipeline Interference with Private Property • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project.	
MIN.7/7/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief and the Assistant Chief for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/7/9/2023	**Closing Prayers** There being no other business the meeting ended at 1.30pm with a word of prayer led by Stephen Muriuki.	**Resident**

Confirmation of True Record of the Meeting:

MIRRIAM KARIUKI	Smuty	22/9/2023
TWWDA Representative	**Signature**	**Date**
FOR. JIM R.G. NJERU		22/09/2023
Administration Representative	**Signature**	**Date**

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 6TH SEPTEMBER 2023 AT GITARE TEA BUYING CENTRE FROM 2.00 PM TO 3.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Lydia Nyaga	Chief Runyenjes West	0717738981
2.	Edward Mugendi	Gitare Resident	0798582290
3.	Joseph Mugambi	Gitare Resident	0728851911
4.	Peter Mugambi	Gitare Resident	-
5.	Elias Kithinji	Gitare Resident	-
6.	John Njeru	Gitare Resident	0791728177
7.	John Paul Kinyua	Gitare Resident	0725782717
8.	Francis Mutegi	Gitare Resident	0704532617
9.	Shadrack Njiru	Gitare Resident	0720570020
10	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
11	Evans Collins Kageche	Environmentalist TWWDA	0721665027
12	Mirriam Kariuki	Environmentalist TWWDA	0702010853

See Attached Attendance Register for other Residents in Attendance

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/26/9/2023	**Opening Prayer** The Chief called the meeting to order at 2.00 pm and a word of prayer was led by Elias Kithinji.	**Chief**
MIN.2/6/9/2023	**Introductions** The Chief, Madam Lydia Ngari introduced the Assistant Chief and later invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/6/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	**TWWDA**

MIN.4/6/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	TWWDA
MIN.5/6/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	Residents
MIN.6/6/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and did not have any objection on implementation of the proposed project **Irrigation Water Provision** • The resident enquired whether the proposed would have provision for irrigation. • The Environmentalist clarified that the proposed project targets to provide domestic water. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve and therefore would not interfere with private	Residents

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 8TH SEPTEMBER 2023 AT NTHAGAIYA CHIEF'S OFFICE FROM 11.00 AM TO 1.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Charles Kibe Irungu	Chief Kagaari South West	0727424287
2.	Cosme Wambugu	Nthagaiya Resident	0728576541
3.	Nthiga Njagi	Nthagaiya Resident	0720973081
4.	Reuben Ndwiga	Nthagaiya Resident	0722943677
5.	Emily Njiru	Nthagaiya Resident	0727990591
6.	Lucy Karimi	Nthagaiya Resident	0726022882
7.	Benedicta Ngungi	Nthagaiya Resident	0725346068
8.	Nancy Maregu	Nthagaiya Resident	0726064186
9.	Pielenga Njoki	Nthagaiya Resident	0725537419
10	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
11	Evans Collins Kageche	Environmentalist TWWDA	0721665027
12	Mirriam Kariuki	Environmentalist TWWDA	0702010853

See Attached Attendance Register for other Residents in Attendance

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/8/9/2023	**Opening Prayer** The Chief called the meeting to order at 11.00 am and a word of prayer was led by Reuben Ndwiga.	**Chief**
MIN.2/8/9/2023	**Introductions** The Chief invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/8/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA	**TWWDA**

	• Area of Jurisdiction • Mission and Vision	
MIN.4/8/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	TWWDA
MIN.5/8/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	Residents

MIN.6/8/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and did not have any objection on implementation of the proposed project **Modalities of Connection** • The resident enquired whether the resident with connections from other Water Service providers could connect to the proposed water project and whether the water would be metered. • The Environmentalist clarified that the water would be metered and anyone willing to be connected would fill an application through the WSP that will manage the proposed project upon completion. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve. **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project. **Coverage of the Water Project** • The resident of Kiangucu requested that the project considers a wide coverage within the location as many people within the location did not have enough water.	**Residents** **TWWDA**
MIN.7/8/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/8/9/2023	**Closing Prayers** There being no other business the meeting ended at	**Resident**

	1.30pm with a word of prayer led by Nancy Maregu.

Confirmation of True Record of the Meeting:

MIRRIAM KARIUKI — **TWWDA Representative**

Signature — **Signature**

22/9/2023 — **Date**

JIM R.G. NJERU — FOR: **Administration Representative**

Signature — **Signature**

22/9/2023 — **Date**

TANA WATER WORKS DEVELOPMENT AGENCY

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 5TH SEPTEMBER 2023 AT KIGAA MARKET, CHIEF'S OFFICE FROM 10.00 AM TO 1.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Kibaru Kiambuthu	Chief Runyenjes East	0721670993
2.	Agostino Ngagi	Kigaa Resident	0700141669
3.	John Mwaniki Kariuki	Mwenendega Resident	0723432888
4.	Teresiah Wanja	Gichiche Resident	0729976691
5.	Sarah Njiru	Gichiche Resident	0714019137
6.	Lillian Murugi	Mwenendega Resident	0729721000
7.	Isaac Njiru	Kigaa Resident	0728638336
8.	Samuel Nyaga	Kigaa Resident	0713949758
9.	Joshua Muchiri	Kigaa Resident	0728440594
10	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
11	Evans Collins Kageche	Environmentalist TWWDA	0721665027
12	Mirriam Kariuki	Environmentalist TWWDA	0702010853

See Attached Attendance Register for other Residents in Attendance

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/5/9/2023	**Opening Prayer** The Chief called the meeting to order at 10.00 am and a word of prayer was led by Lillian Murugi.	**Chief**
MIN.2/5/9/2023	**Introductions** The Chief, Mr. Kibaru Kiambuthu invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/5/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA • Area of Jurisdiction • Mission and Vision	**TWWDA**

MIN.4/5/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Embu County. The officer elaborated on the 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations are being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	TWWDA
MIN.5/5/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the resident. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed the TWWDA team during the exercise.	Residents
MIN.6/5/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area currently has other water service provider but the water supplied was still not enough. • The residents stated that they did not have any objection in regard to the proposed project and welcomed the project. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environment clarified that the proposed pipelines targets to utilize road reserve and therefore would not interfere with private property. **Interference with existing Water Projects in the area** • Residents enquired whether the proposed project	Residents

	would affect other existing water projects. The environmentalist explained that the proposed water project would not interfere with other water projects. The proposed project would be done independently and would coexist with other water projects within the area. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project.	
MIN.7/5/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Chief, the Assistant Chief and the Nyumba Kumi Leaders for helping the TWWDA team mobilize residents. The Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/5/9/2023	**Closing Prayers** There being no other business the meeting ended at 1.30pm with a word of prayer led by Samuel Nyaga.	**Resident**

Confirmation of True Record of the Meeting:

MIRRIAM KARIUKI	Smutf	22/9/2023
TWWDA Representative	**Signature**	**Date**
JIM NGICHERU		22/9/2023
FOR: **Administration Representative**	**Signature**	**Date**

MINUTES OF STAKEHOLDER ENGAGEMENT FORUM FOR PROPOSED RUNYENJES WATER SUPPLY PROJECT ON 11TH SEPTEMBER 2023 AT KATHARI CHIEF'S OFFICE FROM 11.00 AM TO 1.30 PM

In Attendance

S/NO.	NAME	ORGANISATION/DESIGNATION	CONTACT/EMAIL
1.	Saverion Ngingo	Assistant Chief Kathari Sublocation	0724421775
2.	Danson Kinyua	Kathageri Resident	0725085865
3.	John Eric Murimi	Kathari Resident	0724229395
4.	Cyprian Njeru	Kathari Resident	0713282033
5.	Japheth Njeru	Ngurara Resident	0722847854
6.	Sarah Njura	Kiaganare Resident	0718141598
7.	John Kariuki	Kathageri Resident	0799188563
8.	Douglas Joanah	Kathari Resident	0712680450
9.	John Zakayo	Kathageri Resident	0707639321
10	Jim Njeru	Sub County Water Officer Runyenjes	0741575983
11	Evans Collins Kageche	Environmentalist TWWDA	0721665027
12	Mirriam Kariuki	Environmentalist TWWDA	0702010853

See Attached Attendance Register for other Residents in Attendance

Agenda

The Agenda adopted for the meeting was as follows:-

1. Prayers
2. Introductions
3. Background Information
4. Purpose of the Engagement
5. Filling of Questionnaires
6. Matters Raised and Recommendations
7. AOB
8. Closing Prayers

Minutes	Discussions	Actions
MIN.1/11/9/2023	**Opening Prayer** The Assistant Chief called the meeting to order at 11.00 am and a word of prayer was led by Sarah Njura.	**Chief**
MIN.2/11/9/2023	**Introductions** The Assistant Chief invited the Sub county water officer Runyenjes who introduced team from TWWDA and the agendas of the day.	**Chief** **TWWDA** **Sub-County Water Officer**
MIN.3/11/9/2023	**Background Information** The Environmentalist from TWWDA explained to the residents on the background information of TWWDA as follows: • Mandate of TWWDA	**TWWDA**

	• Area of Jurisdiction • Mission and Vision	
MIN.4/11/9/2023	**Purpose of the Engagement** The Environmentalist explained to the residents that Tana Water Works Development Agency is conducting an ESIA for the proposed Construction of Runyenjes Water Supply Project in Runyenjes and its environs. The officer elaborated on the following: 1. Components of the proposed project including the intake, treatment works, distribution lines and storage tanks 2. Targeted area of supply 3. Aim of the project Additionally, the officer explained that as an important part of this exercise, consultations were being held with members of the immediate project community, interested and affected parties in order to obtain their views regarding the proposed project through questionnaires solely for submission of the report to NEMA. The Environmentalist through the Assistant Chief requested the residents to fill their opinions/concerns in the questionnaire provided.	TWWDA
MIN.5/11/9/2023	**Filling of questionnaires** The Environmentalist team administered the questionnaires to the residents. The Sub County Water Officer took the resident through with the questionnaire and helped in clarifying questions which the people did not understand. Various issues were raised by the residents and addressed by the TWWDA team during the exercise.	Residents
MIN.6/11/9/2023	**Matters Raised and Recommendations** **Acceptance of the Proposed Project** • Residents highlighted that the area experienced water shortages and did not have any objection on implementation of the proposed project **Modalities of Connection** • The resident enquired whether the resident with connections from other Water Service providers could connect to the proposed water project and whether the water would be metered. • The Environmentalist clarified that the water would be metered and anyone willing to be connected would fill an application through the WSP that will manage the proposed project upon	Residents TWWDA

	completion. **Pipeline Interference with Private Property** • The residents enquired whether the project would interfere with individual property. The Environmentalist clarified that the proposed pipelines targets to utilize road reserve. **Water Charges** • The residents recommended the water charges be user-friendly as many people struggle in paying water bills. **Employment for the locals** • Residents requested the contractor considers residents for employment during construction of the project. **Coverage of the Water Project** • The residents requested that the project considers a wide coverage within the location as many people within the location did not have enough water. **Irrigation Water Provision** • The resident enquired whether the proposed would have provision for irrigation. • The Environmentalist clarified that the proposed project targets to provide domestic water.	
MIN.7/11/9/2023	**AOB** **Vote of thanks** The TWWDA team thanked all resident for their cooperation throughout the meeting. The team also thanked the area Assistant Chief for helping the TWWDA team mobilize residents. The Assistant Chief also thanked the residents for attending the meeting.	**TWWDA** **Chief**
MIN.8/11/9/2023	**Closing Prayers** There being no other business the meeting ended at 1.30pm with a word of prayer led by John Kariuki.	**Resident**

Confirmation of True Record of the Meeting:

MIRRIAM KARIUKI — **TWWDA Representative**

Signature — **Signature**

22/9/2023 — **Date**

FOR: JIM R.G. MJOMA — **Administration Representative**

Signature — **Signature**

22/9/2023 — **Date**

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nema

Mazingira Yetu | Uhai Wetu | Wajibu Wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT LICENSE

License No: **NEMA/EIA/PSL/32375**

Applicaton Ref No: **NEMA/EIA/PSR/50588**

This is to certify that the Environmental Impact Assessment Project Report received from **Tana Water Works Development Agency.**

of
P.O Box 1292 – 10100, Nyeri.

submitted to the National Environment Management Authority in accordance with the Environmental Impact Assessment & Audit Regulations, 2003 regarding the:
Proposed Runyenje Water Supply Project.

whose objective is to carry on
Construction of a 15,000m^3 Runyenjes water supply project comprising approximate 8.8km of main lines with varying sizes and pressure ratings, 1No. diversion weir and 2No. intake chambers, 15,000m^3 full treatment works, 2No. 1,000m^3 RC storage tanks, 3No. 225m^3 masonry storage tanks, 5No. 500m^3 RC storage tanks, 2No. 135m^3 masonry storage tanks, 2No. 50m^3 masonry brake pressure tanks and associated works.

Located at
Along the Thuci River with the treatment works at Munyutu within Kanja North Sub-location, Runyenjes and Kyeni Constituency, Embu County.

has been reviewed and a license is hereby issued for the implementation of the project, subject to attached conditions.

Issue Date: **15/05/2024**

Signature
(Seal)

Director-General
The National Environment Management Authority.

P.T.O.

ISO 9001 : 2015 Certified

1 General Conditions

1.1 This project is for the construction of a 15,000m^3 Runyenjes water supply project comprising approximate 8.8km of main lines with varying sizes and pressure ratings, 1No. diversion weir and 2No. intake chambers, 15,000m^3 full treatment works, 2No. 1,000m^3 RC storage tanks, 3No. 225m^3 masonry storage tanks, 5No. 500m^3 RC storage tanks, 2No. 135m^3 masonry storage tanks, 2No. 50m^3 masonry brake pressure tanks and associated works along the Thuci River with the treatment works at Munyutu within Kanja North Sub-location, Runyenjes and Kyeni Constituency, Embu County.

1.2 The license shall be valid for 24 months (time within which the project shall commence) from the date hereof.

1.3 The Director General shall be notified of any transfer, variation or surrender of this license.

1.4 Without prejudice to the other conditions of this license, the proponent shall implement and maintain an environmental management system, organizational structure and allocate resources that are sufficient to achieve compliance with the requirements and conditions of this license.

1.5 The Authority shall take appropriate action against the proponent in the event of breach of any of the conditions stated herein or any contravention to the Environmental Management and Coordination Act, 1999 and regulations therein.

1.6 This license shall not be taken as statutory defence against charges of environmental degradation or pollution in respect of any manner of degradation/pollution not specified herein.

1.7 The proponent shall ensure that records on conditions of licenses/approval and project monitoring and evaluation shall be kept on the project site for inspection by NEMA's Environmental Inspectors.

1.8 The proponent shall submit an Environmental Audit report in the first year of occupation/operations/commissioning to confirm the efficacy and adequacy of the Environmental Management Plan.

1.9 The proponent shall comply with NEMA's improvement orders throughout the project cycle.

2 Construction Conditions

2.1 The proponent shall obtain special use permit from the Kenya Forest Service (KFS) prior to commencement of the construction of the Runyenjes water supply project across Thuci river in Mount Kenya Forest.

2.2 The proponent shall obtain the requisite approvals from the County Government of Embu, Water Resources Authority and all other relevant Authorities prior to commencement of works.

2.3 The proponent shall obtain abstraction permit from Water Resources Authority prior to commencement of in-water works at Thuci River.

2.4 The proponent in consultation with Kenys Forest Service shall develop and implement a comprehensive forest off-set plan to compensate the forest resources and associated ecosystem services affected by the proposed dam and water supply project.

2.5 The proponent shall put up a project signboard as per the Ministry of Transport and Infrastructure standards showing the NEMA EIA license number among other details.

2.6 The proponent shall seek authorization from the Water Resources Authority for the proposed water works and for water abstraction, prior to commencement of works.

2.7 The proponent shall ensure strict adherence to the provisions of Environmental Management and Coordination (Noise and Excessive Vibrations Pollution Control) Regulations of 2009.

2.8 The proponent shall ensure that any changes made to the designs are submitted to Water Resource Authority for checking and recording.

2.9 The proponent shall take necessary measures to rehabilitate, re-vegetate and landscape all disturbed areas by planting suitable tree species buffer around the affected areas.

2.10 The Proponent shall establish and maintain a comprehensive labour management plan during the entire project cycle. This plan should be designed to protect the safety and human rights of all workers at all times. It must incorporate occupational health and safety strategy, workman compensation insurance policies, a system for addressing workers grievances, measures for preventing gender-based violence, as well as a comprehensive plan for preventing sexual harassment, exploitation and abuse.

2.11 The proponent shall ensure strict adherence to the Occupational Safety and Health Act, 2007.

2.12 The proponent shall ensure relocation, compensation and restoration of livelihoods for any Project Affected Persons and develop a consultative plan for emerging issues and Grievance Redress Mechanisms as shall be prescribed in the Resettlement Action Plan.

2.13 The proponent shall continually consult with the County Government of Embu to ensure that pertinent issues are resolved amicably, including equitable sharing of the abstracted water to ensure project sustainability.

2.14 The proponent shall ensure that workers are provided with adequate Personal Protection Equipment, sanitary facilities as well as adequate training.

2.15 The proponent shall ensure strict adherence to the provisions of the National Construction Act of 2011.

2.16 The proponent shall ensure that no excavated debris or other forms of wastes are disposed of or deposited in the rivers.

2.17 The proponent shall ensure that all excavated material and debris is collected, re-used and where need be, disposed of as per the Environmental Management and Coordination (Waste Management) Regulations of 2006.

2.18 The proponent shall ensure strict adherence to the provisions of the Environmental Management and Coordination (Air Quality) Regulations of 2014.

2.19 The proponent shall ensure that activities are undertaken during the day between 0800 hours and 1700 hours and that transportation of construction materials to and from site are undertaken during weekdays at off peak hours.

2.20 The proponent shall ensure that the development adheres to zoning specifications issued for development of such a project within the jurisdiction of the County Government of Embu with emphasis on approved land use for the area.

2.21 The proponent shall ensure strict adherence to the Environmental Management Plan developed throughout the project cycle.

3 Water Supply Operational Conditions

3.1 The proponent shall obtain a water permit from Water Resources Authority to operate the dam and water supply system. The proponent shall adhere to the water permit conditions and guidelines.

3.2 The proponent shall adhere to conditions issued by Water Resource Authority for dam wall integrity monitoring and maintenance, in-water works, water flow monitoring and water use/ abstraction permits.

3.3 The proponent shall provide Water Resource Authority with the work plan, and the inspection schedule ensuring that during the site meetings, Water Resource Authority technical staff is/or are involved to enhance adherence to design for safety purposes.

3.4 The proponent being a water permit holder shall establish and maintain a comprehensive Dam Safety Monitoring and Reporting Program for the duration of dam operation.

3.5 The proponent shall ensure that the Dam Safety Monitoring and Report Program continuously assesses and mitigates potential environmental impacts related to dam safety, ensuring the protection of surrounding and downstream ecosystems and human communities.

3.6 The proponent shall develop and submit a Dam Safety Plan for approval by the Water Resources Authority and National Construction Authority prior to commencing dam operation. The Dam Safety Plan shall include a detailed description of the monitoring and reporting protocols, the instrumentation used, and the criteria for safety assessments.

3.7 The proponent shall continuously monitor and take corrective actions on the following parameters related to dam safety:

a) Water level in the reservoir and downstream areas.

b) Structural integrity and stability of the dam.

c) Flow rates and sediment transport downstream of the dam.

d) Seismic activity within the dam vicinity.

e) Climate conditions affecting dam operations.

f) Any other parameters relevant to dam safety, as specified by the regulatory authority.

3.8 The proponent shall submit regular dam safety reports to the Water Resources Authority, including but not limited to quarterly assessments of the Dam Safety Monitoring and Report Program effectiveness.

3.9 In the event of any safety concerns or incidents, the proponent shall immediately notify the Water Resources Authority and trigger the Emergency Response Plan to prevent and control any eventuality with immediate effect.

3.10 The proponent shall develop and maintain an Emergency Response Plan for potential dam safety incidents.

3.11 The Emergency Response Plan shall include clear procedures for notifying and evacuating affected communities, as well as mitigating potential environmental impacts in case of an emergency.

3.12 The proponent shall maintain records of all dam safety monitoring data, reports, and any mitigation measures taken. These records shall be made available to the regulatory authority upon request.

3.13 The proponent shall ensure all wastes generated from the development are segregated in colour coded bins in line with the National Solid waste colour code and all recyclable materials recovered for reuse recycling as per the requirements of Sustainable Waste Management Act, 2022 and its subsidiary legislations throughout the project cycle.

3.14 The proponent shall ensure that sanitary facilities are constructed at suitable places so as to avoid contamination of water bodies and the subsequent water-borne diseases/vectors.

3.15 The proponent shall ensure that the chemicals used for water treatment (such as Alum) are appropriately handled and disposed of as provided for in their respective Material Safety Data Sheets.

3.16 The proponent shall ensure that all waste water is treated and disposed as per the standards set out in the third schedule of the Environmental Management and Coordination (Water Quality) Regulations of 2006.

3.17 The proponent shall ensure that all drainage facilities at the water supply and household level are fitted with adequate functional oil water separators and silt traps.

3.18 The proponent shall ensure that all the operational equipment used are well maintained in accordance with the Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations of 2009.

3.19 The proponent shall ensure that all solid waste is handled in accordance with the Environmental Management and Coordination (Waste Management) Regulations of 2006.

3.20 The proponent shall ensure that all workers are well protected and trained as per the Occupational Safety and Health Act of 2007.

3.21 The proponent shall comply with the relevant principal laws, by-laws and guidelines issued for development of such a project within the jurisdiction of the County Government of Embu, Kenya Forest Service, Ministry of Health, Kenya Rural Roads Authority, Water Resource Authority, Ministry of Water and Sanitation, Ministry of Land, Housing and Urban Development, Kenya Wildlife Service, Ministry of Agriculture, Livestock, Fish and Irrigation and other relevant Authorities.

3.22 The proponent shall ensure that environmental protection facilities or measures to prevent pollution and ecological deterioration such as soil erosion control, functional storm drainage, catchment protection, river pollution prevention, and equitable water supply mechanisms are designed, constructed and employed simultaneously with the proposed project.

4. Notification Conditions

4.1 The proponent shall seek written approval from the Authority for any operational changes under this license.

4.2 The proponent shall ensure that the Authority is notified of any malfunction, emergency of any system within 12 hours on the NEMA hotline No. **0741101100/0736101100** and mitigation measures put in place.

4.3 The proponent shall keep records of all pollution incidences and notify the Authority within 24 hours.

4.4 The proponent shall notify the Authority in writing of its intent to decommission the facility **three (3) months** in advance.

5. Decommissioning Conditions

5.1 The proponent shall ensure that a decommissioning plan is submitted to the Authority for approval at least three (3) months prior to decommissioning.

5.2 The proponent shall ensure that all pollutants and polluted material is contained and adequate mitigation measures provided during the phase.

The above conditions will ensure environmentally sustainable development and must be complied with.