Government of Kenya

Tana Water Works Development Agency

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

FOR

THE PROPOSED WATER SUPPLY DISTRIBUTION – LAST MILE CONNECTIVITY FOR CHOGORIA WATER SUPPLY PROJECT LOCATED IN MAARA SUB COUNTY IN THARAKA-NITHI COUNTY.

COMPREHENSIVE PROJECT REPORT (CPR)

Proponent:	**Firm of Experts (Reg. No. 12508)**
Chief Executive Officer Tana Water Works Development Agency P.O. BOX 1292 – 10100 **NYERI KENYA** Tel: 061-2032282	**Greenville Nexus International Ltd** P. O. Box 50173-00100, Nairobi. Tel: 0700 130 101/0725928477 Email: info@greenvilleint.com/greenvilleint@gmail.com Suraj Plaza Suite 504 along Limuru Road Website; www.greenvilleint.com

March 2024

FACT SHEET

Project name	Proposed water supply distribution – Last Mile Connectivity (LMC) project for Chogoria Bulk Water supply
Assignment Name	Environmental and Social Impact Assessment (ESIA) - Comprehensive Project Report
Location	Maara Sub County in Tharaka-Nithi County. Tharaka-Nithi County
Project Description	Project infrastructure will involve the construction of the following components: • **Water Lines** (i) Kianjagi – Katharaka – Igwanjau pipeline (9.9km) (ii) Karaa – Kiriani pipeline (2.45km) (iii) Katharaka junction – Mukui pipeline (8.01km) (iv) Nguruki – Magutuni pipeline (5.64km) (v) Kieganguru – Kiraro pipeline (1.67km) (vi) Chogoria town pipelines (0.74km) - Banana Line (290m) - Kanywee Line (450m) (vii) Nguruki - Keeria Market pipeline (0.835km) (viii) Keeria – Nguruki inner pipeline (2.8km) (ix) Kilimo Talii - Wiru pipeline (3.7km) (x) Mutindwa market pipeline (0.67km) (xi) Kairuni – Polepole pipeline (0.91km) • **Break Pressure Tanks** 3 No Pressure tanks will be constructed. 2No along the Katharaka – Igwanjau Water Main and 1 No along the Mukui Water Main.
Project Cost	**Two hundred and seventeen million three hundred and eighty-one thousand seven hundred and seventy shilling and seventy-three cents (Ksh. 217,381,750.73)**
Address of the Proponent	Tana Water Works Development Agency P.O. BOX 1292 – 10100 **NYERI KENYA** Tel: 061-2032282

CERTIFICATION

For and on behalf of:

TANA WATER WORKS DEVELOPMENT AGENCY

P.O. BOX 1292 – 10100 NYERI KENYA

This Environmental and Social Impact Assessment (ESIA) Comprehensive Project Report was prepared in accordance with the Environmental Management and Coordination Act (EMCA) 1999 and the Environmental Impact Assessment and Audit Regulations 2003 (revised 2015 & 2019) to meet the statutory requirements for the implementation of projects under schedule II. We, the undersigned, confirm that the contents of this report are a true representation of the ESIA process for ***the proposed water supply distribution – last mile connectivity for Chogoria water supply project located in Maara Sub County in Tharaka-Nithi County.***

FIRM OF EXPERTS

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Lead Expert: ..... Date: 28-03-2024

Signature

FOR PROPONENT

TANA WATER WORKS DEVELOPMENT AGENCY

Proponent Representative Name ..... Eng. Philip Gichuki

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Signature: ..... **Date**: 28/03/2024

Disclaimer

This Environmental Impact Assessment Report is being submitted in accordance with the terms and conditions of contract in respect of provision of consultancy services. It has been carried out in full observance of the EIA regulations and in compliance with the Environmental.

EXECUTIVE SUMMARY

Project Overview

Background

The Kenyan Government, in partnership with the Tana Water Works Development Agency (TWWDA), financed the Chogoria Bulk Water Supply Project with a loan from the African Development Bank, under the Kenya Towns Sustainable Water Supply and Sanitation Program (KTSWSSP). Launched in 2019 and completed in 2023, this initiative aimed to enhance water and wastewater services in several towns, thereby fostering economic growth, improving quality of life, and building climate resilience. Officially inaugurated on July 13, 2023, the project now provides clean water to approximately 4,000 people across 1,000 households in Chogoria and surrounding areas, including key institutions like Chuka University (Chogoria Campus), Chogoria Girls High School, and Chogoria PCEA Hospital.

With ambitions to extend services to over 160,000 individuals, the Ministry of Water, Irrigation, and Sanitation is focusing on Last Mile Connectivity to connect more consumers to the Chogoria Water Supply Project, aiming to alleviate water scarcity and enhance community welfare.

Specific objectives

The proposed water supply distribution – Last Mile Connectivity for Chogoria Water Supply Project will improve the lives of Chogoria town residents and further areas within Chogoria by.

- Improving access to safe, reliable, sustainable, and affordable water supply services through increased connectivity of consumers to the completed Chogoria Water Supply Project.
- To provide water to extended environs within the supply area of Chogoria town.
- Boosting the capacity of NIWASCO by promoting increased consumer connections thus increasing revenue for the utility company and operators through the increased customer base.
- Promoting economic growth of the area by encouraging more developments and investments.
- Improving the overall health of the population by reducing infection of waterborne diseases and could even assist communities in dealing with natural disasters and pandemics by providing clean water to the end users.
- Improving hygiene standards of the area by encouraging better hygiene behaviours such as hand washing and general cleanliness.

Project Components

This design criteria which was heavily dependent on the Ministry of Water and Irrigation, Practice manual for water supply services in Kenya as well as world standards and codes referenced for the design of water supply infrastructure. The project has the following components:

- Population and water demand projection
- Design of water mains
- Design of break pressure tanks
- Pipe material selection
- Valve chambers

Table 0-1: Summary of the project components

Water Lines	Kianjagi – Katharaka – Igwanjau - 9.9 km
	Karaa – Kiriani pipeline - 2.45 km
	Katharaka junction – Mukui pipeline - 8.01 km
	Nguruki – Magutuni - 5.64 km
	Kieganguru – Kiraro - 1.67 km
	Chogoria town - 0.74 km
	Nguruki - Keeria Market - 0.835 km
	Keeria – Nguruki inner - 2.8 km
	Kilimo Talii – Wiru - 3.7 km
	Mutindwa market - 0.67 km
	Kairuni – Polepole - 0.91 km
Pressure tanks	2No along the Katharaka – Igwanjau Water Main
	1 No along the Mukui Water Main

Project Activities

The project will be implemented in two stages which include preconstruction and construction phase.

(i) Preconstruction phase

Project preconstruction activities are important in the lifecycle of the project. This phase sets the groundwork for successful project execution, ensuring that all necessary preparations are made before actual construction begins. The key activities involved in the preconstruction phase are:

- Project feasibility study and preliminary design

- Design, cost estimation and tender documents preparation
- Permitting and Approvals
- Procurements

(ii) Construction Phase

- Preparation and transportation of pipe and other equipment and facilities.
- Clearance of vegetation within pipeline Right of way.
- Pipeline installation through cut and fill trenching.
- Pipeline welding and finishing.
- Pre-commissioning and commissioning, including hydro-testing.
- Construction camps for pipeline workers; and Offices and other facilities.

Project Alternative Analysis

This section 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 primary considerations for these alternatives include the location of the project, its design, and technological scale. It's crucial that these alternatives are not only economically viable but also minimize negative impacts on the environment, society, health and safety, and avoid unnecessary delays.

Choosing the **'No Project Option'** for the proposed water supply project in Chogoria means keeping everything unchanged. Favored for its minimal environmental impact, this option, however, lets numerous issues persist for the local populace. Residents will continue to face difficulties accessing clean and dependable water, leading to no improvement in living standards, employment, or economic development. The region will miss out on opportunities for growth, employment generation during the project's construction and operation phases, and face unregulated water tariffs. Moreover, inefficient and overlapping water networks will remain, increasing the financial burden and the risk of waterborne diseases. Essentially, while environmentally cautious, this option neglects critical needs for development and public health, highlighting the necessity for a balanced approach that addresses both environmental conservation and community well-being.

The **proposed water supply project** in Kenya focuses on delivering significant social and economic benefits by improving safe water access, aligning with TWWDA's strategic goals and contributing to national and international development agendas like Kenya's Vision 2030, Sustainable Development Goal 6, and others. Key considerations for the project include selecting a project location with minimal utility congestion, environmental impact, and traffic disturbance, ensuring the water mains and pipeline extensions are laid within road reserves or adjacent streets to reduce environmental and social disruption.

Material selection prioritized HDPE pipes for their durability, cost-effectiveness, and lower transportation and installation impacts, particularly suitable for the varied Kenyan terrain. Steel pipes are designated for challenging sections, such as steep or rocky areas and crossings, to ensure reliability and longevity. The project meticulously plans for pipe coverage and slope to optimize performance and minimize maintenance.

This comprehensive approach to planning and material selection ensures the project's viability and sustainability, addressing critical water supply issues while minimizing environmental impacts. Through strategic infrastructure investment, the project aims to enhance water quality and availability, support economic development, and improve living standards, fulfilling key aspects of global and national development objectives.

Project Site Descriptions

Project Location

The proposed water supply distribution – Last Mile Connectivity (LMC) project for the Chogoria Water Supply Project is located in Maara Sub County in Tharaka-Nithi County **Figure 0.1.** Tharaka-Nithi County is one of the forty-seven (47) counties in Kenya created by the Constitution of Kenya, 2010, and is located to the East of Mt Kenya. The project areas is an agricultural hub with 80% of the population engaging in farming activities, focusing on crops such as tea, coffee, maize, beans, bananas, Sukuma wiki (kale), cowpeas, and cabbages, supported by micro-irrigation. The presence of multiple tea and coffee factories underscores the area's strong agricultural economy.

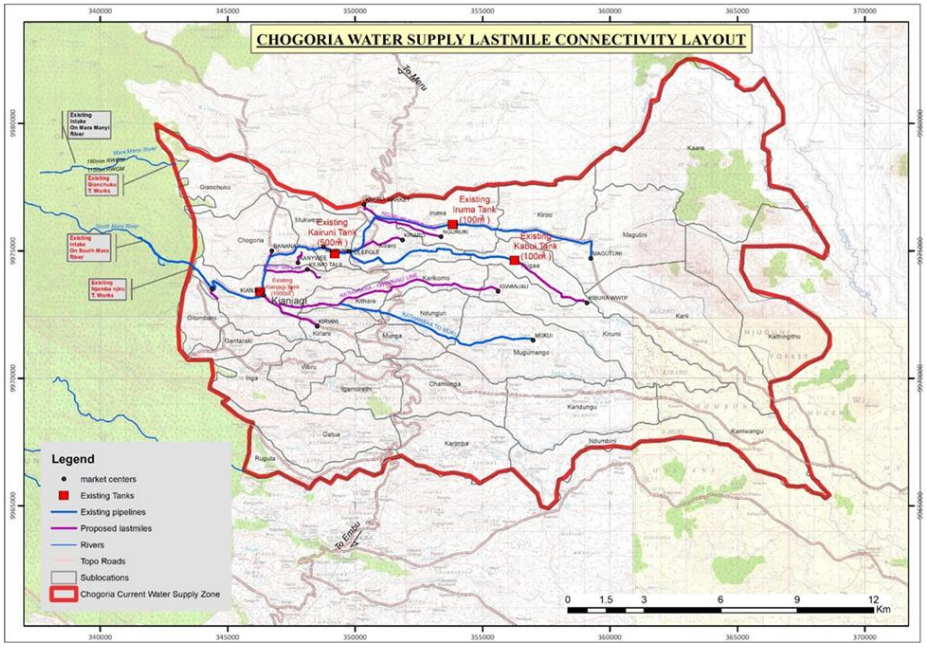

Figure 0.1: Proposed Project Location

Baseline Environmental and Social Conditions

The temperatures in the highland areas range between 14°C to 30°C while those of the lowland area range between 22°C to 36°C. Some areas in the lower region experience temperatures of up to 40°C especially during the dry season. The county has a bi-modal rainfall pattern with the long rains falling during the months of April to June and the short rains in October to December. The short rains are more reliable than the long rains. The rainfall ranges from 2,200mm to 500mm with the high-altitude areas experiencing reliable rainfall, middle areas receiving moderate rainfall, while the lower areas receive low, unreliable and poorly distributed rainfall.

The geology of the project area is highlands which is characterized by well drained, extremely deep dusky red to dark reddish brown, friable clay with acid humic topsoils. In the lowlands away from Mt. Kenya, the soils are mixture of well drained, shallow to very deep dusky red to dark brown, friable, rock, boulder, and stony loam to clays.

The topography of the county is greatly influenced by the Mt. Kenya volcanic activity creating 'V' shaped valleys within which the main tributaries of River Tana originate and flow eastwards. These rivers include: Thuci, Mara, Nithi, Mutonga, Naka, Ruguti, Kathita and Kithinu. Other rivers originate from Nyambene Hills, including Thingithu, Thanantu, Thangatha, and Ura rivers among others. These rivers provide water for domestic use and small holder irrigation schemes across the county.

Institutional and legal framework

Project management Entities (PIE)

Table 0-2: Summary of PIE

Institution	Management Role
Tana Water Works Development Agency/Nithi Water and Sanitation Company	TWWDA in conjunction with NIWASCO the proponent, will be charged with the responsibility of ensuring that the proposed development has been put up in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender documents, selection of renowned environmentally conscious contractors and supervision to ensure that the objectives of this ESMMP are met.
National Environment Management Authority (NEMA)	NEMA's responsibility is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government of Kenya in the implementation of all policies relating to the environment.
The Contractor	The persons/firms contracted to construct the proposed water supply distribution – Last Mile Connectivity for Chogoria Water Supply Project will

	be required to comply with the requirements of the ESMMP within this report. To ensure strict compliance environmental specifications of this ESMMP should form part of the contract documents
Consultant	The sourced consultant will have to ensure that the proposed ESMMP is up to date and is being used by the contractor. Periodic audits of the ESMMP will have to be done to ensure that its performance is as expected.
Tharaka Nithi County Government	The relevant departmental officers in Tharaka Nithi local authorities should be called upon where necessary during Project implementation to provide the necessary permits and advisory services to the Project implementers.

Policy, Legal and Regulatory Framework

The Kenya Government policy on all new projects or activities requires that an environmental impact assessment be carried out at the planning stages of the proposed undertaking to ensure that significant environmental and social impacts are taken into consideration during the planning/design, construction, operation and decommissioning of the facility. The project underwent screening process which identified the proposed Project as ***Medium Risk Project*** as per the 2nd schedule of Environmental Management and Coordination Act (EMCA Cap 387) – amendment via legal notice no. 31 – April 2019. Additionally, the project also falls under category 2 of the Africa Development Bank Environmental and Social Safeguards Policies as defined in the Bank's Operational Safeguards (OSs). The project does not lead to displacement of Project Affected Persons (PAPs). This report has been prepared for submission pursuant to Regulation 7 (4) of the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 of the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019.

Other legal requirements for the proposed project include.

• Constitution of Kenya 2010 • Environment Management and Coordination (EMCA 2015) • Environmental Impact Assessment and Audit) Regulations, 2003 • Environmental Management & Coordination (Water Quality) Regulations, 2006 • Waste Management Regulations, 2006 • Noise and Excessive Vibration Pollution (Control) Regulations, 2009	• Land Act 2012 • Water Act 2016 • County Government Act No. 17 of 2012 • Physical Planning Act 1996 (286) • Urban Areas and Cities Act 2011 • Occupational Health and Safety Act (OSHA 2007) • Public Health Act (Cap.242) • HIV and AIDS Prevention and Control Act 2011 • Sexual Offences Act 2006

• Environmental Management and Coordination (Air Quality Regulations 2014 • National Gender and Equality Commission Act 2011 • Public participation bill of 2016	• Child Rights Act (Amendment Bill) 2014 • Labour Relations Act 2012 • Energy Act, 2006 • The Penal Code CAP 63 • County Government Act, 2012

The African Development Bank (AfDB)

The African Development Bank (AfDB) Integrated Safeguards System (ISS) are designed to promote the sustainability of project outcomes by protecting the environment and people from the potentially adverse impacts of projects. ***Table 0-3*** presents the applicable AfDB Integrated Safeguard System and their relevance to the proposed project.

Table 0-3: Applicable AfDB Integrated Safeguard System and their relevance

Policy	Relevance
OS 1: Environmental and Social Assessment	The Project components will trigger OS 1, the assessment identified that According to OS 1 screening provisions, Chogoria Water Supply Infrastructure is a Category 2, the project is likely to have detrimental site-specific environmental and/or social impacts that are less adverse and largely reversible, and readily minimized by applying appropriate management and mitigation measures. Mitigation measures for impacts identified are detailed in chapter 6 of this report.
OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation	The policy aims to avoid involuntary resettlement where feasible, or minimize resettlement impacts where involuntary resettlement is deemed unavoidable after all alternative project designs have been explored. For Chogoria Water Supply Infrastructure, displacement not triggered as pipelines are designed to follow road Right of Way (RoW) and River Riparian- However, impact crops/trees / structures/fences will be identified along the easement to be used by water pipelines.
OS 3: Biodiversity, Renewable Resources and Ecosystem Services	The safeguard aims to conserve biological diversity and ecosystem integrity by avoiding or, if avoidance is not possible, reducing and mitigating any adverse environment and social risks., For proposed project works might result in loss of vegetation diversity which provide habitat to wildlife and other related

Policy	Relevance
	ecosystems benefits. However, the impacts to biodiversity by the above-described works will be less significant as detailed in Chapter 7 of this report.
OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency	The Project shall utilize raw materials both during construction and operation phase that could result to pollution of biophysical environment if not handled appropriately. Appropriate mitigation measures for likely waste to be generated by the Project are detailed in Chapter 7 of this report. Project activities shall not result to significant amount of greenhouse gases, EMSP prepared for operation phase provides for measures to be adopted to ensure efficient function of the Plant consequently reducing emission of methane and hydrogen sulphide gases. Also, the Project design has ensured that sewer flows through by gravity hence reducing the need for pumping.
OS 5: Labor Conditions, Health and Safety	The Project shall involve workers both during construction and operation phases of the project. This policy read together with OSHA 2007 shall form integral instruments to be used in ensuring that health, safety and working conditions of both works and community is safeguards. The Labor Relations Act 201 will be applied by labor force on site in addressing disputes related to working conditions.

Stakeholder Consultations

Stakeholder consultations and public participation were conducted during the ESIA study with the following objectives:

- Disseminate and inform the public and stakeholders about the project with special reference to its key components and description.
- Create awareness among the public on the need for the ESIA for the proposed project.
- Gather comments, suggestions, and concerns of the interested and affected parties.
- Incorporate the information collected in the ESIA.
- Build community consensus and acceptance of the proposed project.

Public participation was conducted through the public consultative meetings (see **Table 0-4** for the meeting details) and admission of questionnaires to allow for systematic understanding and interaction of the project beneficiaries, neighbors, local community members/ surrounding enterprises and any other would be affected/ interested parties.

Table 0-4: Details of the meetings held

Number of meetings held	2			
Venue	Chogoria chief camp		Kairuni chief's office	
Date	14th February 2024		15th February 2024	
Participants	Males -7	Females -1	Males -33	Females - 6

Overall, the stakeholders' views are summarized in **Table 0-5**. The minutes of public participation meetings and lists of attendance have been attached in *Appendix 1 and 2* of this report.

Table 0-5: Summary of the baraza outcome

Issues raised	**Brief explanation**	**Technical Team Response**
Employment	Fences and roads/paths damaged during excavation	The contractor shall endeavour to restore the fence or any damaged structure back to its original form as much as possible.
Local work force	Need for employment during the Project	In a bid to grow the economy of the project area, the contractor shall be keen on hiring locals especially for the unskilled labour.
Compensation of PAPs	Fear of lack of compensation	Compensation for all persons that'll be directly affected by the projects shall be done diligently following the Resettlement Action plan that shall be formulated by the consultant.
Repair and maintenance	If a person detects a leakage from the proposed pipeline during the project operation phase, they can report the leakage to a designated reporting center or authority.	After construction and successful commissioning of the water and sewer project, the TWWDA shall hand over the project to the area Water Service Provider; NIWASCO any reports pertaining leakage or system failure shall be reported to their field officers who will in return carry out quick repairs. The area water provider shall provide hotline numbers on which they can be reached.
Water	High water rates of community water proposed cheaper rates. Need for repair of damaged water pipelines during construction	Rates reviewed by Water Company are expected to be reasonable. Water lines damaged during construction will be restored as immediate as possible.

Environmental and social management plan (ESMP)

Positive impacts

(i) **Improved Access to Clean Water**: The project will ensure a reliable and clean water supply, significantly enhancing the community's health and quality of life by reducing the incidence of waterborne diseases.

(ii) **Economic Growth**: By providing a consistent water supply, the project will support local agriculture, industry, and other economic activities, contributing to overall economic development.

(iii) **Employment Opportunities**: The construction and maintenance of the water supply infrastructure will create jobs for residents, both during the implementation phase and operations.

(iv) **Educational Benefits**: With easier access to clean water, children, especially girls who often bear the burden of fetching water, can spend more time in school, improving educational outcomes.

(v) **Environmental Conservation**: A managed community water supply can lead to more sustainable water usage patterns and protect local ecosystems from overexploitation.

(vi) **Enhanced Community Health**: Access to clean water reduces the prevalence of waterborne diseases, improving overall community health and reducing healthcare costs.

(vii) **Improved Sanitation**: The project often goes hand in hand with improved sanitation facilities, further enhancing public health and environmental conditions.

(viii) **Resilience to Climate Change**: By securing water resources, communities can be more resilient to the impacts of climate change, such as droughts or floods.

(ix) **Time Savings**: Reduced time spent on fetching water from distant or unreliable sources allows for more productive uses of time, benefiting individual and community development.

Negative impacts and proposed mitigation measures

Although there are a number of justifications of why the project should be developed in the area, there are various negative impacts raised that affect the environment and social well-being and therefore the proposed mitigation measures will reduce the adverse impacts. This will assist the contractor and proponent to check impact verses the proposed mitigation measures in the various levels/phases of the proposed project. The following Table summarizes these Impacts and the mitigation measures.

Table 0-6: Impacts and proposed mitigation measures

Associated Impact	Proposed Management Actions
Construction Phase	
Vegetation Clearing, Soil Erosion and Siltation	• 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.

Associated Impact	Proposed Management Actions
	• 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. • Sensitize workers and enable them to properly handle concrete spillages or waste cement.
Air Pollution Impacts	• Maintain construction equipment at high operational conditions such as to control emissions into the air. • 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. • It will be necessary to notify the immediate neighborhoods on the potential odors during the excavations. The period should, however, be kept as short as possible (odour generation may not be fully eliminated during the period) • Use of sprinklers to regularly water construction site, this suppresses the dust menace at construction sites. • People working in the sites with dust emissions to use dust masks to prevent respiratory infections.
Noise Pollution	• Avoid nighttime construction when noise is loudest. • Conduct periodic noise measuring and monitoring to determine levels and extent of harmful noise. • Clearly label the high noise areas. • Provide PPE personal protective equipment (PPE) including masks, goggles, scarfs, boots and overalls among other protective clothing to persons operating within or visit identified high noise areas. • To meet noise level requirements, the equipment should be equipped with standard noise attenuation features. Machines that exceed acceptable noise limits should be equipped with silencers or lagging materials or specially designed acoustic enclosures. • Inform residents when construction activities are likely to generate excessive noise in order to minimize disruption to local residents.

Associated Impact	Proposed Management Actions
	• Sensitize truck drivers to avoid hooting especially when passing through sensitive areas such as churches, residential areas, and hospitals.
Water Resources Pollution	• 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.
Drainage and Hydrology Disruptions	• Excavated channels to follow contours to avoid interference with surface drains. • Where the drainage system and pavements might be interfered with, restoration to be done after construction activities are completed. • Whenever necessary, drains along the construction line are directed towards existing drainage systems to cater for storm water during the rains. However, construction should be carried out during a dry season and should take the shortest period possible. • Utilize excavated soil to level excavated ground where necessary and cover the water and sewer lines that will have been laid in the ground. • 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. • Ensure compliance with environmental laws.
Interruption of Existing Infrastructure	• Formal request for permission to cross, break in and lay the pipelines should be sought from affected property owners; and • A work plan with clear responsibilities for each party should be developed to ensure smooth execution of the construction.
Waste Generation Impacts (Liquid and Solid)	**(i) Solid Wastes** • The contractor shall develop a comprehensive waste management plan prior to commencement of works. • Properly labelled and strategically placed waste disposal containers shall be provided at all places of work.

Associated Impact	Proposed Management Actions
	• Recycling of construction material shall be practiced where feasible e.g., containers and cartons. **(ii) Liquids Wastes** • Water containing pollutants such as concrete or chemicals should be directed to a conservancy tank for removal from the site where applicable. • Potential pollutants of any kind and form shall be kept, stored, and used in such a manner that any escape can be contained. • Wash areas shall be placed and constructed in such a manner to ensure that the surrounding areas including groundwater are not polluted. • No grey water runoff or uncontrolled discharges from the site or working areas to any. **(iii) Hazardous Wastes** • Ensure proper handling of lubricants, fuels and solvents while maintaining the equipment. • Any chemical or fuel spills shall be cleaned up immediately. The spilt liquid and clean- up material shall be removed, treated, and transported to an appropriate site licensed for its disposal. • A safety and emergency response plan will need to be developed for all operations with emphasis on the protection of the environment prior to start up.
Resettlement Impacts	• Prepare a Resettlement Action Plan (RAP) for purposes of compensation of likely assets and sources of livelihood for Project Affected Persons.
Social Risks	**(i) Labor Influx Effects** • Effective community engagement and strong grievance mechanisms on matters related to labor. • Effective contractual obligations for the contractor to adhere to the mitigation of risks against labor influx, the contractor should engage a local community liaison person as provided for in Chapter 6 • Proper records of labor force on site while avoiding child and forced labor. • Comply to provisions of WIBA 2007 • Develop and implement a children Protection Strategy, this strategy will ensure that no child under the legal age of 18 years in employed to the Project. **(ii) Human Right and Gender Inclusivity**

Associated Impact	Proposed Management Actions
	• Gender Inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. • Failure to protect Human Risk areas Associated with, Disadvantaged Groups, Interfering with Participation Rights, and interfering with Labor Rights **(iii) Child Protection** • Develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project. • All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behavior. • Children under the age of 18years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014 **(iv) Prevalence of Communicable Diseases** • HIV/AIDS Awareness Program and other communicable diseases to be instituted and implemented as part of the Contractor's Health and Safety Management Plan to be enforced by the Supervising Engineer. • This will involve periodic HIV/AIDS and other communicable diseases Awareness Workshops for Contractor's Staff. • Access to Contractor's Workforce Camps by outsiders to be controlled. • Contractor to provide standard quality condoms to personnel on site.
Occupational Health and Safety	• The proponent will be required to commit the contractor to Site Occupational Health and Safety rules and regulations as stipulated in the OHSA, 2007. • ▪ The Project Contractor will be required to provide appropriate personal protective equipment and a safe and healthy environment for construction workers. • There should be a crisis management team to administer First Aid to injured persons. • ▪ The Project Contractor should test and approve equipment before use. • ▪ The Project Contractor should train workers on how to use various PPE and safe use of machinery
Operation phase	
Wayleave encroachment	• Mapping and installation of beacons to which illustrate the width of the pipeline reserve.

Associated Impact	Proposed Management Actions
	• 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 importance of not interfering with way leaves and public reserve land.
Water wastages	• 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 area.
Illegal connection	• This will require constant inspection by NIWASCO officials and installation of leak and burst detectors at designated areas along the pipeline. • Conduct public sensitization programs on importance does not interfere with the water pipeline and the need to seek official water connection from NIWASCO
Increased water use	• Effective measures, such as promoting water conservation practices and enhancing the system's efficiency, are crucial to mitigate the impact of higher demand and maintain the balance between supply and consumption
Decommissioning Phase	
Loss of Revenue and Employment Opportunities	• NIWASCO to provide alternative water sources for the community • The employees working in Operations, repair and maintenance to be redeployed
Soil erosion	• Plant grass and other native vegetation along soil filled trenches. • Maintain soil conservation works until the site stabilizes.
Generation of waste material	• Careful dismantling to ensure materials remain as re-usable as possible. • Selling or donating the re-usable or recyclable materials to avoid waste. • Cleaning and proper site rehabilitation by adhering to a NEMA approved Decommissioning plan

Associated Impact	Proposed Management Actions
Occupational Health and Safety	• Use of standard operating procedures for all machinery and equipment • Ensure Material Safety Data Sheets (MSDS) for all chemicals used in the field are provided. • Provide appropriate personal protective equipment (PPE) • Redesign manual processes and routine work tasks to reduce heavy lifting/repetitive activities. • Train workers in general safety procedures including first aid. • Use designated routes for machinery and personnel
Impact on Socio-Economic Activities	• Notification to local community members whose farms have encroached on the reserve will be notified of pending decommissioning activities
Loss of Flora and Fauna	• The proponent shall ensure minimal clearing of vegetation. • Transportation of decommissioning wastes to be done through the existing local roads • Sensitization of decommissioning workforce on environmental conservation and ecological protection • Re-vegetation of cleared areas with indigenous vegetation specie

Project Specific EOHS clauses

When drafting clauses for Environment, Occupational Health, and Safety (EOHS) in works contracts, it's crucial to be specific and comprehensive to ensure compliance with both local laws and international best practices:

(i) General Rules of Hygiene, Health, and Safety (HHS) on Construction Sites:

The Contractor must adhere to and enforce strict hygiene, health, and safety standards as per the Occupational Safety and Health Act (OSHA), 2007, and other applicable laws. This includes regular safety drills, the provision of personal protective equipment (PPE) to all workers and ensuring that all machinery and equipment are maintained to statutory standards.

(ii) STD - HIV Awareness:

The Contractor shall implement an ongoing STD and HIV awareness and prevention program, which includes providing educational workshops, access to voluntary testing and counseling services, and distributing informational materials to all employees in accordance with the HIV and AIDs Prevention and Control Act 2006.

(iii) Management of Relationships Between Employees and Local Communities:

In line with the provisions of Child Rights Act (Amendment Bill) 2014, Sexual Offences Act 2006 and Labour Relations Act 2012, The Contractor shall establish and enforce policies to manage interactions between employees and local community members, emphasizing the protection of minors and other vulnerable groups. This includes conducting background checks on employees, training on ethical behavior, and setting up a grievance mechanism for community complaints.

(iv) Consideration of Gender Equity and Prevention of Gender-Based Violence (GBV):

The Contractor must actively promote gender equity and take measures to prevent and address any incidents of gender-based violence and sexual exploitation and abuse. This includes providing gender sensitivity training to all employees, enforcing a strict non-discrimination policy, and establishing a safe and confidential reporting and response system for GBV cases.

(v) **Management of 'Chance Finds':**

In the event of a chance find (discovery of any archaeological or cultural artifacts during construction), the Contractor must immediately halt construction activities at the site and notify the National Museums of Kenya. The Contractor shall comply with all directives from relevant authorities concerning the preservation, documentation, or removal of such finds.

Capacity-Building.

Capacity building for the Proposed Water Supply Distribution – Last Mile Connectivity (LMC) project for Chogoria Bulk Water Supply is a critical component that ensures the project's success and sustainability. Areas of consideration in planning and implementing capacity building strategies include:

(i) **Stakeholder Engagement**: Engage local communities, government bodies, and potential users of the water supply from the outset. This includes conducting workshops, public consultations, and information sessions to gather input and build ownership among the community.

(ii) **Training and Development**: Develop a comprehensive training program for local staff and management teams on the operation, maintenance, and administration of the water supply system. This could include technical training on system mechanics, as well as administrative training on billing, customer service, and regulatory compliance.

(iii) **Technical Assistance**: Provide ongoing technical support to the local operators of the water supply system. This might involve periodic visits from experts, access to troubleshooting support, and updates on new technologies or methods that could enhance system efficiency.

(iv) **Institutional Strengthening**: Help local institutions develop the capabilities to manage water resources effectively. This might include assistance in policy formulation, regulatory frameworks, and improving interagency coordination.

(v) **Community Participation**: Encourage community participation in the maintenance and monitoring of the water supply. Initiatives could include forming user groups or committees responsible for minor maintenance tasks or monitoring water quality and supply issues.

(vi) **Sustainability Practices**: Train stakeholders in sustainable practices such as water conservation techniques and the integration of renewable energy sources (if applicable) to power the water supply system.

(vii) **Monitoring and Evaluation**: Implement a robust monitoring and evaluation framework to assess the effectiveness of capacity-building activities. This should include metrics to evaluate the improvement in skills, efficiency of the water supply system, and satisfaction levels among the community.

(viii) **Adaptability and Resilience**: Prepare local teams to adapt to changing conditions, such as population growth or climate change impacts, which could affect water supply needs or system operations.

Resettlement action plan's (RAP)

The assessment conducted on the proposed Chogoria Water line in the context of the African Development Bank's Integrated Safeguards System (ISS), 2013, on involuntary resettlement: land acquisition, population displacement and compensation.has revealed promising outcomes regarding the potential impacts on People Affected by the Project (PAPs). With no identified PAPs necessitating the establishment of a compensation framework. The identified issues shall be addressed under the Environmental and Social management Plan (ESMP) as proposed in the Environmental and Social Impact Assessment report.

Table 0-7: Proposed interventions to facilitate businesses during construction period.

Issue	**Remedial Action**
Impacts on hawkers	Contractor to ensure hawkers are safely guided on safe areas to continue with their businesses
Impacts on temporary businesses along project wayleave	Businesspersons to be encouraged to temporarily move to spaces not impacted by project
Temporary disturbances to businesses and pavements at key urban centres	• Excavations and pipe laying to be conducted off business hours. • Temporary crossing points to be established along the excavated channels to facilitate customer crossings. • Continuous engagement with business owners to ensure their continuous involvement in project decisions.

	• Restored to the greatest extent possible all pavements impacted on by their construction works in accordance with the ESMP. • Implementation of the project SEP

The project shall make statutory payments to the various road agencies as stipulated under the law to facilitate the use of road corridors and crossings as illustrated in below:

Table 0-8: Estimated statutory payments to various road agencies

Institution	Length (km)	Estimated statutory compensation level (KES)
Kenya National Highways Authority (KeNHA)	2.17	250,000.00
Kenya Urban Roads Authority (KURA)	2.6	50,000.00
Kenya Rural Roads Authority (KeRRA)	7.2	100,000.00
Sub-total		**400,000.00**

Conclusion and Recommendation

The following are some of the recommendations made to minimize or mitigate for the adverse environmental and social impacts from the proposed project:

(i) There is need for rigorous implementation of the Environmental Management and Monitoring Plan which will facilitate the mitigation and/or prevention of potentially adverse environmental impacts.

(ii) The proposed ESMMP should be followed fully by the contractor with the supervision from the proponent. A report on the findings from the monitoring of the ESM&MP right from implementation all through to decommissioning phase submitted quarterly.

(iii) The mitigation measures proposed should be followed by the proponent as it is highlighted in this ESIA report.

(iv) The design, construction and operation should be carried out in accordance with the specific report for the proposed project.

(v) All contractor's employees and any other person visiting the site should be provided with appropriate PPE and trained on their proper use.

(vi) On completion of the Civil Works, NIWASCO to commission an Independent Consultant to undertake an initial Environment, Social, Health and Safety Audit as required by Environment Impact Assessment and Audit Regulations of 2003. The audit will identify non-conformities which the Contractor together with NIWASCO will address through the defect's liability period of the Project. This audit will also form basis of annual Project self-audits by NIWASCO.

LIST OF ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
BETA	Bottom-Up Economic Transformation Agenda
DOSHS	Directorate of Occupational Safety and Health Services
ECDE	Early Childhood Development Education
EIA	Environmental impact assessment
EMCA	Environmental Management and Coordination Act
EPC	Engineering Procurement and Construction
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
HIV/AIDS	Human immunodeficiency virus/ Acquired immunodeficiency syndrome
KeNHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
KFS	Kenya Forest Services
KNBS -	Kenya National Bureau of Statistics
KTSWSSP	Kenya Towns Sustainable Water Supply and Sanitation Program
KURA	Kenya Urban Roads Authority
LM	Lower Midland
LMC	Last Mile Connectivity
MDG	Millennium Development Goal
MTP	Medium-Term Plan
NEMA	National Environmental Management Authority
NGEC	National Gender and Equality Commission
NIWASCO	Nithi Water and Sanitation Company
OP	Operational Procedures

OS	Operational Safeguards
OSHA	Occupational Safety and Health Administration
PAPs	Project Affected Persons
PCEA	Presbyterian Church of East Africa
RE	Resident Engineer
RoW	Right of Way
SDG	Sustainable Development Goal
TWWDA	Tana Water Works Development Agency
VMGs	Vulnerable and Marginalized Groups
WIBA	WORK INJURY BENEFITS ACT
WRA	Water Resources Authority
WSP	Water Service Provider

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1. INTRODUCTION

1.1. Project Background

The Government of Kenya through the Tana Water Works Development Agency – TWWDA received a loan from the African Development Bank (AfDB) for the implementation of the Construction of the Chogoria Bulk Water Supply Project under Kenya Towns Sustainable Water Supply and Sanitation Program (KTSWSSP). The objective of the program was to improve the access, quality, availability, and sustainability of water supply and wastewater management services in multiple towns to catalyze commercial activities, drive economic growth, improve the quality of life of people, and build resilience against climate variability and change.

The project was construction from 2019 and was completed in 2023. Thereafter, the Chogoria Water Supply Project was officially commissioned 13th July 2023 enabling the people of Chogoria and its environs access clean and adequate water for domestic use. Chogoria Water Supply Project was a bulk water supply project with 1000 households (4000 people) currently benefiting from the construction of the project. Notable beneficiaries include Chogoria town residents, Chuka University (Chogoria Campus), Chogoria Girls High School, and Chogoria PCEA Hospital.

However, the Ministry of Water, Irrigation, and Sanitation through TWWDA aims to increase connections to more than 160,000 people. This therefore calls for the implementation of Last Mile Connectivity for the Chogoria Water Supply Project to achieve this goal with the aim of providing access to safe, reliable, sustainable, and affordable water supply through increased connectivity of consumers to the completed Chogoria Water Supply Project. This shall eradicate the critical water scarcity in the region and improve the community's overall well-being.

This report therefore presents a ESIA study for the proposed implementation of water supply distribution – as Last Mile Connectivity project.

1.2. Project Justification and Rational

TWWDA has developed a strategic plan for the period 2023 – 2027 with the aim of improving access to water and sanitation services by increasing access to quality water services from 57.8% to 90% over the planning period. The Project is among the initiatives of the Board towards achieving the strategic goal above. The Project addresses improved water supply, in small towns and surrounding rural areas, as well as water storage that underpins the Kenyan economic and social developments (Vision 2030) and its associated Medium-Term Plan (MTP) IV, Bottom-Up Economic Transformation Agenda (BETA), Sustainable Development Goal (6) which is the new 2030 agenda and expands Millennium Development Goal (MDG) as guided by resolutions of Rio+20 conference. The goal focuses more on investment in adequate infrastructure in Water, Sanitation, Hygiene,

Water Quality, Wastewater Management, Water Scarcity and use Efficiency, Integrated Water Resource Management and Protection of Water related Ecosystems.

1.3. The Rationale for the ESIA

The Kenya government policy on projects or activities such as the water supply distribution – Last Mile Connectivity (LMC) project for Chogoria Bulk Water supply requires that an Environmental Impact Assessment (EIA) be carried out at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation, and decommissioning of the project. The "Integrated Environmental Assessments," which is a more holistic approach to the evaluation of the proposed project, was used to undertake an environmental impact assessment and develop a comprehensive report for the proposed project.

1.4. Objectives of the ESIA

The principal objective is to highlight the possible positive and negative environmental and social impacts expected during the establishment and operation of the proposed project, with the aim of proposing the possible mitigation measures to the negative impacts. This is in line with ensuring that such a development does not negatively impact the environment in terms of social, health, economic and physical (soil, water, plant, and animals) state of the area. The CPR identified the possible environmental impacts during the construction, implementation, and operational phases of the project. The exercise was carried out in accordance with the National Environmental Management Authority (NEMA), Environmental Impact Assessment and Audit Regulations and guidelines.

In brief, the specific objectives of the study were to:

(i) Describe the proposed project including the technology to be used.

(ii) Collect, collate, and present baseline information (Physical environment, biological environment, and Socio-economic and cultural environment)

(iii) Identify impacts, both positive and negative, the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated; and identify possible mitigation measures.

(iv) Carry out stakeholders' participation and consultations to collect the concerns, expectations, and opinions of affected, concerned, and interested stakeholders.

(v) Prepare a comprehensive Environmental and Social Management Plan (ESMP)

(vi) To present results of the ESIA in such a way that they can guide in informed decision-making.

1.5. Study Approach and Methodology

At the start of the project, the consultant performed screening and scoping exercises to eliminate unnecessary data collection. The data gathering process involved a variety of methods including questionnaires,

observations, photography, site visits, desktop environmental studies, and, where needed, scientific tests. These methods adhered to the criteria and manner outlined in sections 31-41 of Part V of the Environmental (Impact Assessment and Audit) Regulations, 2003.

The project's report adopted an inter alia approach, which covered environmental, social, cultural, economic, safety, and health impacts. This comprehensive review ensured that all potential negative effects were identified, and measures proposed to mitigate them adequately. Given the significance and scale of the proposed project, a detailed environmental impact assessment report was deemed necessary. This approach was chosen to guarantee a thorough and complete assessment, following the methodology outlined:

1.5.1. Environmental Screening

This is the first stage when the proposed project was evaluated guided by EMCA cap 387 In screening, we checked whether or not a particular project falls within a category that requires an ESIA before commencement. According to schedule 2 of EMCA, Cap 387 and in legal notice no. 31 of April 30, 2019 (2; 3c), Proposed water supply distribution – Last Mile Connectivity (LMC) project for Chogoria Bulk Water supply is categorized as ***Medium Risk Projects*** under "**Water resources and infrastructure, including —**" among projects requiring an ESIA.

In addition, screening was done in accordance with the NEMA regulations on environmental and social safeguards which informed the ESIA process. Some considerations during the screening process included physical site location, environmental sensitivity of the areas surrounding the proposed site, nature of community and social activities in the project area.

1.5.2. Desk Study

Documentation review provided an understanding of the terms of reference, environmental and social status, demographic trends, land-use practices, development strategies and plans as well as the policy and legal documents.

1.5.3. Physical Inspection of the Site and Surrounding

In February 2024, a physical inspection of the proposed site, including field investigations of the site and its surrounding areas, was conducted. These investigations aimed to examine the physical characteristics of the site and the environmental condition of the nearby areas with the purpose of identifying the expected impacts of the project on these elements.

1.5.4. Public Participation

During the Environmental and Social Impact Assessment (ESIA) process for the proposed Last Mile Connectivity (LMC) project for Chogoria Bulk Water supply, significant emphasis was placed on public participation. This was achieved through public meetings, questionnaires, and interviews with key stakeholders

and informants. Questionnaires were distributed to project stakeholders and beneficiaries to gather a wide range of insights and concerns. The information collected was synthesized and included in the comprehensive ESIA Project Report.

To ensure broad community engagement and feedback, a major public meeting was conducted, which saw participation from various community members and representatives of project stakeholders. The attendance list and minutes of this public consultation meeting were documented in appendices VI and V, respectively. This meeting aimed to gather the community's concerns and views directly, ensuring their perspectives were considered in the project planning.

Additionally, key informant interviews and consultations were carried out, as detailed in chapter 5 of the report, to gather in-depth insights from stakeholders with specific knowledge or interest in the project. These efforts underscored the project's commitment to incorporating the views and addressing the concerns of all those potentially affected by the water supply distribution project.

1.5.5. Structure of the Report

The Environmental and Social Impact Assessment (ESIA) report was compiled based on the findings from the assessment process, adhering strictly to the Environmental Impact Assessment (EIA) guidelines provided by the National Environment Management Authority (NEMA) for a Comprehensive Project Report. Throughout the assessment, the consultants maintained open and consistent communication with the project proponent, ensuring they were well-informed at every stage.

The culmination of this exercise was the creation of the Comprehensive Project Report. This report is structured to guarantee that the proposed development aligns with the Environmental Management and Coordination Act (EMCA, Cap 387), emphasizing compliance with environmental regulations and sustainable development principles. The report is in 9 chapters, each presumably covering different aspects of the assessment and findings to provide a detailed overview of the project's environmental and social impacts:

- Chapter 1: Introduction: Gives Background Information to the Study Describing the Objectives and the Terms of Reference.
- Chapter 2: Nature of the project: Description of Project Site.
- Chapter 3: Baseline Information: Outlines the Baseline Information of the Study Area.
- Chapter 4: National Policy, Legal and Institutional Framework: Description of pertinent legislative and regulatory considerations.
- Chapter 5: Public Participation and Stakeholder Consultation: Summarizes the outcome of the Stakeholder Engagement and Public Consultations process.
- Chapter 6: Analysis of Proposed Project Alternatives: Gives the analysis of the project alternatives.

- Chapter 7: Potential Impacts and Mitigation Measures: Evaluation of project alternatives (Design, location, materials, and technology).
- Chapter 8: Environmental and Social Management & Monitoring Plan (ESMMP)
- Chapter 9: Conclusion and Recommendation: Concludes the findings and recaps the main recommendations.
- Chapter 10: References
- Chapter 11: Appendices

2. BASELINE, ENVIRONMENTAL AND SOCIAL CONDITIONS

2.1. Project Location

The proposed water supply distribution – Last Mile Connectivity (LMC) project for the Chogoria Water Supply Project is located in Maara Sub County in Tharaka-Nithi County **Figure 2.1**.

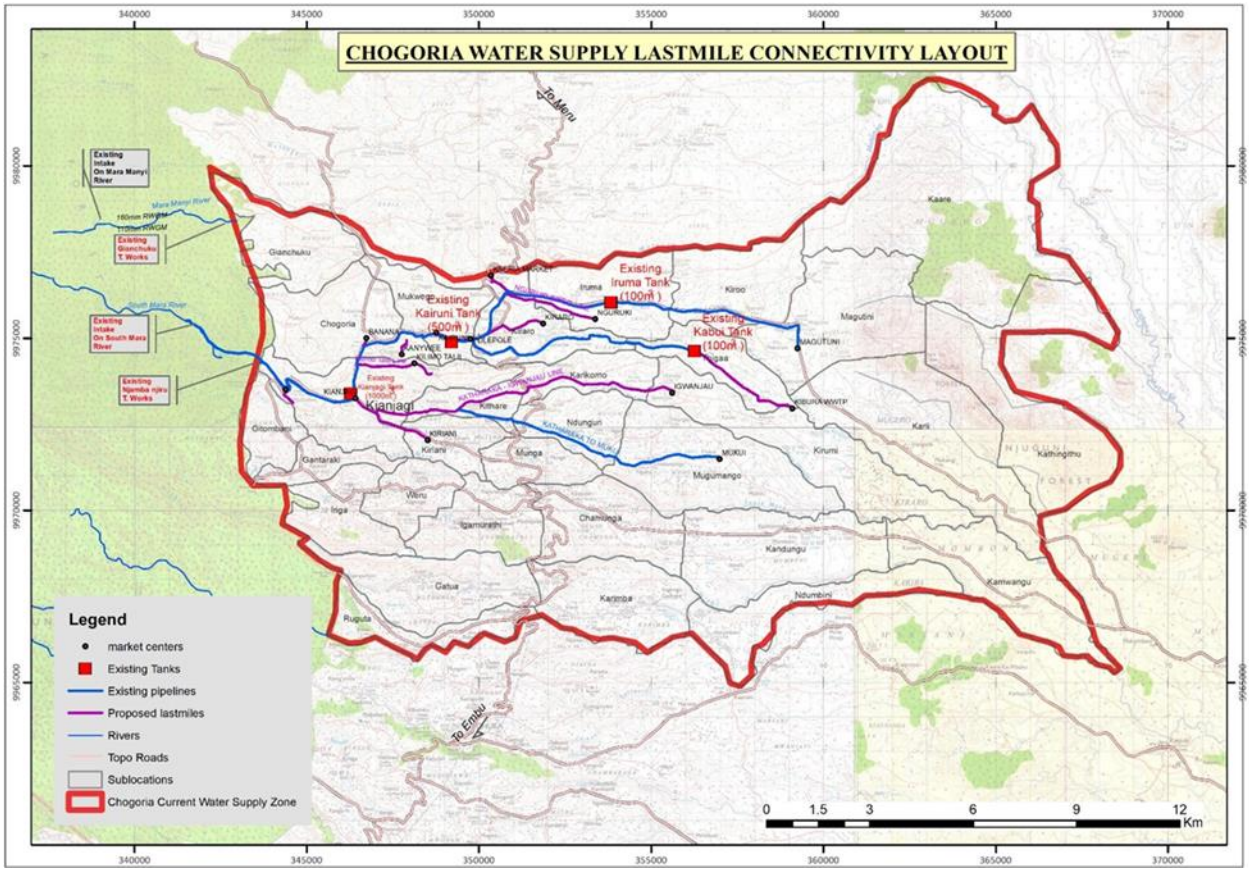

Figure 2.1: Proposed LCM project coverage

Tharaka-Nithi County is one of the forty-seven (47) counties in Kenya created by the Constitution of Kenya, 2010, and is located to the East of Mt Kenya. The county is divided into five sub-counties namely, Maara, Igambang'ombe, Meru South (Chuka), Tharaka North, and Tharaka South Sub Counties. These Sub-Counties are subdivided further into 15 wards, 53 locations, and 134 sub-locations **Figure 2.2.**

The project area is located about 185 km from Nairobi City on the Nairobi – Meru Highway.

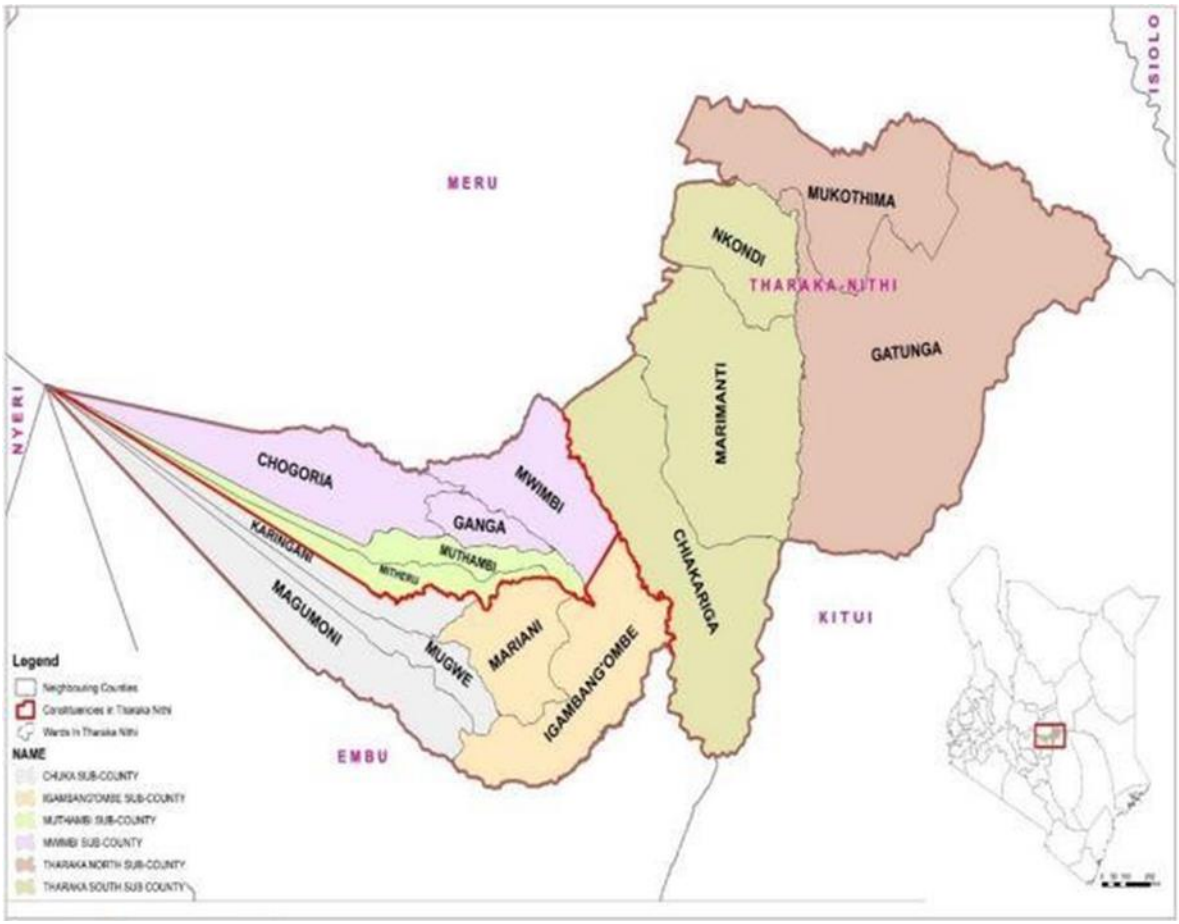

Figure 2.2: Tharaka-Nithi County (Source: Tharaka-Nithi County Integrated Development Plan 2023 – 2027)

2.2. Social Setting

2.2.1. Population

The Project area had a total population of 114,894 people and an average population density of 431 people per Km2 in the year 2019 according to KNBS 2009 Population and Housing Census. The population comprises of 57,689 males, 57,205 females.

2.2.2. Education

The Project area's educational institutions consist of Nursery schools Early Childhood Development Education Centers (ECD), Primary Schools, Secondary Schools and tertiary institutions such as Youth Polytechnics, other Training Institutions and Universities Colleges. As of the year 2013, the Project area had about 64 Primary, 43 Secondary Schools, 11 Youth Polytechnics, 5 other training institutions all spread across the administrative Wards in Mwimbi.

According to Maara sub-County Education office, education institutions enroll children from EDCE centers at an average of four years. The number of girls enrolled is higher than that of boys with dropout rate of boys

being higher than girls. The transition from primary to secondary school is 70%. Some of the leading secondary schools include Chogoria Boys and Girls High Schools. There is also a proposed University College at Nturiri. Photographs of some learning institutions within the project area are given below.

Plate 2.1: Kabui High School

Plate 2.2: PCEA Chogoria Girls

2.2.3. Health Facilities

Maara Sub County has a significant network of health facilities, these facilities are run by the government, religious organizations, community based organizations and private individuals. The health facilities include one Hospitals, Health Centres, Dispensaries, Medical Clinics and other private facilities. The biggest hospital is PCEA Chogoria Hospital in Chogoria urban centre. Table 3.4 and photographs below show the number and type of health facility in each sub-county.

Table 2-1: Health Facilities (Source: eHealth-Kenya facilities)

Sub County	Hospital	Health Centre	Dispensary
Chogoria	1	2	3
Maara		2	3
Murugi		1	3
Kiera		1	2
Ganga		1	3
Total	1	7	14

2.2.4. Transport and Communication

The communication infrastructure is satisfactory; the Project area is accessible through the Nairobi – Embu – Meru Town's main highway. Most of the other roads are graveled and make most of the Project areas accessible. However, some of the roads are not graveled and may be difficult to use during the rainy seasons.

The Project area generally has good mobile phone coverage with Safaricom and Airtel networks available. The areas on the lower remote areas of the Project have poor mobile network coverage because of the hilly terrain. It is estimated that over 70% of the population own mobile phones. Internet connectivity is mainly available in urban centers. There are Post Offices in Chogoria urban centre and Marima market. **Plate 2.3** and **Plate 2.4** show some of the existing transport infrastructure within the area.

Plate 2.3: Images of Chogoria Town

Plate 2.4: Chogoria Meru Highway

2.2.5. Economic Activities

Chogoria urban centre is the major Town in Maara sub-County. It is situated near the main Nairobi–Meru highway. It is endowed with developed infrastructure in terms of transport, and other social amenities like Hospitals, Schools, and Banking Facilities. However, its status has changed after being made the Maara sub-County Headquarters. The County and National Governments Offices situated within the Town have changed its outlook and businesses.

Chogoria Town is served by several prominent Banks among them, Kenya Commercial Bank, Co-operative Bank and Equity Bank. Agency banking has been gaining popularity with the introduction of KCB Mtaani, Equity Banking Agents and Co-op Kwa Jirani Facilities. Mobile Money Transfer Services especially Mpesa are accessible to many people who have no access to formal Banking Services. There are a few Light Industries in the Project area. Most of these are located in the high agricultural potential areas of Maara and Chogoria, where they mostly undertake the processing of agricultural products especially tea and coffee.

Agriculture is the main economic activity for the Project area. The cash crops of tea and coffee and also horticultural crops are grown in the upper and middle zones of the Project area. This is because the high altitude favours this kind of farming. On the other hand, the low altitude areas which are extensively dry are known for livestock husbandry such as cattle, goats, sheep keeping and honey production. Millet, sorghum and cassava do well in the lowland areas as they are better adapted to the arid climatic conditions. However, subsistence farming forms a large percentage of agricultural activities in this area. Other crops grown in the Project area include maize, beans, cowpeas, tomatoes, onions, potatoes among other crops. **Figure 2.3** illustrates the main land use areas within the Project area. **Plate 2.5** Tea Farming within the Project area are given below.

Plate 2.5: Tea farming in the project area

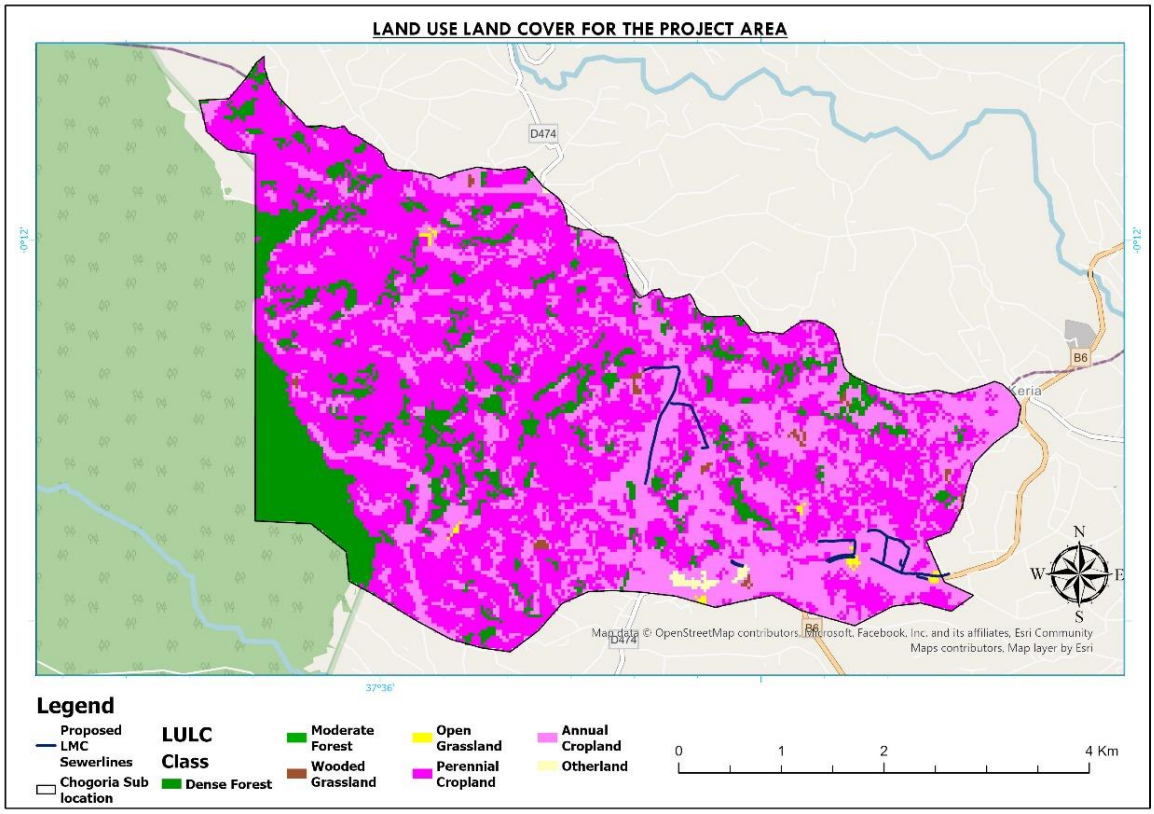

Figure 2.3: Land Use Patterns

2.2.6. Connection to a Water Service Provider

Among the respondent, 51% of respondents are connected to a Water Service Provider, majority being served by Community Water Service Providers who supply raw water **Figure 2.4**.

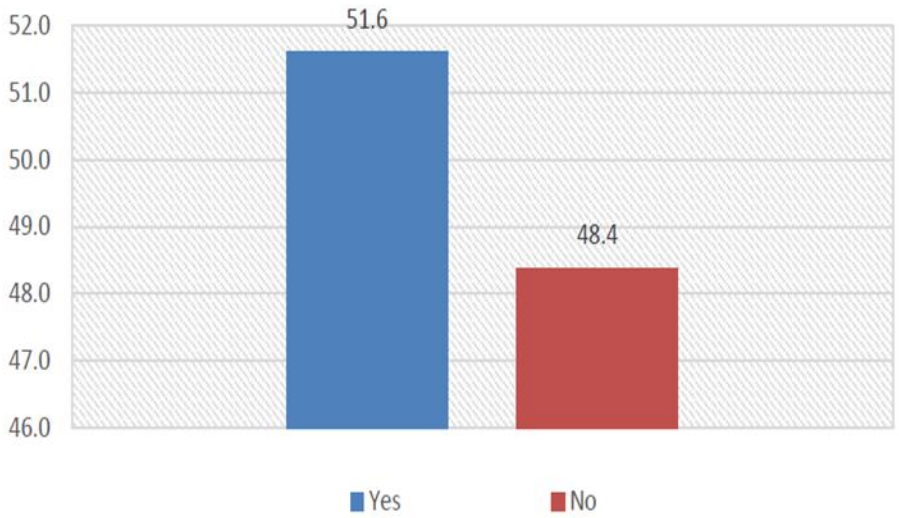

Figure 2.4: Connection to Water Service Provider

2.2.7. Alternative Sources of Water Supply

The respondents who are connected to the Water Service Provider in Chogoria address the unreliable water supply by getting water from street vendors (43.8%), Kiosks (18.8%) and Wells/Boreholes (12.5%) as seen in **Figure 2.5**.

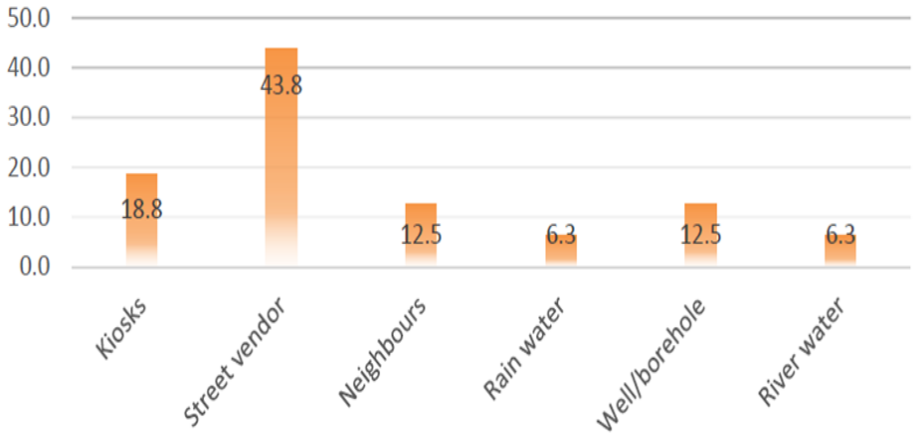

Figure 2.5: Alternative Water Supply

2.2.8. Sanitation Excretion Disposal

The survey established that 70% of respondents in Chogoria Town use pit latrines located behind shops for the case of urban centre while only 12% use septic tanks which are emptied regularity by private exhauster vendors, the entire Town do not have any formal sanitation infrastructure.

2.2.9. Energy Access

The main sources of energy in the project area are firewood, paraffin and charcoal. There is an increase in usage of solar energy especially by health and education institutions that do not have access to electricity lines. The rural electrification program by the National Government has been implemented extensively within the subcounty. Investment in alternative renewable energy sources will enhance reliability of power supply in the county, especially Hydro-electric power generation, solar and wind, biogas energy.

Household energy use in the project area is summarized in **Figure 2.6**.

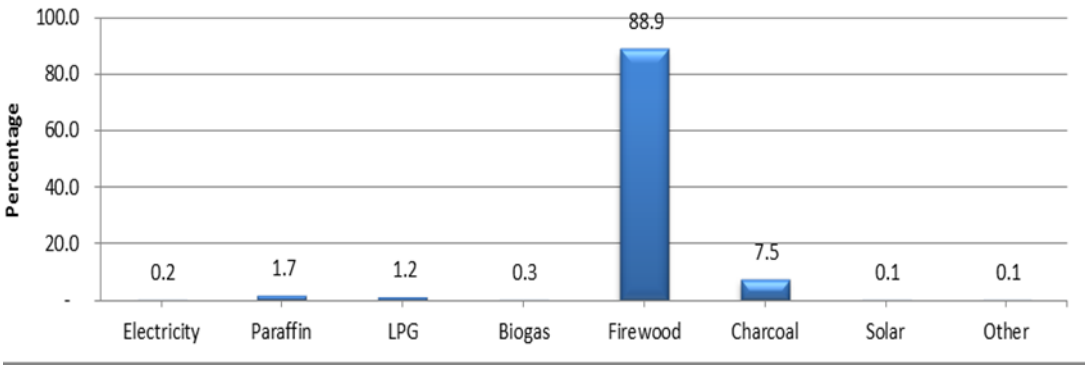

Figure 2.6:Percentage distribution of Household fuel use (source Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID))

2.3. Physical Environment

2.3.1. Topographic Features

The topography of Maara Sub County is greatly influenced by the Mt Kenya volcanic activity creating 'V' shaped valleys within which the main tributaries of Tana River flow originating from Mt Kenya Forest. The highest point has topography of 1775m a.s.l within the Mt Kenya Forest and the lowest point being 1217m.a.s.l as illustrated in **Figure 2.7** below.

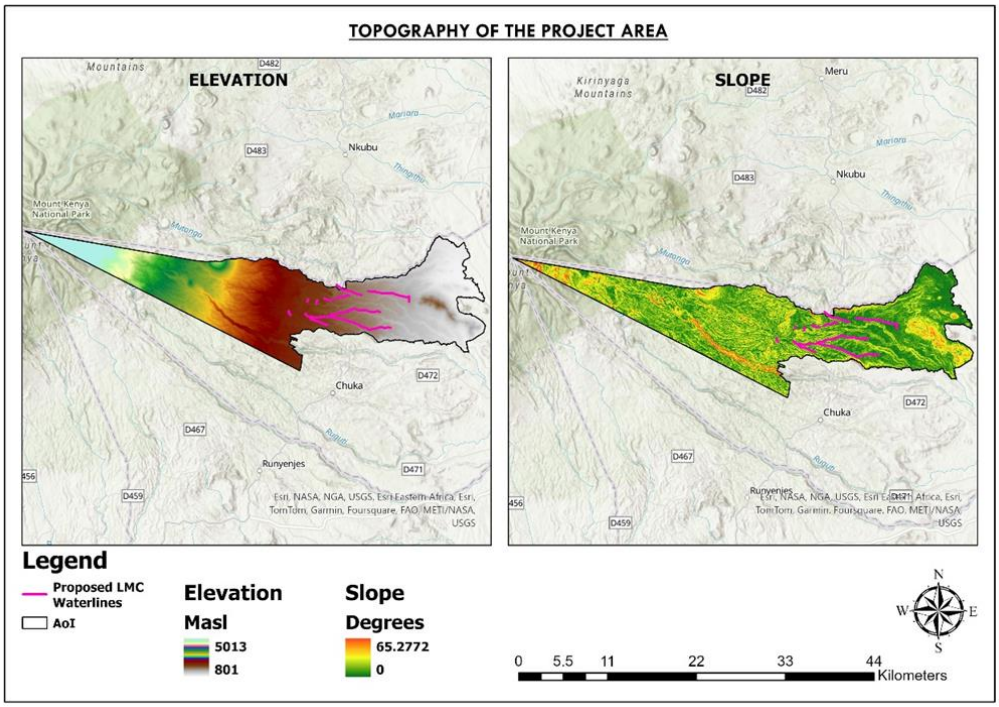

Figure 2.7: Topography

2.3.2. Biological Environment

Vegetation and Flora

Biodiversity of the Project location is highly influenced by the Mt Kenya Forest Ecosystem with respect to indigenous plant cover species. However, due to human activities, the indigenous plant species have been displaced by exotic species that have also acquired economic values among the communities. Such plant species include tea, coffee, Eucalyptus spp, Cypress ssp., Caussurina spp. and Graveria SSP and wattle trees species. Other plant features include grass species, ferns, napier grass, avocado, banana, yams (mainly in the river flood plains), cassava, sugar cane, pineapple, arrowroots, and coffee).**Figure 2.3** shows the general vegetation cover and density of proposed project area.

Fauna

Human habitation and agricultural activities have significantly interfered with both terrestrial and aquatic habitats in the Project areas. There is no terrestrial wildlife observed in the Project area since most land is under agricultural use for many years pushing the animals into the Mt Kenya Forest. However, limited rodents like squirrels, moles and different bird species among others are found in the area (specific habitats characteristics will be established during the detailed assessment. Among the aquatic species present include frogs, freshwater fishes are found naturally in the rivers. Livestock keeping is significant with dairy cows, sheep, goats, poultry and house pets (dogs and cats) may also constitute part of the wider biodiversity).

2.3.3. Climatic Condition

The climate of the Project area is heavily influenced by its geographical location and altitude relative to Mt. Kenya and the equator. The climate in the Project area changes with altitude, becoming semi-arid towards the lower ridges in Maara region. Rainfall is bimodal, with the long rains occurring from March to May, with a maximum in April, and the short rains from October to December. Depending on the altitude, the annual rainfall ranges from between 1,250-2,500mm in the Project area.

Table 2-2 represent the average climate condition in the proposed area. The temperature increases from the highlands to the lowlands; the lowest temperature are experienced in the period from June to July. Average temperature ranges between 16°c to 22°c, but daily temperature is much higher especially in the lower reaches. Monthly evaporation ranges between 1.8 mm in July to 8.3 mm in February, humidity ranges between 36 % in March to 72 % in July.

Table 2-2; Mean Monthly Climatic Conditions Rainfall

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Avg. Temp°C	18.6	19.5	19.9	19.3	18.6	17.6	16.9	17.2	18.2	18.7	18	18.1

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Min. Temp °C	14	14.4	15.3	16	15.4	14.1	13.3	13.5	13.9	14.9	15	14.3
Max. Temp°C	23.7	24.8	24.8	23.5	22.7	21.7	21.2	21.7	23.3	23.5	21.8	22.3
Rainfall mm (in)	37	26	56	133	75	25	19	21	18	77	134	53
Humidity (%)	69	64	67	77	76	73	71	70	66	71	82	77
avg. Sun hours (hours)	9.9	10.1	9.5	8.7	8.4	7.5	6.8	7.3	8.8	8.8	7.8	9.

2.3.4. Geology

The upper zone of the Project area is characteristic by loose red volcanic soils with small traces of sandy clays in some areas. The middle zone also has fertile well drained sandy clay soils and has good agricultural potential. The soils of the lower zone are predominantly sandy loams and course gravel patches, they have poor water holding capacity and most of rainwater infiltrates immediately into the ground after rainfall. The basement system in this area is also porous, a situation that has led to the poor moisture content of soils in this area. The photographs below show soils within the Project area.

Plate 2.6: Red Volcanic Soils within the Project area

Plate 2.7: Rock structure within the Project area

2.4. Hydrology

2.4.1. Surface Water Resource

The Rivers in the Project area originate from the Mt. Kenya Forest. These Rivers are in drainage area No. 4 of the Tana Water Catchment System categorization. This drainage Basin is divided into sub-basins namely are

4FA, 4FB 4EA and 4EB. The Project area is within 4EB which includes North Maara, South Maara and Kamara Rivers. These Rivers flow in a south-easterly direction on the eastern slopes of Mt. Kenya. They originate from high in the mountain. They are perennial and have adequate flows all the year round. **Plate 2.8** of River Kamaara which is among the major Rivers in the Project area are given below.

Plate 2.8: River Kamaara

2.4.2. Ground Water Resources

Largely due to the proximity of the region to Mt. Kenya, the source of all surface water draining the catchment originated from Mt. Kenya. Ground water sources have not been extensively exploited. Shallow wells are the most prevalent category of ground water sources. They are found in homesteads in areas where the water table is high. Community water schemes in the area which provide raw water are the main source of water in areas not covered by the water service providers. They draw the water upstream ensuring that the systems are gravity fed. This negates the need to exploit ground water sources which could prove to be more expensive to initiate and operate. Figure 3.4 below indicates the general hydrology flow of the area.

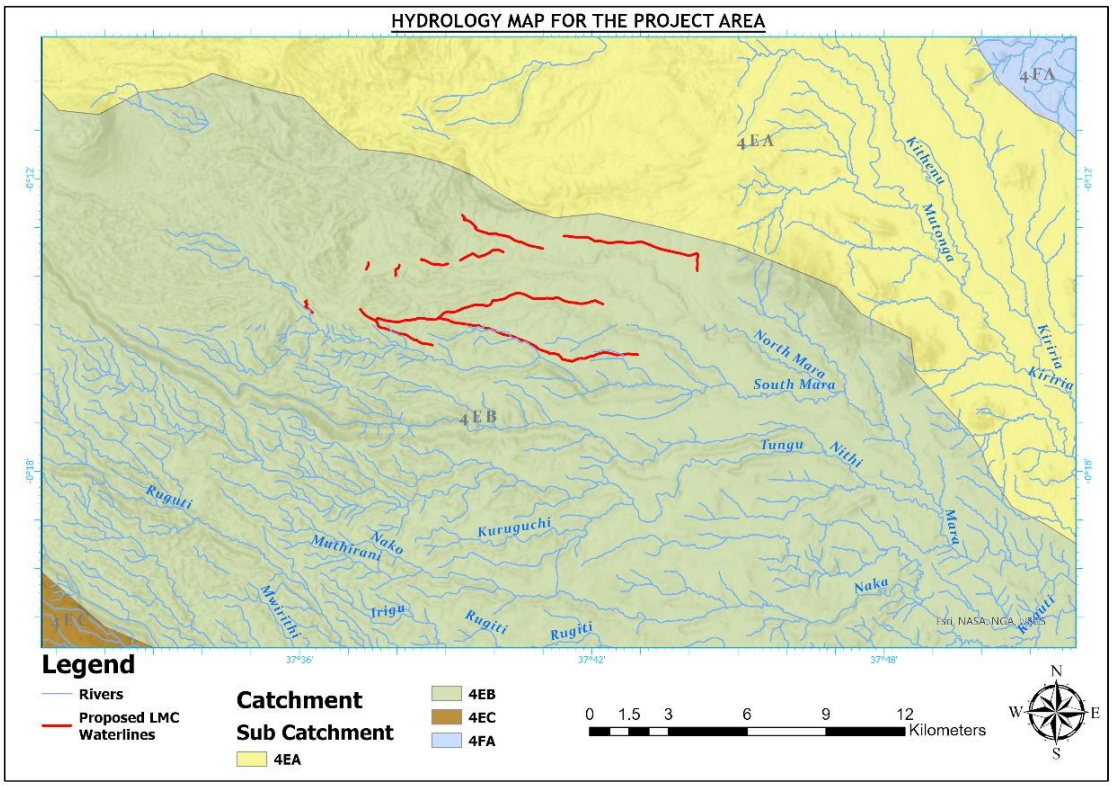

Figure 2.8: Hydrology.

3. PROJECT DESCRIPTION

3.1. Existing Water Supply Infrastructure

Nithi Water and Sanitation Company (NIWASCO) is the only Licensed Water Service Provider (WSP) in Tharaka Nithi County and supplies water to a total of 72,680 people accounting for approximately 50% of the population within the command area and about 18% of the total population.

Chogoria Water Supply Project supplies water to 1000 households, or 4000 people, and the proposed water supply distribution – Last Mile Connectivity (LMC) project shall improve supply to more than 27500 household or, 110,000 people. Already commissioned Chogoria water supply project consist of the following infrastructures.

3.1.1. An intake weir

Located approximately 3km within Mt. Kenya Forest across South Maara river with an abstraction of 15,000m^3 of water per day through a 450mm diameter ferrous steel raw water gravity main to the new Kibaranu Treatment Works.

Figure 3.1: Intake Weir (1)

Figure 3.2: Intake weir (2)

3.1.2. Kibaranu Water Treatment Works

Kibaranu water treatment works located at the edge of Mt. Kenya Forest within the Nyayo Tea plantations with a capacity of 15,000m^3/day to cater for the ultimate demand of 2037 for Chogoria town and its environs.

3.1.3. Treated Water Mains

Water from the treatment works conveyed to storage tanks within each zone using steel pipelines following existing road reserves. The pipelines distribute water to Kianjagi, chogoria town, Kairuni and Iruma tanks.

3.1.4. Storage tanks

Table 3-1: Existing storage tanks in the Chogoria water supply project

Zone	Location	Capacity (m^3)
Zone B	Kianjagi	$1000m^3$
Zone B	Kairuni	$500m^3$
Zone D	Iruma	$100m^3$
Total		$1600m^3$

Figure 3.3: Existing storage tanks

3.1.5. Existing NIWASCO Water Distribution System

The location of storage tanks and pipeline routing ensures a gravity system with no pumping required. The approximate total length of transmission mains is 20km with diameters ranging from 50mm - 160mm uPVC and HDPE pipes. There are 8 Nr. Storage Tanks is the distribution network of capacity, $100m^3$.

3.1.6. Existing Community Water Schemes

Numerous community water supply schemes which supply raw water for domestic consumption and irrigation exist within Chogoria. Some of the community schemes include: Muthambi 4K, Murugi – Mugumango, lruma – Magutuni, Gantaraki, Mzalendo, Githima, Githituni, Muringa – Banana, Kirumi Kiamunjari, Wiru, Kamwene, Kahuruko, etc.

3.2. Proposed Last Mile Connectivity Water Supply Project

3.2.1. Total Water Demand

The total water demand was established as per the equation below:

Total Demand = Domestic Demand + Institutional Demand + Commercial Demand+ Livestock Demand + NRW

Table 3-2: Summary of the Water Demand Requirement

Category	2017	2022	2027	2032	2037
Domestic	7945	8480	9,142	9,727	10,455
Education	1009	1080	1,221	1,252	1,357
Health	357.29	369.61	384.17	404.84	428.38
Commercial & Industrial	449.5	479.5	511.6	548	587.8
Livestock	817	925	1,047	1,184	1,340
Total	**10,578**	**11,334**	**12,306**	**13,116**	**14,168**

3.2.2. Proposed Water Mains

The total length surveyed so far is 42km comprising of pipeline summarized in **Table 3-3** and the layout shown in **Figure 3.4** and **Figure 3.5.**

3.2.3. Break Pressure Tank

Break-pressure tanks should be used to keep the pressures within the limits. 3 No Pressure tanks will be constructed. 2No along the Katharaka – Igwanjau Water Main and 1 No along the Mukui Water Main. The plan and sectional drawing is indicated in **Figure 3.6**.

3.2.4. Estimated Project Implementation Cost

The estimated cost of the project is approximately ***two hundred and seventeen million three hundred and eighty-one thousand seven hundred and seventy shilling and seventy-three cents (Ksh. 217,381,750.73)***

Table 3-3:Summary of the proposed water mains

Pipeline	Zone	Area covered	Ultimate Water Demand year 2037 (m^3/day)	High Level Zone (m^3/day)	Low Level Zone, (m^3/day)
Kianjagi – Katharaka – Igwanjau pipeline (9.9km)	Zone B, Zone C, Zone F	Igwanjau market, Kariakomo market, about 9No. public institutions and the surrounding 13010No. estimated households or 52040 people	2966.32		2966.32
Karaa – Kiriani pipeline (2.45km)	Zone F	Karaa market, Kiriani market, about 5No. public institutions and 2626No. estimated households or 10503 people	598.63		598.63
Katharaka junction – Mukui pipeline (8.01km)		Kiamaogo market, Ndunguri market, Ngeru market, Ngaita market, and Mukui markets as well as 15No. public institutions and 4958 estimated households or 19830 people.	1130.33		1130.33
Nguruki – Magutuni pipeline (5.64km)	Zone D	Nguruki market up to Magutuni market, 6No. public institutions and 5577 households or 22509 people	1271.66		1271.66
Kieganguru – Kiraro pipeline (1.67km)	Zone D	Kiraro, 4No. public institutions and 1397 households or 5588 people	318.50		318.50
Chogoria town pipelines (0.74km)	Banana Line (0.29m) - Zone A	Chogoria town	100.00	100.00	
	Kanywee Line (0.45) - Zone A		90.0	90.0	

Pipeline	Zone	Area covered	Ultimate Water Demand year 2037 (m^3/day)	High Level Zone (m^3/day)	Low Level Zone, (m^3/day)
Keeria Market pipeline (0.89km)	Zone D	Keeria market	54		54
Mutindwa market pipeline (1.7km)	Zone D	Mutindwa market, 5No. public institutions and 100 households or 400 people	339.1		339.1
Kairuni – Polepole pipeline (0.91km)	Zone D	Kairuni market, Polepole market 2No. public institutions and 120 households or 480 people.	150.00	150.00	

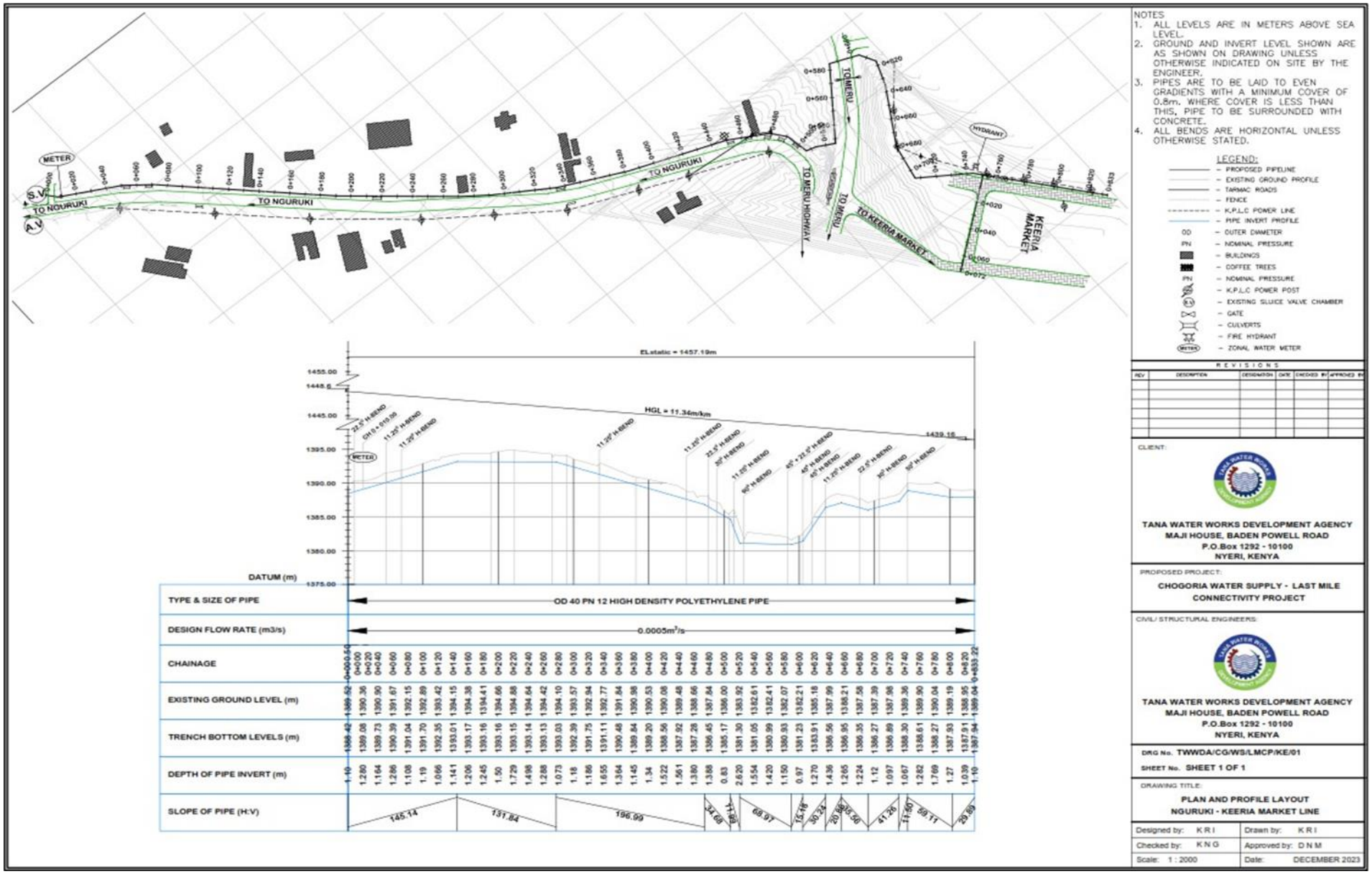

Figure 3.4: Sample of water main profile drawing

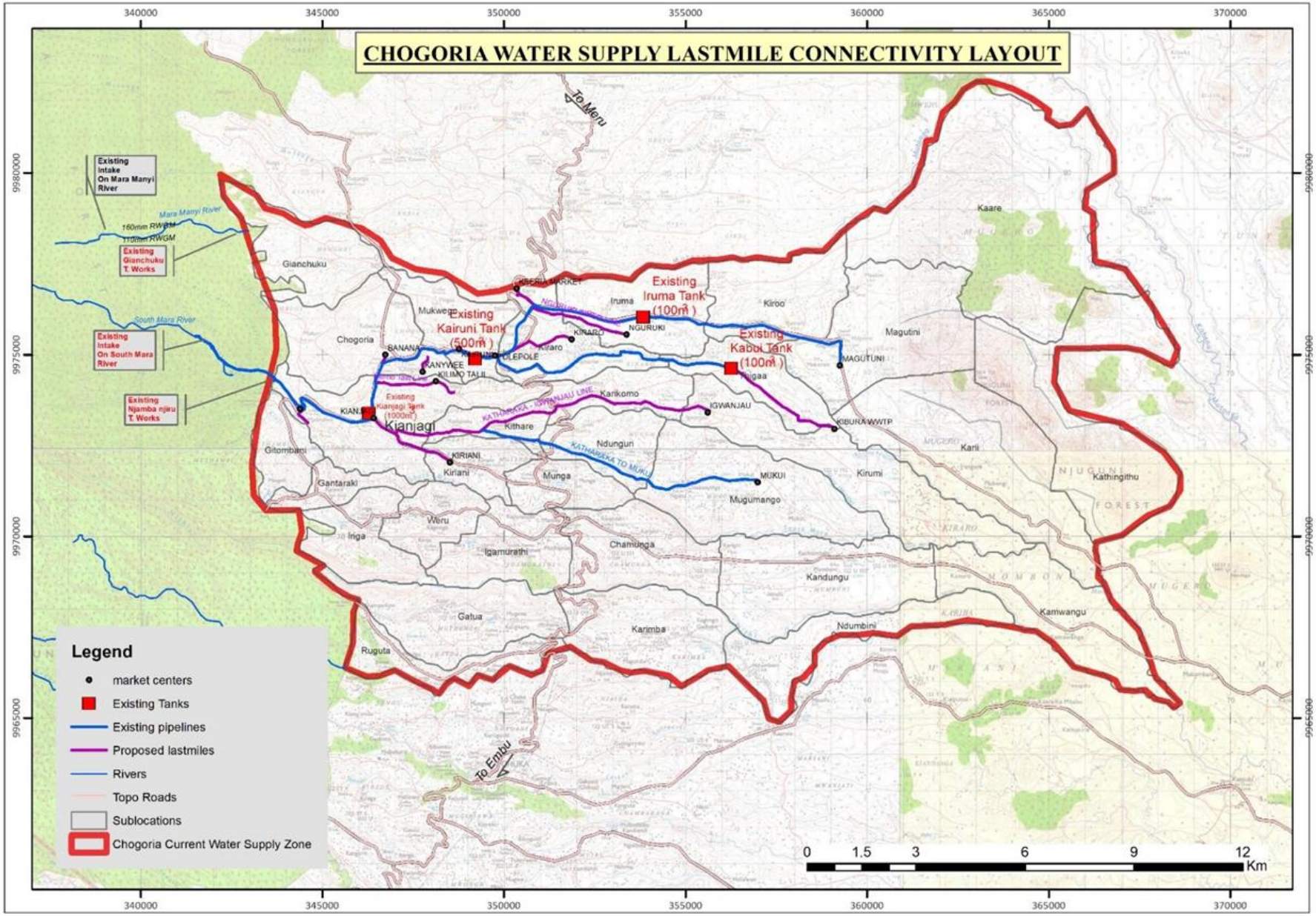

Figure 3.5: Layout Map

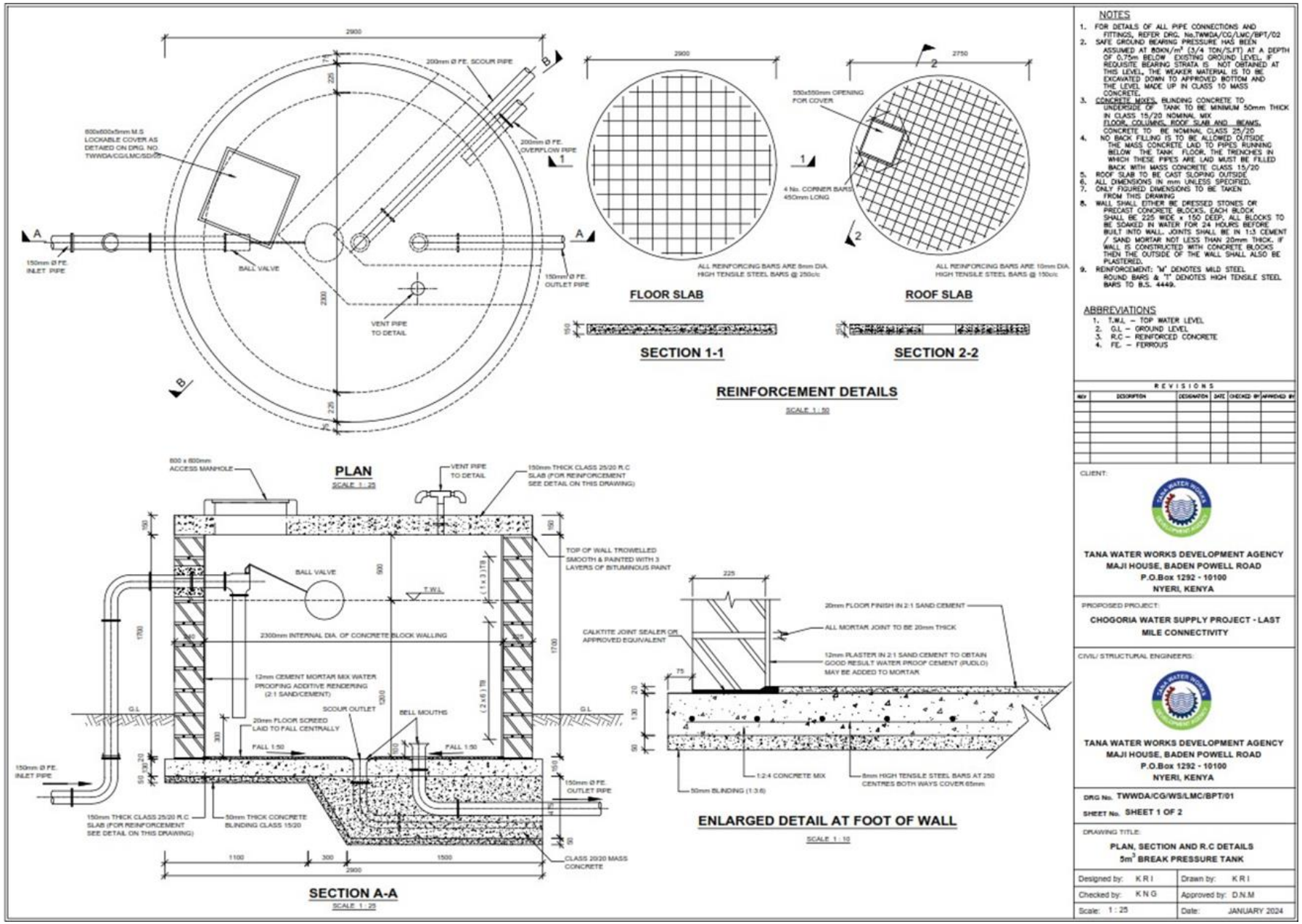

Figure 3.6:BPT plan and Section drawing

3.3. Project Activities

3.3.1. Permits and Approvals

A range of permits and approvals will be required to support pipeline construction. These are summarized below.

Table 3-4: Requisite permits and approvals for the proposed Water Supply Pipeline Project

Necessary permit/ approval	Responsible Agency	Current Status
Project EIA License	National Environmental Management Authority, NEMA	Pending
Permit to utilize road reserve and enable needed road crossings	KERRA, KENHA, KURA	Ongoing
Construction and registration of workplaces	DOSHS	Pending
Solid Waste Disposal	NEMA	Pending

3.3.2. Project activities to be undertaken during the construction phase.

The project is anticipated to take approximately 18 months to construct from the award of an Engineering, Procurement and Construction (EPC) contract. Once the decision to proceed with the Project has been taken and an EPC contract awarded, it will take approximately 3 months before construction mobilization commences. The average rate of pipeline laying is estimated around 800m per day, with slower progress in more challenging areas, such as the road crossings. The construction schedule will also take account of weather constraints, particularly during the peak rainy season.

3.3.3. Machinery and equipment

For a water supply system, that involves significant infrastructure development like water mains and distribution networks, a variety of machinery and equipment are required to ensure efficient construction, operation, and maintenance. Some of these machinery and equipment include:

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

- Welding Machines

3.3.4. Waste Management

Waste materials will be generated by the construction and, to a much lesser extent, operation of the Project. This will include both non-hazardous and hazardous wastes. A preliminary review of existing waste management facilities has been undertaken to determine the ability of existing waste management facilities to handle waste generated by the Project. This information will be updated and developed in more detail as part of the Engineering Procurement and Construction (EPC) process.

1. Construction Waste

Construction waste will be generated from a range of activities including:

- Preparation and transportation of pipe and other equipment and facilities.
- Clearance of vegetation within pipeline Right of way.
- Pipeline installation through cut and fill trenching.
- Pipeline welding and finishing.
- Pre-commissioning and commissioning, including hydro-testing.
- Construction camps for pipeline workers; and Offices and other facilities.

2. Earthworks Waste

Over most of the length of the pipeline, 100% of the excavated material will be returned to the trench. Padders will be used on the construction spreads which will allow the excavated material to be used as backfill material, around the pipe and cables, by separating out larger stones from the excavated material.

There is only a small amount of residual spoil (per linear metre) when the trench is completely backfilled and this can be spread across the Right of way when completing the reinstatement and restoration, without any impact. There is no need to remove spoil from site for disposal elsewhere.

In rocky areas, there may be insufficient fine material for backfill and material will need to be imported. This will result in some wasted excavated material; however, volumes are still likely to be relatively small. In rock, the excavation depth and cover to the top of the pipe will be reduced to as low as 0.6 m and the trench sides will be vertical.

In a trench with vertical sides, the volume of backfill required is minimized. The volume of backfill and hence the volume of residual spoil for a vertical trench is approximately 0.8 m^3 per linear metre of trench, whilst for a battered trench, the volume is more than double. Pipeline trenches with battered sides will be required in some areas, however the overall percentage will be very low, and any additional material will be mixed and spread across the Right of way following the same method as above.

3. Metal Waste

For pipeline waste, it has been assumed that 0.3% - 0.5% of the pipeline will be metal waste (from off-cuts, damaged sections etc.). In addition, there will be welding rod (electrode) waste of approximately 10% - 20% of the weight of each rod. . All metal waste will be stored at the main construction camps, weighed and accounted for prior to disposal. This waste (scrap) will attract a market value and all receipts reconciled at the end of construction.

4. General Solid Waste

This comprises waste generated by accommodation camps, offices, and storage facilities, and includes paper, plastics, non-recyclable materials, food waste and other non-hazardous waste materials. General construction waste volumes will be generated from field joint coating materials and packaging, line pipe end caps/bevel protectors, cable drums and pallets. Some of the materials generated, such as waste epoxy and waste PUF, will need to be segregated and handled separately. Some of the packaging materials will also be contaminated and need to be managed as hazardous waste. It should be noted that items such as the cable drums and pallets could be reused by local communities for firewood or building materials. An assessment of such opportunities will be undertaken during detailed design.

5. Wastewater

Accommodation camp wastewater volumes can be calculated for sanitary wastewater based on 100 ltr/person/day for sewage and 200 ltr/person/day for grey water. Hydrotest water will be used to test the integrity of the pipeline for leaks. Inlet water from the intake will be used for hydrotesting. Wastewater settlement ponds are planned to be constructed at the downstream end of the hydrotest section. All hydrotest water will be passed through a break tank and filtration system before entering settlement ponds. Precise details on the design and location of these ponds will be developed during the EPC process and water abstraction and discharge will be permitted in line with applicable Kenyan regulations.

6. Hazardous Waste

Hazardous waste will include waste oils and filters from mobile plants and equipment and generators, oily rags, waste solvents, used chemical drums, used lubricants, paint waste and hot insulation waste (both used for tanks, vessels and piping at stations). The main process that generates waste apart from welding during the construction phase is the field joint coating.

All hazardous wastes will be stored at the worksite in segregated areas with an impermeable base and roofing to prevent contamination of run-off. Hazardous wastes will be collected regularly and taken for disposal to an appropriately licensed waste management facility.

7. Operational Waste

During operations, little or no wastes will be generated as the pipeline will be buried and water will flow under gravity for the majority of its length.

3.3.5. Waste Management Strategy

The Project Waste Management Strategy is based on the waste management hierarchy which outlines a preferred order from waste management i.e. prevention, re-use, recycling and recovery and disposal as a last resort. This approach aims at promoting environmentally friendly practices, efficient resource use and reduced pollution and negative impacts to the environment.

The anticipated waste streams have been evaluated against the requirements of the Environmental Management and Coordination (Waste Management) Regulations 2006 and the disposal methods and options have been identified in this ESIA Report. Where a waste disposal facility/landfill is not present within proximity of significant waste generator locations (e.g., main accommodation camps), or of sufficient size to handle to additional quantity, waste will be transported and managed within the WSP waste management facilities. The potential impacts associated with waste management have been described and appropriate mitigation approaches defined in section 6.5 of this report.

3.3.6. Construction & Operations 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.

1. Construction Workforce

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 Laborer, Guards, Drivers

2. Operations Workforce

The operations workforce will comprise approximately 10 workers. A detailed workforce projections and plans will be developed by the project area Water Service Provider (WSP), NIWASCO during the operation phase of the project. The overall approach for recruitment of workers shall be guided by the relevant qualifications and experience required for the performance of the relevant work.

3.3.7. Construction Logistics

All necessary construction materials will be transported by road and will be sourced locally.

3.3.8. Hydrostatic Testing and Commissioning

Commissioning of the pipeline will be undertaken to prepare the pipeline for handover from the EPC contractor to TWWDA and for the commencement of operational water flow through the pipeline. Hydrostatic testing will be undertaken to assess the strength and integrity of the pipeline system. The water for hydrostatic testing will be sourced from phase 1 of the project. Water quality testing will be undertaken before hydrostatic testing to ascertain its quality which must meet the minimum requirements for drinking water. The carbon steel pipeline will be tested in sections to the limit of elevation changes, allowing the test pressure to be maintained between the minimum required test pressure and maximum pressure which the pipeline will safely withstand.

3.3.9. Pre-Commissioning and Line fill

Given the use of carbon steel materials, drying will not be required as part of the pre-commissioning process after dewatering. Line fill shall then be undertaken from the low to the high ends of the pipeline.

3.3.10. Commissioning

When all system commissioning, start-up activities and tests are complete, a System Completion Notice (SCN) will be issued upon which the ownership of the system transfer from the Design Team to the Operations Team.

3.3.11. Pipeline Operations

The pipeline laying operations shall be guided by the project ESMP.

3.3.12. Decommissioning

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.

4. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1. Introduction

The importance of environmental care is paramount for the survival of human beings, prompting legal interventions to ensure responsible interactions with our surroundings. In Kenya, environmental governance is structured around key legislations, including the Constitution of Kenya, 2010, the Environmental Management and Coordination Act (EMCA) Cap 387, its subsidiary legislations, and various national and international environmental laws. EMCA Cap 387 plays a central role in harmonizing and coordinating environmental management in Kenya. It establishes a comprehensive legal and institutional framework, with the National Environment Management Authority (NEMA) at its core, to oversee environmental management across all aspects. The Act aims to ensure sustainability in environmental practices. In cases of legal discrepancies, EMCA Cap 387 takes precedence, ensuring a unified approach towards environmental sustainability.

4.2. Policy Provision

The proposed investments will be implemented within provisions of various government Policies as summarized in

Table 4-1: Policy Frameworks

Policy	Policy Applicability
Kenya Vision 2030 (2010)	Kenya Vision 2030 is a national long-term development blueprint to create a globally competitive and prosperous nation with a high quality of life by 2030. The vision is anchored on three key pillars: economic, social, and political governance. It aims to transform Kenya into a newly industrializing, middle high-income country and to provide a high quality of life to all its citizens by 2030 in a clean and secure environment.
Sustainable Development Goals (SDGs)	The concept of the SDGs was born at the United Nations Conference on Sustainable Development, Rio+20, in 2012. The objective was to produce a set of universally applicable goals that balances the three dimensions of sustainable development: environmental, social and economic. The Investments will therefore contribute towards achieving this goal through the proposed sanitation Projects.
National Environment Policy (2013)	The National Environment Policy aims to ensure a high quality of life for current and future generations by implementing sustainable practices in managing the environment and natural resources. Its main objectives are to establish an integrated framework for environmental planning and management, enhance the legal and institutional arrangements for better coordination, support sustainable management practices for environmental conservation, and

Policy	Policy Applicability
	encourage collaboration and cooperation in environmental protection and sustainable management efforts. The project is situated in ecological zones V and VI, which are known for their sensitive ecosystems that can be adversely affected by activities not aligned with their natural character. To mitigate the potential negative impacts on these ecosystems during both the construction and operation phases of the project, it is crucial to implement the Environmental and Social Management and Monitoring Plan (ESMMP)developed. This implementation will help to ensure that the project activities do not destabilize the ecosystems within these zones.
National Climate Change Response Strategy, 2010	The strategy paper recognizes that Kenya is a water scarce Country and offers a variety of strategies for ensuring that the resource is utilized in ways that recognize that it is a finite resource. The paper also argues that interventions in the water sector should take a participatory approach involving different water users including gender groups, socioeconomic groups, planners and policy makers in water resource management (Kenya, 2010: 53). These principles will also apply to the sanitation initiatives discussed in this ESIA.
National Land Policy (2012)	The National Land Policy aims to guide the country towards efficient, sustainable and equitable use of land for prosperity and provides a legal, administrative, institutional and technological framework for optimal utilization and productivity of land-related resources in a sustainable and desirable manner at national, County and community levels. It addresses critical issues of land administration, access to land, land use planning, restitution of historical injustices, environmental degradation, conflicts, the unplanned proliferation of informal urban settlements outdated legal framework, institutional framework and information management. This policy addresses the following topics: • Constitutional issues, such as compulsory acquisition and development control as well as tenure. It recognizes the need for security of tenure for all Kenyans (all socioeconomic groups, women, pastoral communities, informal settlement residents and other marginalized groups). • This policy recognizes and protects private land rights and provides for derivative rights from all categories of land rights-holding.

Policy	Policy Applicability
	• Through the Policy the government will ensure that all land is put into productive use on a sustainable basis by facilitating the implementation of key principles on land use, productivity targets and guidelines as well as conservation; and • The Policy promotes Environmental Management and Audit as land management tools and encourages public participation in the process.
National Land Use Policy (2017)	The overall goal of the national land use policy is to provide legal, administrative, institutional, and technological framework for optimal utilization and productivity of land related resources in a sustainable and desirable manner at national, county and community levels. The Policy is premised on the philosophy of economic productivity, social responsibility, environmental sustainability, and cultural conservation. Key principles informing it include efficiency, access to land use information, equity, elimination of discrimination and public benefit sharing. The Policy is cognizant of numerous factors that affect land use in Kenya which include geographic and ecological features, population distribution, social, historical, cultural, and economic factors.
National Water Policy (2012)	The National Water Policy includes details of the national government's policies and plans for the mobilization, enhancement, and deployment of financial, administrative, and technical resources for the management and use of water resources. Currently there is a new National Water Policy 2021 that was approved for tabling in the 12th Parliament on 4th August 2021.
Wildlife Policy (2012)	The Wildlife Policy makes provision for an overarching framework for the prudent and sustainable conservation, protection and management of wildlife and wildlife resources in Kenya, with the incidental provision on access and the fair and equitable distribution of benefits accruing therefrom, and its alignment with other sector-specific laws and the environment policy. The wildlife policy is aimed at promoting the protection and conservation of wildlife in Kenya, both in protected and non-protected areas.
National Forestry Policy (2014)	The Policy provides a framework for improved forest governance; resource allocation, partnerships, and collaboration with the state and non-state actors to enable the sector to contribute to meeting the country's growth and poverty alleviation goals within a sustainable environment. The goal of the policy is to increase the area under forest cover to 10% of the total land area in the country.

Policy	Policy Applicability
Wetlands Policy (2013)	The Wetland Policy aims to provide an effective and efficient institutional and legal framework for the management and conservation of wetlands and mitigating the diverse challenges that affect wetlands conservation and use in Kenya. This policy also fulfils Kenya's obligations under the Ramsar Convention.
Kenya National Youth Policy 2006	This Policy aims at ensuring that the youth play their role, alongside adults in the development of the Country. The National Youth Policy visualizes a society where youth have an equal opportunity as other citizens to realize their fullest potential. Proposed Sanitation Projects will provide direct employment to the youth as required by the Policy.
National Environmental Sanitation and Hygiene Policy-July 2007	The Policy is devoted to environmental sanitation and hygiene in Kenya as a major contribution to the dignity, health, welfare, social well-being, and prosperity of all Kenyan residents. The Policy recognizes that healthy and hygienic behavior and practices begin with the individual. The implementation of the Policy will greatly increase the demand for sanitation, hygiene, food safety, improved housing, use of safe drinking water, waste management, and vector control at the household level and encourage communities to take responsibility for improving the sanitary conditions of their immediate environment. Implementing the Project will directly contribute to achievement of the Policy
National Energy Policy (2018)	The Policy provides for a sustainable, adequate, affordable, competitive, secure, and reliable supply of energy at the least cost geared to meet national and county needs while protecting and conserving the environment.
Occupational Health and Safety Policy (2012)	This policy is intended to protect the safety and health of workers in workplaces
HIV/AIDS Policy of 2009	The policy identifies HIV/AIDS as a global crisis that constitutes one of the most formidable challenges to development and social progress. The pandemic heavily affects the Kenyan economy through loss of skilled and experienced workforce due to deaths, loss of person-hours due to prolonged illnesses, absenteeism, reduced performance, increased stress, stigma, discrimination, and loss of institutional memories, among others. The policy roots for the provision of basic information and instruction on HIV and AIDS prevention and control to the public.

Policy	Policy Applicability
Gender Policy 2011	This Policy will be referred to during Project implementation especially during hiring of staff to be involved in the Project, procuring of suppliers, sub consultants and sub-contractors to the Project
National Sustainable Waste Management Policy (2021)	The policy aims to create an enabling regulatory environment for Kenya to effectively tackle the waste challenge by implementing sustainable, waste management that prioritizes waste minimization and contributes to a circular economy

4.3. Legislations Policy

The proposed investments will be implemented within provisions of various Acts of Parliament and Local Legislations as summarized in

Table 4-2: Legislation Policies

Policy	Policy Applicability
Constitution of Kenya 2010	The CoK at Article 43 (1) provides that every person has the right – (b) to accessible and adequate housing, to reasonable standards or sanitation; and (d) to clean and safe water in adequate quantities. These provisions cover oblige state organs and bind them to provide not just high quality or clean and safe water but also adequate quantities to all people that they will serve. Also, 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.
Environment Management and Coordination (EMCA 2015)	The Act provides for the establishment of a legal and institutional framework for the management of the environment. This is achieved through various regulations. For Water Supply Projects proposed in Chogoria, the following EMCA Regulations will be applicable: (i) EMCA (Waste Management) Regulations, 2006 Legal Notice No. 121; (ii) EMCA (Water Quality) Regulations, 2006 Legal Notice No. 120; (iii) EMCA (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61; (iv) EMCA (Air Quality Regulations 2014)
Environmental Impact	The regulation provides a framework under which Environment and Social Impact Assessment for the Project will be prepared, Regulation 4(1) further states that: (a)"…no Proponent shall

Policy	Policy Applicability
Assessment and Audit) Regulations, 2003	implement a project: likely to have a negative environmental impact. (b) for which an environmental impact assessment is required under the Act or these Regulations, unless an environmental impact assessment has been concluded and approved in accordance with these Regulations…"
Environmental Management & Coordination (Water Quality) Regulations, 2006	Regulation 9 provides for water quality monitoring. It states that the "Authority in consultation with the relevant lead agency, shall maintain water quality monitoring for sources of domestic water at least twice every calendar year and such monitoring records shall be in the prescribed form as set out in the second schedule to these regulations".
Waste Management Regulations, 2006	Regulation 4 (1) states that "no person shall dispose of any waste on a public highway, street, road, recreational area or in any place except in a designated receptacle". Regulation 4 (2) further states that "a waste generator shall collect, segregate and dispose such waste in the manner provided for under these regulations". The proponent will use provisions of this regulation to ensure that waste is handled, stored, transported and disposed as per this regulation.
Noise and Excessive Vibration Pollution (Control) Regulations, 2009	The Contractor 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 by vehicles. The regulations provide for a maximum of 60 dcl during the day and 35 dcl during the night for a construction site.
Environmental Management and Coordination (Air Quality Regulations 2014	These regulations provide a framework for management of plant and equipment emissions of hydrocarbons on site. The regulations require that all plant and equipment on site should be well serviced to manufacturers specifications to avoid air pollution, the regulation also require monitoring of baseline air quality within construction site and implementation of correction action where the standards are not complied to. Water spray will be used at all times when working in dry areas to avoid risks associated with dust menace.
Land Act 2012	It is the substantive law governing land in Kenya and provides legal regime over administration of public and private lands. It also provides for the acquisition of land for public benefit. The government has the powers under this Act to acquire land for projects, which are intended to benefit the general public. The Project proposed will be implemented within government land

Policy	Policy Applicability
	and along road reserves. However, sites for WWTP will be acquired through willing buyer willing seller arrangement.
Water Act 2016	The Water Act 2002 was amended in the year 2016 to align to the Kenyan Constitution 2010. The Act vest the responsibility of developing water and sanitation infrastructure (sewerage and water supply) in Tharaka Nithi to Nithi Water and Sanitation Company (NIWASCO). The Design and ESIA Teams have adequately involved NIWASCO in the preparation the Project.
County Government Act No. 17 of 2012	The proposed Projects will be implemented within Chogoria Project area. Part II of the Act empowers the county government to be in charge of function described in Article 186 of the constitution, (county roads, water and Sanitation, Health). The Projects once complete will be handed over to NIWASCO County Government for operation and maintenance.
Physical Planning Act 1996 (286)	Section 29 of the said Act empowers the local Authorities (now county governments) to reserve and maintain all land planned for open spaces, parks, urban forests and green belts as well as land assigned for public social amenities. The Projects identified will be implemented with the Spatial Plan developed by the Tharaka Nithi County Government.
Urban Areas and Cities Act 2011	This Law passed in 2011 provides legal basis for classification of urban areas (City) when the population exceeds 500,000; a municipality when it exceeds 250,000; and a town when it exceeds 10,000) and requires the city and municipality to formulate County Integrated Development Plan (Article 36 of the Act). The Projects described in this assessment are within Tharaka Nithi County CIDP 2013-2017.
Occupational Health and Safety Act (OSHA 2007)	The Act provides EHS Guidelines which shall be followed by both the Contractor and Supervising Consultant during implementation of the Project to avoid injuries and even loss of life to workers and neighbouring community.
Public Health Act (Cap.242)	The Act provides Guidelines to the Contractor on how he shall manage all wastes (Liquid and Solid Wastes) emanating from the Project in a way not to cause nuisance to the community. This Act, during construction shall be read alongside the waste management regulations of EMCA 2015 for utmost compliance.

Policy	Policy Applicability
HIV and AIDS Prevention and Control Act 2006	The object and purpose of this Act is to (a) promote public awareness about the causes, modes of transmission, consequences, means of prevention and control of HIV and AIDS; (b) extend to every person suspected or known to be infected with HIV and AIDS full protection of his human rights and civil liberties. The Act provisions will be applied during Project implementation phase where the contractor will be required to create awareness among workers and community at large
Sexual Offences Act 2006	An Act of Parliament that makes provision about sexual offences aims at prevention and the protection of all persons from harm from unlawful sexual acts, and for connected purposes. Section 15, 17 and 18 focuses mainly focused on sexual offenses on minor (children).
Child Rights Act (Amendment Bill) 2014	This Act of Parliament makes provision for parental responsibility, fostering, adoption, custody, maintenance, guardianship, care and protection of children. It also makes provision for the administration of children's institutions, gives effect to the principles of the Convention on the Rights of the Child and the African Charter on the Rights and Welfare of the Child. The contractor under this Project will be required to comply to provisions of the Act during Project implementation
Labour Relations Act 2012	An Act of Parliament to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratization of trade unions and employers organizations or federations, to promote sound labour relations through the protection and promotion of freedom of association. This act will be applied by labour force on site in addressing disputes related to working conditions.
National Gender and Equality Commission Act 2011	The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all, women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities. This Act will be applied during hiring of workforce on site.
Public participation bill of 2016	The Bill is an ACT of Parliament that provides a general framework for effective public participation and to give effect for the constitutional principles of democracy. The purpose of the act includes promotion of democracy and public participation of the people according to article 10 of the constitution, promote community ownership for public decisions and promote public participation and collaboration in governance processes.

Policy	Policy Applicability
	In adherence to the bill two main stakeholder workshops and 5nr public meetings were carried out during Project EISIA study and in the full ESIA study. The purpose of the stakeholder workshops included informing the community on the project, incorporating the views of the people into the project design, enhancing the sustainability of the project by allowing feedback of major concerns in the project life.
Energy Act, 2006	The Energy Act, 2006 was enacted on 2nd January 2007establishes an Energy Regulatory Commission (ERC) mandated to perform all function that pertains to energy production, transmission, setting and enforcing of energy policies, public education and enforcing energy conservation strategies, prescribing the energy licensing process and issuing of licenses that pertain to energy sector in Kenya. Section 30 of the Act provides the factors that shall be taken into consideration prior to issuance of license. It states the need and expression of an entity to conserve and protect the environment and natural resources in accordance to the EMCA 1999. Moreover, the Act gives provisions for the need to protect health and safety of users of energy by providing an enabling environment of operation that protects the health and safety of users of the service for which the license or permit is required and other members of the public affected by the undertaking.
County Government Act, 2012	The main purpose of the enactment of this Act was to give effect to Chapter Eleven of the Constitution; to provide for county governments' powers, functions and responsibilities to deliver services and for connected purposes. Functions which were carried out by local governments were effectively transferred to the county governments. The Act gives county the responsibility of planning and co-coordinating all developments within their areas of jurisdiction. Part XI (sections 102-115) of the Act provides for planning principles and responsibilities of the county governments. The land use and building plans provided for in the Act are binding on all public entities and private citizens operating within the county. The proposed project is within the Nairobi City Government and thus there will be need of working in liaison with the County Government. The County government may also issue directives, and authorizations on various aspects e.g., waste management and fire emergency preparedness among others. *The proponent will work in liaison with NCC and in particular the Water, Energy, Forestry, Environment and Natural Resources sector.*
The Penal Code CAP 63	Chapter XVII on "Nuisances and offences against health and convenience" contained in the penal code strictly prohibits the release of foul air into the environment which affects the health

Policy	Policy Applicability
	of the persons. It states "Any person who voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighborhood or passing along a public way is guilty of a misdemeanor." *Waste disposal and other project related activities shall be carried out in such a manner as to conform to the provisions of this code.*
Permits and Licenses	The Proponent 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, collection of Waste by a NEMA licensed handler. NIWASCO will before project operation apply for license to discharge into the environment. Other permits will include leases from Kenya Forest Services (KFS) and Water Resources Authority (WRA) for the Water Supply Component.

4.4. African Development Bank Policy Provisions

The Project is being financed by AfDB and was therefore checked against the listed Operation Safeguards and appropriate mitigation measures for impacts likely to be triggered under each policy included in the EMSP. Table 4-3 presents a summary of the Bank's applicable Operational Safeguards and their relevance to the proposed project.

Table 4-3: Bank's Operational safeguards

Policy	Criteria in The Project	Discussions
OS 1: Environmental and Social Assessment	Yes	The Project components will trigger OS 1, the assessment identified that According to OS 1 screening provisions, Chogoria Water Supply Infrastructure is a Category 2, the project is likely to have detrimental site-specific environmental and/or social impacts that are less adverse and largely reversible, and readily minimized by applying appropriate management and mitigation measures. Mitigation measures for impacts identified are detailed in chapter 6 of this report.
OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation	Yes	The policy aims to avoid involuntary resettlement where feasible, or minimize resettlement impacts where involuntary resettlement is deemed unavoidable after all alternative project designs have been explored. For Chogoria Water Supply Infrastructure, displacement not triggered as pipelines are designed to follow road Right of Way (RoW) and River Riparian- However, impact crops/trees / structures/fences will be identified along the easement to be used by water pipelines.
OS 3: Biodiversity, Renewable Resources and Ecosystem Services	Yes	The safeguard aims to conserve biological diversity and ecosystem integrity by avoiding or, if avoidance is not possible, reducing and mitigating any adverse environment and social risks., For proposed project works might result in loss of vegetation diversity which provide habitat to wildlife and other related ecosystems benefits. However, the impacts to biodiversity by the above-described works will be less significant as detailed in Chapter 7 of this report.
OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency	Yes	The Project shall utilize raw materials both during construction and operation phase that could result to pollution of biophysical environment if not handled appropriately. Appropriate mitigation measures for likely waste to be generated by the Project are detailed in Chapter 7 of this report. Project activities shall not result to significant amount of greenhouse gases, EMSP prepared for operation phase provides for measures to be adopted to ensure efficient function of the Plant consequently reducing emission of methane and hydrogen

Policy	Criteria in The Project	Discussions
		sulphide gases. Also, the Project design has ensured that sewer flows through by gravity hence reducing the need for pumping.
OS 5: Labour Conditions, Health and Safety	Yes	The Project shall involve workers both during construction and operation phases of the project. This policy read together with OSHA 2007 shall form integral instruments to be used in ensuring that health, safety and working conditions of both works and community is safeguards. The Labour Relations Act 201 will be applied by labour force on site in addressing disputes related to working conditions.

5. GRIEVANCE REDRESS MECHANISM

5.1. Overview

A Grievance Redress Mechanism (GRM) is an instrument through which dispute resolution is sought and provided. It involves the receipt and processing of grievances from individuals or groups negatively affected by activities of a particular project. A Grievance Redress Mechanism (GRM) plays a critical role in preventing negative interruptions in project implementation occasioned by legal redress that are costly and time consuming. It spells out avenues to mitigate grievances from stakeholders and provides a legitimate, accessible and cost-effective avenue for receiving and addressing grievances whenever they occur.

5.2. Objectives of the Grievance Redress Mechanism

The objectives of the GRM are as follows:

(i) To provide and operationalize structures for receiving and addressing grievances emanating from project activities and providing feedback.
(ii) To sensitize stakeholders on existing avenues and channels for registering and resolving grievances
(iii) To establish a trusting and respectful relationship between the Project and the community.
(iv) To promote early identification of grievances and address them effectively and efficiently towards better manage of project impacts.
(v) To promote good relations between the project implementers, executers and the local communities.
(vi) Facilitate a learning culture, by means of analysing trends and patterns to drive continuous performance improvement and reduce repeat grievances thus improving project management decisions.

5.3 Principles of the GRM

The effectiveness of this GRM will be guided by following principles:

- Accessibility – The GRM shall be accessible to everyone and at any time.
- Predictability –time bound at any stage with specified timeframes for the responses.
- Fairness – The procedures herein are perceived as unbiased in regard to access to information and meaningful public participation.
- Rights compatibility – The outcome of the mechanism should be consistent with the Bank and national standards and should not restrict access to other redress mechanisms.
- Transparency and Accountability – The entire GRM process to be open and transparent and done out of public interest.
- Culturally appropriate, thus sensitive to people's perceptions about fairness, justice and respectful solutions

- Feedback – The GRM to serve as a means of feedback from various stakeholders to improve project outcomes.

5.4 Types of Grievances

The GRM will solely be dedicated to handling grievances related or emanating from activities of the proposed projects under the National Urban Water Supply and Sanitation Programme. The type/ scope of grievances shall include those related to:

- Grievances and disputes emanating from compensation.
- Inadequate stakeholders' consultation and participation at any stage of projects implementation
- Negative social and environmental impacts emanating from projects implementation.
- Concerns on prioritization and/ or distribution of project interventions
- Concerns on social and environmental safeguards matters.
- Cases of gender-based violence, particularly sexual exploitation and abuse/sexual harassment
- Any concerns/ complaints from stakeholders relating to contractors and consultants engaged during projects implementation.

Any grievances that will be raised outside this scope shall be redirected to other GRMs discussed at national level. Matters that are within project management and coordination will also not trigger the use of this GRM and will be dealt with administratively within the projects.

5.5 The Grievance Redress Mechanism Structure

The GRM structure presents procedures and timeframes for grievance redress at various levels. Figure 5.1. presents the general steps for each grievance reported.

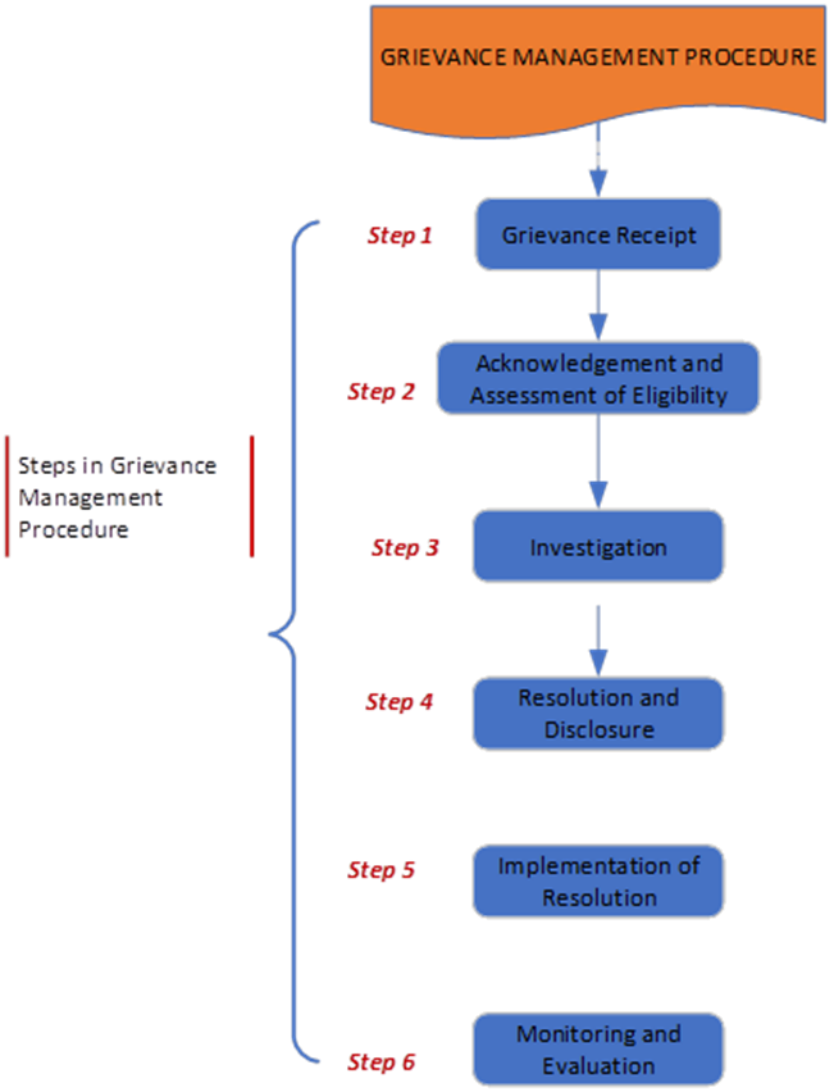

Figure 5.1: Grievance Management Procedure

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

5.2.1. First Level of Redress: Community Level

The first level of grievance redress will be at the community level mainly targeting the local beneficiary communities and the project affected persons (PAPs). For every community at location level, a local grievance management committee shall be formed and trained to handle community grievances/ complaints emanating from the implementation of the proposed water supply and sanitation projects. The committee shall comprise of five members who shall include the local chief as the chair. The other members shall be nominated by the project beneficiaries ensuring gender balance and a representation of the vulnerable where applicable. The committee shall be trained by the community liaison officer from the local water service provider (WSP) on conflict resolution, group dynamics, project sustainability among other areas that shall be deemed necessary.

(i) Step 1: Receipt of grievances

The mode of receipt of the complaints/ grievances may either be in writing, reported verbally, over the phone or emails. Once the local grievance management committee receives a grievance, the committee secretary shall be mandated to register the grievance. The received grievance and relevant information related to the grievance shall be recorded on a standardized grievance register.

(ii) Step 2: Acknowledgement, assessment for eligibility and recording

The committee shall then determine the eligibility of the grievance received and if eligible, they shall notify the complainant and acknowledge receipt within three (3) days of receiving it. If not eligible, the complainant shall be informed of the reasons and advised on other existing GRMs to address his grievance. The complainant shall also be informed of the next steps and the timeframes including any further information/ documentation that maybe required to aid in investigation. The timeframes should not be later than twenty-one (21) days after the grievance is received.

(iii) Step 3: Investigation

The committee shall then set a day when all members are available and begin the investigation by assessing the seriousness/ severity of the grievance and classifying it either as high, medium, or low based on its impact to the complainant and the project. The assessment may necessitate the need for additional data collection through field visits to the sites, interviews with the relevant groups and follow up meetings with the affected groups to validate the information provided by the complainant. Minutes of such meetings shall be recorded and attached to the grievance report.

(iv) Step 4: Grievance Resolution and Disclosure

Depending on the findings and severity of the grievance, a resolution shall be decided immediately, and the deliberations recorded in the grievance resolution form. However, if the grievance cannot be resolved by the local grievance management committee it shall be escalated to the county level and to the national level if not resolved at the county level. In cases where the complainant shall not be satisfied with the resolution given by the concerned committee, they shall be advised to report to the next level of redress. Also, in cases where the project GRM levels are unable to resolve the grievance, the complainant will be referred to the existing legal and judicial mechanisms in Kenya. This process should take a maximum of thirty (30) days from the time the parties are informed of the acceptance of the grievance.

(v) Step 5: Implementation of the Resolution Mechanism

Once a resolution has been determined and the same communicated to the affected parties, an agreement shall be drawn outlining the following among other strategies for settlement of the grievance:

- Requesting the relevant agencies/ contractors responsible for the grievance to take appropriate measures to address the root causes of the grievance.
- Determining reasonable compensation for loss from the accused parties
- Signing agreements between the accused persons and the project for solutions mutually agreed upon.

(vi) Step 6: Grievance monitoring

The local grievance management committee shall then monitor the implementation of the grievance resolution mechanisms given and assess any further impacts of the project related grievances. They shall also monitor to ensure that the redress is granted to complainant in a timely and efficient manner and give regular feedback to the complainants about the progress.

5.2.2. County Level

The second level of redress will be at the county level where a county grievance management committee shall be established and chaired by a nominee of the proponent, TWWDA. The membership of the committee shall entail a nominee from the water service providers (WSPs), community liaison officers from the WSPs and the chairs of the various local grievance management committees in the County. The committee will also 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. Similarly, like in the first level of redress, a grievance resolution form shall be filled providing details of how the grievance was investigated and the recommended action provided. The resolution period shall be expected to take a maximum of fourteen (14) working days after which the complainant shall be notified through a grievance disclosure form. Grievances that shall not be resolved at this level shall be referred to the next level.

The county grievance management committees shall be obligated to submit a quarterly report using the standardized format. of registered complaints to Tana Water Works Development Agency, TWWDA.

5.2.3. Third Level of Redress: National Level

At the National Level, a Grievance Handling Committee shall be appointed and equally trained to handle grievances. The committee shall be chaired by a nominee at the Ministry of Water, Sanitation and Irrigation, other membership shall include the CEO TWWDA, the project co-ordinators at TWWDA, the chairs of the county grievance management committees and a representation from TWWDA legal department. The ministry

shall appoint a grievance handling officer who shall foresee operations of the committee. As in other levels, the reporting tools for other levels shall equally apply at national level reporting.

The resolution period at national level shall be expected to take a maximum of twenty (21) working days and the concerned shall be notified through the GRM/003 form. Should the grievance not be solved within this period, the complainant shall be advised to seek recourse through the legal and judicial mechanisms in Kenya discussed below.

TWWDA shall maintain databases and reports on all grievances and regularly conduct an assessment of the overall effectiveness and the impact of the GRM. The results of the assessment shall be used to improve the performance of the GRM and provide valuable feedback to project management.

5.2.4. National Arbitration Processes in Kenya

In the event that the complainants are dissatisfied with the outcome of grievance resolution, they shall be advised to seek recourse through the following national arbitration processes:

(i) Commission on Administrative Justice (CAJ)
(ii) National Environment Tribunal (NET)
(iii) Land Acquisition Tribunal
(iv) Courts

(i) Commission on Administrative Justice (CAJ)

The Commission on Administrative Justice (CAJ) also known as the Office of the Ombudsman is an independent commission established by the Commission on Administrative Justice Act, 2011 pursuant to Article 59 (4) of the Constitution of Kenya. It is the foremost constitutional commission whose primary function is to ensure public officers and public institutions respect sovereignty of the people of Kenya. The CAJ is mandated to address all forms of maladministration, promote good governance and efficient service delivery in the public sector by enforcing the right to fair administrative action. The CAJ investigates abuse of power, manifest injustice and unlawful, oppressive, unfair or unresponsive official conduct.

(ii) National Environment Tribunal

Tribunals are an integral component of the justice system in Kenya and play an important role in reducing pressure on courts and facilitating expeditious access to justice. The Constitution of Kenya, 2010 recognizes tribunals as part of subordinate courts in the judicial hierarchy hence demonstrating their importance in the administration of justice in Kenya. The National Environment Tribunal (NET) is established under the Environmental Management and Co-Ordination Act (EMCA). The jurisdiction of the Tribunal is set out under section 125 of the Act. The Tribunal hears and determines appeals concerning *grant of a license or permit or refusal*

to grant a license or permit; imposition of any condition, limitation or restriction on a license; revocation, suspension or variation of a license the amount of money required to be paid as fee under the Act or imposition against the person of an environmental restoration order or environmental improvement order by the Authority under the Act or its regulations. The Act requires appeals to be lodged with the Tribunal within sixty days of the occurrence of the event which a person is dissatisfied with.8 In addition, the jurisdiction of the Tribunal extends to appeals against decisions of the Director General of the National Environment Management Authority (NEMA). All grievances related to project licensing by NEMA shall be referred to the National Environment Tribunal.

(iii) Land Acquisition Tribunal

The Land Act, 2012 was amended in 2019 to include Section 133A which provided for the establishment of a tribunal, the Land Acquisition Tribunal to hear and determine appeals from decisions of the National Land Commission in matters relating to the compulsory acquisition of land.

The jurisdiction of the Land Acquisition Tribunal is in respect of appeals from the decision of the National Land Commission (NLC) on matters compulsory acquisition, as per section 133C (1) of the Land Act. Further, section 133C (6) of the Land Act grants initial/first instance jurisdiction to the tribunal to deal with disputes on creation of wayleaves, easements, and public right of way. Also, as per section 133C (8) of the Land Act, the Land Acquisition Tribunal has the powers to uphold and enforce the Bill of Rights and review any administrative action as to compulsory acquisition. In summary, the LAT has jurisdiction on disputes regarding:

(i) Compulsory acquisition of land
(ii) Wayleaves; easements; and public right of way
(iii) Upholding and enforcement of the Bill of Rights, as well as review of administrative action, as to compulsory acquisition

Even though, compulsory acquisition of land is not envisaged in this project, the role and provisions of the Land Acquisition Tribunal have been reviewed and provided as a precaution.

The Courts have power to hear and determine disputes, primarily of criminal and civil nature. Criminal cases are those in which the State prosecutes a person or an organization for committing an act which is not in the interest if the public, and therefore considered to be an offence against the state. Civil cases originate from a person who seeks redress for a private wrong such as breach of contract, trespass or negligence; or to enforce civil remedies such as compensation, damages or to stop some action.

Figure 5.2 presents a summary of the levels of grievance redress mechanism.

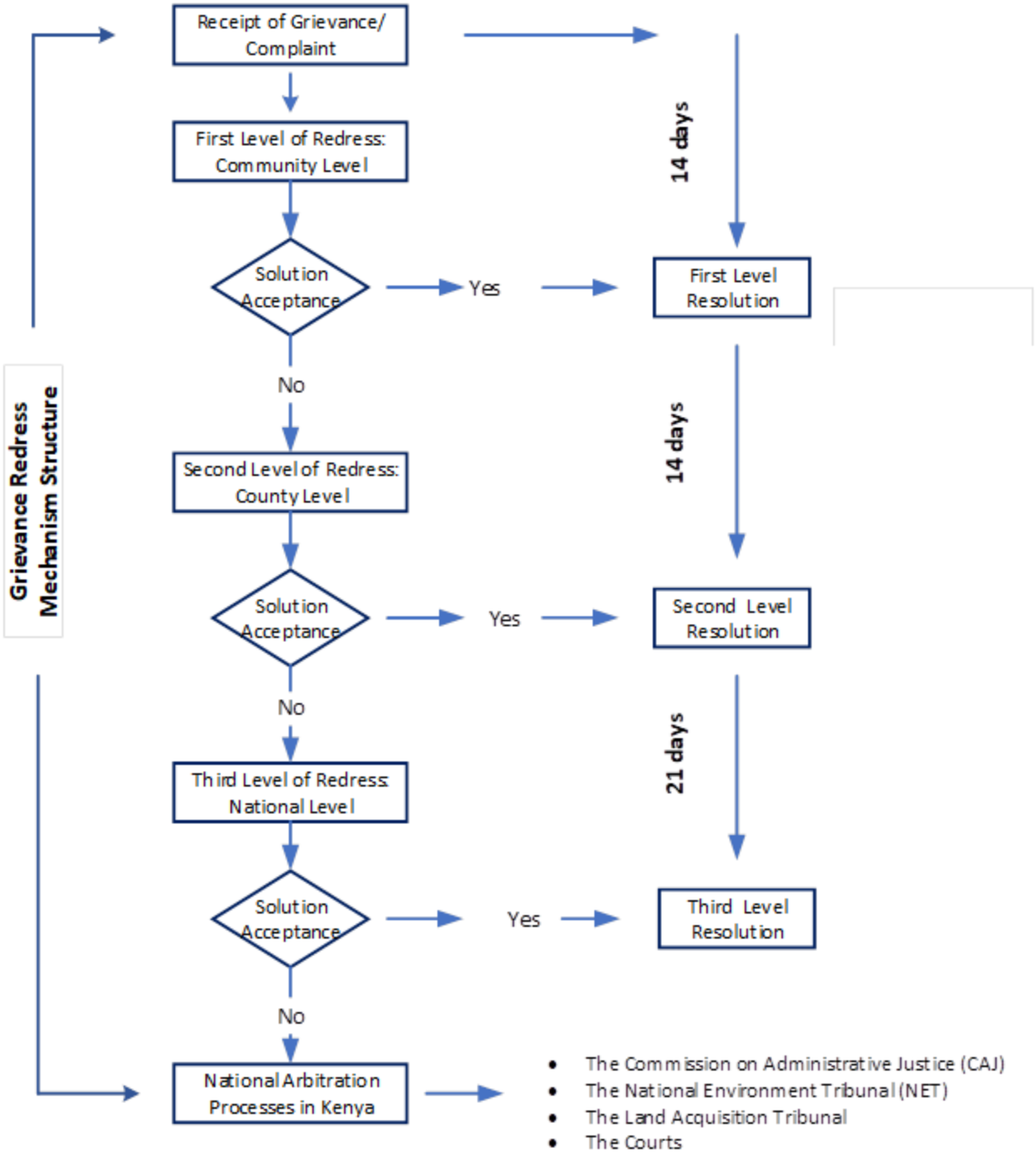

Figure 5.2: Levels of Grievance Redress Mechanism

6. STAKEHOLDERS CONSULTATION

6.1. Overview

This report section discusses the stakeholder engagement and public participation process conducted as part of the Environmental and Social Impact Assessment (ESIA) Study. It details the legal prerequisites for engaging stakeholders, describes the methodology employed in analyzing stakeholders, and summarizes the results of the consultations. Engaging with key project stakeholders is crucial within an ESIA study, as it significantly contributes to gaining the social acceptance for the project from both the local community and regulatory authorities.

6.2. Legal Requirements for Stakeholder Engagement

Kenya has established legal frameworks that mandate public involvement in development projects. In addition to the stipulations of the constitution of Kenya, specific laws have been enacted by parliament to implement these requirements. Furthermore, Kenya has adopted international conventions that further govern the consultation process.

6.2.1. Constitution of Kenya 2010

- Article 10(2) of the Constitution Provides **national values and principles of governance** in this Article bind all State organs, State officers, public officers, and all persons whenever any of them whenever they (c) make or implements public policy decisions. The national values and principles of governance as provided in the constitution include patriotism, national unity, sharing and devolution of power, the rule of law, democracy and **participation of the people and sustainable development**.
- Article (35) of the same constitution provides for Access to information, the articles indicates that every citizen has the right of access to information held by the State; an information held by another person and required for the exercise or protection of any right or fundamental freedom. The same article provides that the **State shall publish and publicize any important information affecting the nation**.
- Articles 174(c) state objectives of devolutions, among them is that devolution give powers of self-governance to the people and enhance the **participation of the people in the exercise of the powers of the State and in making decisions** affecting them and to recognize the right of communities to manage their own affairs and to further their development.
- Article 184 is exclusive on urban areas and Cities, the article provides that National legislation shall provide for the governance and management of urban areas and cities and shall, among other provision provide **for participation by residents in the governance of urban areas and cities**.
- Article 201(a) provides principles of public finance which require openness and accountability, **including public participation in financial matters**.

- Article 232(1) provides values and principles of public service include among others **involvement of the people in the process of policy making**.

6.2.2. The Public Participation Bill 2016

The Bill, when enacted by parliament, will be referred to as "Public Participation Act". The Bill provides general guidelines of ensuring public participation in nation governance. The Bill will give effect to Articles of the Constitution referred to above namely Articles 10(2), 35, 69(1), 118, 174(c), 184(1)(c), 196, 201(a), 232(1) d.

The Bill provides that public participation shall be guided by the following:

- The public, communities, and organizations to be affected by a decision shall have a right to be consulted and involved in the decision-making process.
- Provision of effective mechanisms for the involvement of the public, communities, organizations, and citizens that would be affected by or that would be interested in a decision.
- Participants' equitable access to the information they need to participate in a meaningful manner.
- That public views shall be taken into consideration in decision making.
- Development of appropriate feedback mechanisms
- Adherence to the national values under Article 10 of the Constitution
- Adherence to the principles of leadership and integrity set out in Chapter Six of the Constitution
- Adherence to the principles of public participation as may be prescribed by any written law.
- Promotion of sustainable decisions recognizing the needs and interests of all participants, including decision makers

6.3. Objectives of Public Consultations

The key objectives of the consultation and public participation for the proposed water supply distribution – Last Mile Connectivity (LMC) project for Chogoria Bulk water supply was to:

(i) Disseminate and inform the public and stakeholders about the project with special reference to its key components and description.
(ii) Create awareness among the public on the need for the ESIA for the proposed project.
(iii) Gather comments, suggestions, and concerns of the interested and affected parties.
(iv) Incorporate the information collected in the ESIA.
(v) Build community consensus and acceptance of the proposed project.

6.4. Methodology and of Public Consultations Process

Public participation for the proposed project was conducted through the public consultative meetings and admission of questionnaires to allow for systematic understanding and interaction of the project beneficiaries,

neighbors, local community members/ surrounding enterprises and any other would be affected/ interested parties.

6.4.1. Public Consultation Questionnaires

ESIA questionnaires were administered, to gather information from key stakeholder and the members of the public. This was done using structured questionnaires to assess the environmental and socio-economic views of the respondents. Copies of the filled questionnaires administered in the project area are appended to this report **(Appendix III).**

6.4.2. Key Informant Interviews

The key stakeholder engagements were conducted to foster better and mutual understanding of public concerns as well as incorporate key stakeholders' opinions to this report.

6.4.3. Public Consultation Meetings

To gather the perspectives of essential stakeholders and any other parties that might be affected or interested, the consultant arranged a meeting that primarily targeted the local administration, including the client. This meeting aimed to inform attendees about the proposed project, its expected impacts, and benefits. A stakeholder mapping exercise was conducted before the meeting to determine which key stakeholders should be invited**.** Those directly impacted by the project were carefully examined in discussions with the project's initiator.

The meeting included a presentation on the project's scope, followed by an open discussion forum where all relevant issues were addressed, and consensus was reached among stakeholders. At the public participation meeting, stakeholders had the opportunity to engage with the project's representative, the ESIA expert. The outcomes of this engagement are documented in this report, capturing the issues, suggestions, concerns, and recommendations from the public meetings held on-site. The meeting saw high attendance, with participants actively engaging in the discussions (**refer to the Minutes in Appendix I and the List of Participants in Appendix II).**

6.5. Consultation and Disclosure Outputs

The appendices contain details on the public consultations conducted on the **15th February 2024 at Chogoria and Kairuri chief camps in Tharaka Nithi County** as part of the environmental impact assessment for the proposed project. The details of the meeting are summarized in **Table 6-1** below:

Table 6-1: Details of the meetings held

Number of meetings held	2	
Venue	Chogoria chief camp	Kairuni chief's office

Date	14th February 2024		15th **February** 2024	
Participants	Males -7	Females -1	Males -33	Females - 6

The details feature selected responses recorded in the minutes **(Appendix I**). It was observed that attendees praised the initiative and expressed eagerness for the project's commencement. Nonetheless, there were certain aspects for which the members requested further clarification. A summary of the main issues highlighted by the participants is outlined in **Table 6-2** below:

Table 6-2: Summary of the baraza outcome

Issues raised	**Brief explanation**	**Technical Team Response**
Employment	Fences and roads/paths damaged during excavation	The contractor shall endeavour to restore the fence or any damaged structure back to its original form as much as possible.
Local work force	Need for employment during the Project	In a bid to grow the economy of the project area, the contractor shall be keen on hiring locals especially for the unskilled labour.
Compensation of PAPs	Fear of lack of compensation	Compensation for all persons that'll be directly affected by the projects shall be done diligently following the Resettlement Action plan that shall be formulated by the consultant.
Repair and maintenance	If a person detects a leakage from the proposed pipeline during the project operation phase, they can report the leakage to a designated reporting center or authority.	After construction and successful commissioning of the water and sewer project, the TWWDA shall hand over the project to the area Water Service Provider; NIWASCO any reports pertaining leakage or system failure shall be reported to their field officers who will in return carry out quick repairs. The area water provider shall provide hotline numbers on which they can be reached.
Water	High water rates of community water proposed cheaper rates. Need for repair of damaged water pipelines during construction	Rates reviewed by Water Company are expected to be reasonable. Water lines damaged during construction will be restored as immediate as possible.

6.6. Anticipated impacts

6.6.1. Positive Impacts

Positive impacts identified by stakeholders include the following:

(x) **Improved Access to Clean Water**: The project will ensure a reliable and clean water supply, significantly enhancing the community's health and quality of life by reducing the incidence of waterborne diseases.

(xi) **Economic Growth**: By providing a consistent water supply, the project will support local agriculture, industry, and other economic activities, contributing to overall economic development.

(xii) **Employment Opportunities**: The construction and maintenance of the water supply infrastructure will create jobs for residents, both during the implementation phase and operations.

(xiii) **Educational Benefits**: With easier access to clean water, children, especially girls who often bear the burden of fetching water, can spend more time in school, improving educational outcomes.

(xiv) **Environmental Conservation**: A managed community water supply can lead to more sustainable water usage patterns and protect local ecosystems from overexploitation.

(xv) **Enhanced Community Health**: Access to clean water reduces the prevalence of waterborne diseases, improving overall community health and reducing healthcare costs.

(xvi) **Improved Sanitation**: The project often goes hand in hand with improved sanitation facilities, further enhancing public health and environmental conditions.

(xvii) **Resilience to Climate Change**: By securing water resources, communities can be more resilient to the impacts of climate change, such as droughts or floods.

(xviii) **Time Savings**: Reduced time spent on fetching water from distant or unreliable sources allows for more productive uses of time, benefiting individual and community development.

6.6.2. Negative impacts

(xix) **Environmental Disruption**: Construction activities may disrupt local ecosystems, including flora and fauna, water bodies, and natural landscapes, potentially leading to habitat destruction or alteration.

(xx) **Noise and Dust Pollution**: The construction phase is often associated with increased noise and dust, which can affect the quality of life for nearby residents and wildlife.

(xxi) **Temporary Water Supply Interruptions**: During both construction and maintenance of the water supply system, there might be temporary interruptions to existing water supplies, affecting residents' daily lives.

(xxii) **Social Disruption**: The introduction of construction teams and new workers into a community can sometimes led to social disruption, including issues related to the influx of non-local labour.

(xxiii) **Increased Traffic and Safety Risks**: The transportation of materials and workers can increase traffic, leading to congestion and heightened safety risks for residents, especially children.

(xxiv) **Land Acquisition and Displacement**: Implementing a water supply project may require land acquisition, potentially leading to the displacement of people, loss of property, or changes in land use, affecting livelihoods.

(xxv) **Resource Allocation Conflicts**: Competition for water resources, especially in areas with limited water availability, can lead to conflicts among communities, agricultural users, and other stakeholders.

(xxvi) **Operational Challenges**: Technical issues, poor management, or inadequate maintenance during the operation phase can lead to water quality problems, supply interruptions, and inefficient service delivery.

(xxvii) **Dependency and Reduced Self-Sufficiency**: Relying on a centralized water supply can reduce communities' self-sufficiency, making them more vulnerable to disruptions or failures in the supply system.

Addressing these potential negative impacts requires careful planning, effective community engagement, and sustainable management practices to ensure the long-term success and acceptance of the project.

Plate 6.1: The chief giving remarks during the public consultative forum at Chogoria chief's office

Plate 6.2: Mr. Mutuma attending to issues raised by community members at Chogoria

6.7. Stakeholder Engagement Plan

6.7.1. Stakeholder mapping

Stakeholder mapping in development projects enables the engagement to be tailored appropriately to meet the needs and interests of different stakeholder groups and hence ensure their views and concerns area addressed in a suitable manner. The proposed Water Supply and Sewerage Projects by TWWDA under the National Urban Water Supply and Sanitation Programme shall bring on board various stakeholders as presented in **Table 6-3**

Table 6-3: Stakeholder Mapping and Analysis

Category of Stakeholder	Entities/ Groups	Role of Stakeholder
1. Implementing Agency	TWWDA	• Overseeing project implementation • Compensation of Project Affected Persons • Providing regular updates on project's progress to relevant stakeholders • Maintenance and management of the water and sewerage infrastructure works during operation phase
2. Affected Parties		
a) Directly Affected Parties	Project Affected Persons (PAPs) who are affected through loss of land, land use or loss of livelihood	Provision of land and wayleave for the proposed projects
	Local communities	Project beneficiaries, ownership to ensure sustainability of the projects
b) Indirectly **Affected Parties**		
• National Government Institutions	Ministry of Finance and National Treasury	Coordination of project finances
	Ministry of Water, Irrigation and Sanitation	Coordination of Water Supply and Sewerage Projects under the National Urban Water Supply and Sanitation Programme
	National Land Commission (NLC)	To monitor and have oversight responsibilities over land use planning throughout the country.
• Project executors	Contractors and their workers and Consultants	Project construction and Supervisory role; adherence to approved designs
• Project operators	Water Service Providers (WSPs) in respective project areas	• Technical support during planning and construction phases of the projects • Operationalization/ running of the projects after commissioning
• Relevant Tribunals and the Court	The Commission on Administrative Justice (CAJ),	• National arbitration processes in Kenya where stakeholders can seek recourse on project related grievances • Adjudication of environmental and land related matters
	National Environment Tribunal (NET),	
	Land Acquisition Tribunal	
	The Courts	

Category of Stakeholder	Entities/ Groups	Role of Stakeholder
• County Government Institutions and relevant agencies	Water Resource Authority, WRA	Issuance of water abstraction permits and monitoring water resource use
	Kenya Forest Service, KFS (applicable to projects using forest land e.g Runyenjes Water Supply Project)	Permits and wayleave acquisition
	NEMA	• Project licensing and monitoring adherence to conditions of licensing • Review of annual project audit reports and issuance of improvement orders
	Directorate of Occupational Health and Safety Services	• Registration of workplaces by all contractors • Monitoring of adherence to Occupational, Health and Safety standards as stipulated by the (OSHA) Act
	Water Services Regulatory Board (WASREB)	• Regulation of water and sewerage tariffs for sustainability purposes and for purposes of consumer protection
	Water Resource User Associations (WRUAs)	• Resolve conflicts arising from water use • Development of a Sub Catchment Management Plans (SCMPs) • Monitoring water resource availability, quality and use
	Other service providers using the road reserve e.g. KPLC, county government (drainage and pavements)	Support and cooperation with the project implementing teams
• Road Agencies	Kenya National Highways Authority (KENHA), Kenya Urban Roads Authority (KURA) and Kenya Rural Roads Authority (KERRA)	Necessary permits and approval to use road reserve
• Political Leaders	Political Leaders in the project areas (Governors, Deputy Governors, Senators, Members of Parliament (MPs), Members of County Assembly (MCAs)	• Political goodwill • Share project information in meetings
• Public Administration	County Commissioner, Deputy County Commissioner, Ward Administrator, Chiefs and Subchiefs)	• Security provision during all project phases • Community mobilisation
	Water and Sanitation	

Category of Stakeholder	Entities/ Groups	Role of Stakeholder
• County Departments	Environment and Natural Resources	Technical support to implementing agency e.g relevant approvals, provision of planning data for specific projects
	Public Health	
	Lands Department	
	Physical Planning	
3. Interested Parties		
• Financier/ Development Partners	African Development Group (AfDB)	• Projects Financing • Monitor project implementation process • Project evaluations and reviews
• Civil Society Groups	Human Rights Groups, Social Welfare Groups, Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs)	• Monitoring and evaluating the implementation of development projects • Provide feedback from communities
• Media	Local radio stations, newspapers	• Information sharing • Community mobilization through local broadcasting stations
4. Vulnerable and disadvantaged groups	• Female-headed households • Households with persons with disability • Elderly • Youth (18-35 years)	•

6.7.2. Stakeholder Needs and Preferred Communication Means

Table 6-4 presents the stakeholder needs for the water supply and sewerage projects and preferred communication means. The key characteristics of various stakeholders have also been presented.

Table 6-4: Summary of Stakeholder Needs and Preferred Communication Means

Stakeholder Category	Stakeholder Group	Key Characteristics	Specific Needs	Preferred Communication Means
Directly Affected Parties	Project Affected Persons, PAPs	• Residing in project areas i.e., along the wayleave • Will be impacted by project environmental and social risks and benefits too	• Fair, timely and adequate compensation for loss of land, land use and livelihood • Involvement in project planning • Adequate notice to vacate	• Public meetings (barazas) • Focus group • Individual PAP consultations
	General community members	• Residing in project areas, most are the targeted project beneficiaries. • Will be impacted by project E & S impacts	• Involvement in project planning • Employment opportunities during project implementation • Improved access to safe drinking water and sanitation	• Household Surveys • Public barazas
Indirectly Affected Parties				
National Government Institutions	Ministry of Finance and National Treasury			
	Ministry of Water, Irrigation and Sanitation			
	National Land Commission (NLC)		• Land acquisition for the projects	
Local administration	MCAs, Ward administrators	Informed on the progress of the Project	Regular communication and project updates	Keep informed
Government agencies	National Land Commission	NLC – to be involved in land compensation for projects	Land acquisition for projects necessitating total land acquisition	Information disclosure on projects through:

Stakeholder Category	Stakeholder Group	Key Characteristics	Specific Needs	Preferred Communication Means
		necessitating total land acquisition		• Phone / Email • One-on-one meetings on need basis • Sharing of relevant project documents • Round table discussions for decision making and consensus.
	NEMA		• Project ESIA reports • Strict adherence to projects conditions of licensing and ESMPs	
	Water Resource Authority, WRA	Consultations on water abstraction and hydrological analysis		
	Road agencies – KENHA, KURA, KERRA	Consultations on permits for using the road reserve	Timely completion of projects	
	Other service providers using the road reserve	Consultations	• Non-interference with their infrastructure, restoration and repair in case of interference	
National Government Departments	Ministry of Finance and National Treasury	Technical updates during project planning		Meetings
	Ministry of Water, Irrigation and Sanitation	Technical updates on project planning		Meetings
County Government Departments	Water, Roads, Public Health	Information sharing	Project information disclosure and regular updates	• One-on-one meetings • Round table discussions
Civil Society Organizations	Human Rights Groups, Social Welfare Groups	Information sharing	Project information sharing	• One on one meetings • Focus group meetings
Business Enterprises	Telecommunication Companies, Business Owners along the wayleave	Sensitization and consultations on project impacts and mitigation measures – e.g., loss of	Involvement in planning to ensure timely relocation of businesses on the wayleave after issuance of notice to vacate.	Focus group meetings

Stakeholder Category	Stakeholder Group	Key Characteristics	Specific Needs	Preferred Communication Means
		access, pavements, loss of livelihoods	Compensation for livelihood loss necessary support to contractors during project implementation	
Political Leadership	National Government and County Government Leadership, Ward administrators, MCAs	Consultations on planned projects	Oversight roles on government programmes	
Special Interest Groups	Widows, Children, Persons with disabilities, youth groups etc.	Individual PAPs who fall under the "vulnerable" engaged Special Interest Groups not engaged	Organise themselves in groups and articulate their needs	
Donor/ Financier	AfDB	Technical updates through reports	Regular communication and projects updates	Emails, Meetings
Vulnerable and disadvantaged groups	Female headed households	Residing and operating in project areas and often not included in communal decision making	Dedicated meetings / FGDs with women, and mechanisms to empower women to ensure their participation in meetings. Flexible scheduling to be tailored to household responsibilities	Community meetings, FGDs
	Youth (18 – 35 years)	Residing and operating in project areas and often not included in communal decision making	Meaningful inclusion in consultations and project activities to enable their empowerment.	Community meetings, FGDs
	Elderly and people with disabilities	Aged people of 65+, unable to work, physically and mentally disabled people staying at home	Accessibility needs	Local community leaders to reach out to the elderly

7. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION

7.1. Introduction

The Environmental and Social Impact Assessment (ESIA) for the proposed project has been thoroughly conducted to evaluate its potential environmental effects. Guided by the Environmental Management and Coordination Act (EMCA) No.8 of 2015, which sets forth the legal framework for such assessments in Kenya, the study identifies the project's impacts across various phases—construction, operation, and decommissioning.

These effects are classified into three main categories**: impacts on the biophysical environment**, **health and safety impacts,** and **socio-economic impacts**, all derived from an analysis comparing the project's anticipated environment against its proposed actions.

7.2. Positive impacts during project planning and design phase

7.2.1. Creation of awareness

During the planning and design phase of the proposed project, awareness done through consultations on different aspects of the project strengthened project acceptance and ownership. Awareness creation improves project acceptance in its planning, implementation and operations phases as well as promote project sustainability.

7.2.2. Employment opportunities

With the planning and design phase of the proposed project, there will be employment opportunities especially for professionals such as engineers, surveyors, environmentalists, health and safety, public health experts and sociologists among others. Those employed will improve their living standards from the fees they will be paid for their services.

7.3. Negative impacts during planning and design phase

The proponent mobilized a team of project design experts from Tana Water Works Development Agency and Environmental and Social consultants to undertake the surveys and other EA studies required for the project. There are potential risks of poor siting of the facilities or non-adherence to the guidelines and specifications on the design of the infrastructure. However, the planning and design studies do not allow for any large-scale destruction and disturbance of vegetation and soils.

Mobilization of the skilled experts and the process of consultations with key stakeholders however led to heightened expectations and speculations and especially on employment opportunities for the surrounding community members.

Proposed Mitigation Measures:

It is envisaged that there will be minimal to no negative impacts during the planning and design stage. However, the design team, Environment and Social experts shall take the necessary measures to mitigate risks through:

(xxviii) Liaising with the relevant Technical Government department in development of the designs.

(xxix) Proper siting of the distribution pipeline to avoid destruction of properties and existing infrastructure.

(xxx) Ensure all the legally required permits such as getting the designs approved, acquiring the ESIA License prior to undertaking the construction activities.

(xxxi) The contractor bidding documents should contain clauses on Environmental Social Health and Safety (ESHS) requirements to guide the contractor on the key requirements; and

(xxxii) Project Management Team (PMT) specifically the Environmental and Social Expert should ensure the design requirements are adhered too in the planning stage.

7.4. Positive impacts during construction phase

The construction stage of the Project is divided into Pre-Construction and Construction phases. The duration of this phase is contingent on the specific activities involved in the project, typically ranging from one to three years. The project's direct positive effects include:

(xxxiii) Employment opportunities during construction, the design report has provided for both unskilled and skilled labourers to be sourced from the local market.

(xxxiv) Provision of ready market for construction materials such as sand, ballast and cement that will be sourced from local market, this will lead to injection of money into the local economy.

(xxxv) Technological and knowledge transfer to the local sector, this will be through the artisan who will be employed and trained by the Project.

7.5. Negative Impacts during Construction Phase

7.5.1. Vegetation Clearing, Soil Erosion and Siltation

Construction activities have the potential to clear vegetation and loosen soils particularly on slopes which can then be washed down into the lower areas (streams and valleys). Soil quality degradation is also likely to occur during construction as a result of disposal of construction materials on the adjacent lands especially near the base of the valleys and ultimately into the rivers.

Proposed Mitigation Measures:

The following measures are proposed to mitigate against soil erosion and measures to enhance vegetation cover.

(xxxvi) Re-plant the indigenous vegetation as much as practical once work is completed.

(xxxvii) Limit vegetation clearance unless where unavoidable circumstances appear.

(xxxviii) Contain excavated soils so that they will not find their way into nearby water sources.

(xxxix) Cement mixing should be done in a designated area away at a safe distance from storm water drains.

(xl) Spilled cement or concrete should be collected and disposed away from natural water ways or storm water drainage.

(xli) Sensitize workers and enable them to properly handle concrete spillages or waste cement.

7.5.2. Air Pollution Impacts

Potential air pollution caused by emissions from construction equipment (Carbon, Hydrocarbons, Particulate Matter) – earth movers and excavators, vehicles, concrete and cement batching plants and trucks, emission of dust from trucks and vehicles accessing the construction areas and camp sites as well as material piling (sand, aggregate and pipes).

Proposed Mitigation Measures:

The following measures are proposed to mitigate against air pollution:

(xlii) Maintain construction equipment at high operational conditions such as to control emissions into the air.

(xliii) Earth moving be done under dump conditions as much as possible to prevent emission of dust into the air.

(xliv) Similarly, piled materials (sand and aggregate) should be maintained dump to prevent dust emissions.

(xlv) It will be necessary to notify the immediate neighborhoods on the potential odors during the excavations. The period should, however, be kept as short as possible (odour generation may not be fully eliminated during the period)

(xlvi) Use of sprinklers to regularly water construction site, this suppresses the dust menace at construction sites.

(xlvii) People working in the sites with dust emissions to use dust masks to prevent respiratory infections.

7.5.3. Noise Pollution

Construction Phase for the proposed Project will most likely result in noise emissions and excessive vibrations as a result of the machines that will be used (excavation equipment among others) and construction vehicles delivering materials to site. Noise can be a nuisance to the local community if construction works begin too early in the day and continues into the night.

Proposed Mitigation Measures:

(xlviii) Avoid nighttime construction when noise is loudest.

(xlix) Conduct periodic noise measuring and monitoring to determine levels and extent of harmful noise.

(l) Clearly label the high noise areas.

(li) Provide PPE personal protective equipment (PPE) including masks, goggles, scarfs, boots and overalls among other protective clothing to persons operating within or visit identified high noise areas.

(lii) To meet noise level requirements, the equipment should be equipped with standard noise attenuation features. Machines that exceed acceptable noise limits should be equipped with silencers or lagging materials or specially designed acoustic enclosures.

(liii) Inform residents when construction activities are likely to generate excessive noise in order to minimize disruption to local residents.

(liv) Sensitize truck drivers to avoid hooting especially when passing through sensitive areas such as churches, residential areas, and hospitals.

7.5.4. Water Resources Pollution

Limited discharge of silt into rivers and other local drainage system from earth moving during construction, potential discharge of oil residuals into the same rivers and open drains from the construction equipment and disruption of accumulated solid wastes from work areas and washed down into the river and other drains.

Mitigation Measures

(lv) Isolate solid wastes disrupted from the works during excavations for safe disposal. The wastes should be collected and disposed in approved sites.

(lvi) 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

(lvii) 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.

7.5.5. Drainage and Hydrology Disruptions

Project construction will involve earthworks and excavation that could interfere with local drainage with a potential to divert the normal surface drains towards homes and private plots. No significant implications are expected in the general hydrology of the larger Project area.

Earthwork activities will result in the generation of some soil materials. When not handled properly the soils could lead to sedimentation of the nearby water sources which will interfere with the habitats and hence flora and fauna downstream of such rivers within the project area.

Mitigation Measures

(lviii) Excavated channels to follow contours to avoid interference with surface drains.

(lix) Where the drainage system and pavements might be interfered with, restoration to be done after construction activities are completed.

(lx) Whenever necessary, drains along the construction line are directed towards existing drainage systems to cater for storm water during the rains. However, construction should be carried out during a dry season and should take the shortest period possible.

(lxi) Utilize excavated soil to level excavated ground where necessary and cover the water and sewer lines that will have been laid in the ground.

(lxii) 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.

(lxiii) Ensure compliance with environmental laws.

7.5.6. Interruption of Existing Infrastructure

There are various installations that will be crossed, move in or move along installations among them:

(lxiv) Roads both main roads and feeder roads in the towns and estates

(lxv) Underground utilities e.g., water lines and communication lines

(lxvi) Fences and temporal structures along the main roads

These services are critical and have implications with spillover effects on the social and economic performance.

Mitigation Measures

(lxvii) Formal request for permission to cross, break in and lay the pipelines should be sought from affected property owners; and

(lxviii) A work plan with clear responsibilities for each party should be developed to ensure smooth execution of the construction.

7.5.7. Waste Generation Impacts (Liquid and Solid)

During construction, solid waste will be generated from a wide range of project activities. Some of the waste includes earth spoils, wrapping materials discarded by the workers on site, food waste from kitchens, waste from the workshops and offices consisting of waste papers, toners and cartridges, broken equipment and containers, steel, timber, etc.

Also, during construction various types of liquid waste will be produced such as concrete washings, runoff from workshops and grey water from contractor's camp. Just as with solid waste, liquid waste can attract wildlife especially for meeting their drinking water needs. This can affect wildlife especially primates.

Mitigation Measures

To minimize pollution and visual intrusion, the waste will have to be managed appropriately as provided by Waste Management Regulation of 2006.

(i) Solid Wastes

(lxix) The contractor shall develop a comprehensive waste management plan prior to commencement of works.

(lxx) Properly labelled and strategically placed waste disposal containers shall be provided at all places of work.

(lxxi) Recycling of construction material shall be practiced where feasible e.g., containers and cartons.

(ii) Liquids Wastes

(lxxii) Water containing pollutants such as concrete or chemicals should be directed to a conservancy tank for removal from the site where applicable.

(lxxiii) Potential pollutants of any kind and form shall be kept, stored, and used in such a manner that any escape can be contained.

(lxxiv) Wash areas shall be placed and constructed in such a manner to ensure that the surrounding areas including groundwater are not polluted.

(lxxv) No grey water runoff or uncontrolled discharges from the site or working areas to any.

(iii) Hazardous Wastes

(lxxvi) Ensure proper handling of lubricants, fuels and solvents while maintaining the equipment.

(lxxvii) Any chemical or fuel spills shall be cleaned up immediately. The spilt liquid and clean- up material shall be removed, treated, and transported to an appropriate site licensed for its disposal.

(lxxviii) A safety and emergency response plan will need to be developed for all operations with emphasis on the protection of the environment prior to start up.

7.5.8. Resettlement Impacts

Displacement not triggered as pipelines are designed to follow road Right of Way (RoW) and River Riparian, however, there will be impact on crops / trees / structures / fences.

Mitigation Measures

Prepare a Resettlement Action Plan (RAP) for purposes of compensation of likely assets and sources of livelihood for Project Affected Persons.

7.5.9. Social Risks

The Project activities as described in the report have the potential of triggering various social risks both at Project Construction Phase and Operation Phase. These risks are likely to be significant in Market centers and towns along the proposed Project route.

This assessment has identified potential social risks associated with the Project as listed below:

(i) Project Impacts to Vulnerable and Marginalized Groups (VMGs)
(ii) Labor Influx Impacts
(iii) Human Rights and gender inclusivity
(iv) Increased Transmission of communicable diseases including HIV/AID

(i) Labor Influx Effects

This impact is triggered during Project Construction Phase due to the Project attracting various categories of workers from local, national and international markets. This therefore leads to concentration of people in one area drawn from diverse social and cultural backgrounds often resulting to a number of issues as listed:

(lxxix) Strain on various resources especially water resources for road works
(lxxx) Grievances from local community members over job opportunities
(lxxxi) Sexual Offences
(lxxxii) Teenage Pregnancies

Mitigation Measures

(lxxxiii) Effective community engagement and strong grievance mechanisms on matters related to labor.
(lxxxiv) Effective contractual obligations for the contractor to adhere to the mitigation of risks against labor influx, the contractor should engage a local community liaison person as provided for in Chapter 6
(lxxxv) Proper records of labor force on site while avoiding child and forced labor.
(lxxxvi) Comply to provisions of WIBA 2007
(lxxxvii) Develop and implement a children Protection Strategy, this strategy will ensure that no child under the legal age of 18 years in employed to the Project.

(ii) Human Right and Gender Inclusivity

This impact is triggered during Project Construction Phase due to the potential of the Contractor's failure to comply with the following provisions:

(lxxxviii) Gender Inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule.

(lxxxix) Failure to protect Human Risk areas Associated with, Disadvantaged Groups, Interfering with Participation Rights, and interfering with Labor Rights

Mitigation Measures

(xc) Mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 Gender Rule.

(xci) The existing community structures headed by location chiefs should be involved in local labor hire, emphasize the requirement of hiring women, youth, and people with disability.

(xcii) Protecting Human Risk Areas Associated with, Disadvantaged Groups, Interfering with Participation Rights and interfering with Labor Rights

(iii) Child Protection

The possibility of contractor children abuse is through hiring of child labour, also labour force on site might abuse children within the Project area through sexual advance that could lead to early pregnancies and school dropout including exposure to communicable diseases such as HIV and AIDS. The contractor will undertake the below listed mitigation measures.

Mitigation Measures

(xciii) Develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project.

(xciv) All staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behavior.

(xcv) Children under the age of 18years should be hired on site as provided by Child Rights Act (Amendment Bill) 2014

(iv) Prevalence of Communicable Diseases

This impact is triggered during Project Construction Phase due to the Project attracting various categories of workers from local, national, and international markets. This therefore leads to concentration of people in one area drawn from diverse social and cultural backgrounds often resulting to people engaging in risky sexual activities.

Mitigation Measures

(xcvi) HIV/AIDS Awareness Program and other communicable diseases to be instituted and implemented as part of the Contractor's Health and Safety Management Plan to be enforced by the Supervising Engineer.

(xcvii) This will involve periodic HIV/AIDS and other communicable diseases Awareness Workshops for Contractor's Staff.

(xcviii) Access to Contractor's Workforce Camps by outsiders to be controlled.

(xcix) Contractor to provide standard quality condoms to personnel on site.

7.5.10. Occupational Health and Safety

The construction of a water supply system, like any large infrastructure project, poses various occupational health and safety (OHS) risks. Managing these risks effectively is crucial to protect workers and ensure the project progresses smoothly. Dome of these risks includes.

- Physical Injuries: Construction sites are inherently risky with potential for falls, being struck by heavy machinery, and accidents involving tools. Excavation work, which is common in water system construction, increases risks of cave-ins or collapses.
- Chemical Hazards: Workers might be exposed to hazardous materials, including construction materials like concrete and paint. These substances can pose risks of poisoning, skin irritation, or respiratory issues.
- Biological Hazards: Depending on the location, workers could be exposed to biological hazards such as bacteria and viruses, particularly when dealing with existing water sources or old infrastructure.
- Ergonomic Risks: The physical labor involved in construction can lead to musculoskeletal injuries due to heavy lifting, repetitive motion, or prolonged standing.
- Noise-Induced Hearing Loss: Construction equipment and operations can generate high noise levels, posing a risk of hearing damage over prolonged exposure.
- Heat Stress and Hydration: Working outdoors, especially in hot climates, increases the risk of heat stress. Proper hydration is crucial, as workers are physically active and may not always focus on their water intake.
- Mental Health: The stress of working in a high-risk environment, potentially for long hours with significant physical demands, can impact mental health and well-being.

Mitigation Measures

- Regular training on safe work practices, emergency procedures, and proper use of protective equipment is essential. Awareness campaigns can also help in recognizing and mitigating risks effectively.
- Provide appropriate PPE such as helmets, goggles, gloves, ear protection, and respiratory masks. Ensure that all workers use the equipment consistently.
- Implement health surveillance programs to monitor the effects of noise, chemical exposure, and other occupational hazards. Early detection of health issues leads to better outcomes and prevention of chronic conditions.

- Evaluate tasks for ergonomic risks and adjust work practices to minimize strain. This could involve using machinery to lift heavy items or redesigning tasks to require less repetitive motion.
- Ensure that there are adequate supervision and clear safety protocols in place, including guidelines for working in confined spaces or handling hazardous materials.
- Provide accessible drinking water and enforce regular breaks, especially in hot conditions, to prevent dehydration and heat stress.
- Offer access to mental health resources and support, including stress management programs and counseling services.
- Establish clear emergency response plans and conduct regular drills to ensure everyone knows how to act in case of an accident or emergency.

7.6. Positive Impacts during Operational Phase

The project's main objective is to improve the quality of life of people within Chogoria and environs through provision of improved Water Services. Specific benefits are listed below:

7.6.1. Improved Access to Clean Water

The project will ensure a reliable and clean water supply, significantly enhancing the community's health and quality of life by reducing the incidence of waterborne diseases.

7.6.2. Economic Growth

By providing a consistent water supply, the project will support local agriculture, industry, and other economic activities, contributing to overall economic development.

7.6.3. Employment Opportunities

The construction and maintenance of the water supply infrastructure will create jobs for residents, both during the implementation phase and operations.

7.6.4. Educational Benefits

With easier access to clean water, children, especially girls who often bear the burden of fetching water, can spend more time in school, improving educational outcomes.

7.6.5. Environmental Conservation

A managed community water supply can lead to more sustainable water usage patterns and protect local ecosystems from overexploitation.

7.6.6. Enhanced Community Health

Access to clean water reduces the prevalence of waterborne diseases, improving overall community health and reducing healthcare costs.

7.6.7. Improved Sanitation

The project often goes hand in hand with improved sanitation facilities, further enhancing public health and environmental conditions.

7.6.8. Resilience to Climate Change

By securing water resources, communities can be more resilient to the impacts of climate change, such as droughts or floods.

7.6.9. Time Savings

Reduced time spent on fetching water from distant or unreliable sources allows for more productive uses of time, benefiting individual and community development.

7.7. Negative Impacts during Operation Phase

7.7.1. Wayleave encroachment

Wayleave encroachment for a water supply system will occurs when unauthorized structures or activities are carried out on the designated corridor or path reserved for water pipelines or infrastructure. This violation not only poses legal issues but can also jeopardize the integrity and functionality of the water supply, leading to potential service disruptions and environmental consequences.

Proposed Mitigation Measures

- Mapping and installation of beacons to 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 importance of not interfering with way leaves and public reserve land.

7.7.2. Water wastages

During operation of the proposed project, risk of water pipeline bursts leading water wastages resulting in increase in the percentage of non- revenue water.

Proposed Mitigation Measures

- 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 area.

7.7.3. Illegal connection

The risk of unauthorized connections to the water pipeline poses significant concerns, including potential contamination of the water supply, reduced water pressure for legitimate users, and increased operational costs for water utilities. Such illegal activities can compromise the overall efficiency and safety of the water distribution system, leading to broader public health and financial implications.

Proposed Mitigation Measures

- This will require constant inspection by NIWASCO officials and installation of leak and burst detectors at designated areas along the pipeline.
- Conduct public sensitization programs on importance does not interfere with the water pipeline and the need to seek official water connection from NIWASCO.

7.7.4. Increased water use

The operation of a water supply system typically results in increased water usage due to the availability of a reliable water source. This uptick in consumption can strain local water resources, necessitating careful management and planning to ensure sustainable use. Effective measures, such as promoting water conservation practices and enhancing the system's efficiency, are crucial to mitigate the impact of higher demand and maintain the balance between supply and consumption.

7.8. Impacts during decommissioning phase.

The impacts of proposed projecting decommissioning are summarized in **Table 7-1**

Table 7-1: Negative impacts during the decommissioning phase

Loss of Revenue and Employment Opportunities	• NIWASCO to provide alternative water sources for the community • The employees working in Operations, repair and maintenance to be redeployed
Soil erosion	• Plant grass and other native vegetation along soil filled trenches. • Maintain soil conservation works until the site stabilizes.
Generation of waste material	• Careful dismantling to ensure materials remain as re-usable as possible. • Selling or donating the re-usable or recyclable materials to avoid waste. • Cleaning and proper site rehabilitation by adhering to a NEMA approved Decommissioning plan

Occupational Health and Safety	• Use of standard operating procedures for all machinery and equipment • Ensure Material Safety Data Sheets (MSDS) for all chemicals used in the field are provided. • Provide appropriate personal protective equipment (PPE) • Redesign manual processes and routine work tasks to reduce heavy lifting/repetitive activities. • Train workers in general safety procedures including first aid. • Use designated routes for machinery and personnel
Impact on Socio-Economic Activities	• Notification to local community members whose farms have encroached on the reserve will be notified of pending decommissioning activities
Loss of Flora and Fauna	• The proponent shall ensure minimal clearing of vegetation. • Transportation of decommissioning wastes to be done through the existing local roads • Sensitization of decommissioning workforce on environmental conservation and ecological protection • Re-vegetation of cleared areas with indigenous vegetation specie

8. PROJECT ALTERNATIVE ANALYSIS

8.1. Introduction

This chapter also 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. This section evaluates potential alternatives for the project across different dimensions relevant to its proposal. The primary considerations for these alternatives include the location of the project, its design, and technological scale. It's crucial that these alternatives are not only economically viable but also minimize negative impacts on the environment, society, health and safety, and avoid unnecessary delays.

Often, the ESIA process is initiated too late in the planning stage, limiting the exploration of a comprehensive range of alternatives. This limitation can detract from the ESIA's objective of fostering solutions that are both environmentally responsible and accepted by the public. Introducing new alternatives and objectives that adapt based on environmental and social conditions, public preferences, and the sustainability of the project could address many environmental and socio-economic challenges linked to new project implementations (Anderson *et al.,* 2003).

8.2. The proposed project alternative

The design considerations analyzed were as follows:

- Project location
- Pipeline location
- Material sourcing sites and disposal of spoil
- Proposed project option
- No project alternative

8.3. No project alternative

The 'No Project Option' in respect to the proposed Project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions.

However, if the Project is not implemented, the following issues will continue affecting residents of Chogoria and surrounding rural areas:

- Poor accessibility to portable and reliable water supply to residents.
- High non-revenue water losses of abstracted water.
- No improvements in living standard/well-being, employment, and local economy in the target beneficiaries.

- Limited opportunities for future growth of the Town and surrounding areas.
- No creation of employment during both construction and operation phases of the Project.
- Uncontrolled tariff charges by the community water supply schemes.
- Unplanned & uneconomical water network system because of many parallel water pipes by different community water supply schemes.
- High risk of residents contracting water borne diseases.

8.4. Location of project components

Water mains have been routed and will be laid in road reserves where there is minimum:

- Utility congestion
- Native plant vegetation and undisturbed areas
- Environmental clearance (archaeology, endangered species)
- Service interruptions
- Traffic disturbance

All water pipeline extensions would be installed in the adjacent street, pathway, or easement, along the entire length of the property to be served.

8.5. Material Selection

8.5.1. Pipe Selection

The pipes considered for the proposed water supply project are those pipes that are manufactured in Kenya since there is no major difference between their performance and prices as compared to imported pipes.

High Density Polyethylene Pipes (HDPE) and polyvinyl chloride pipes (uPVC) are generally unaffected by water. Steel is affected by the aggressivity of water. Concrete pipes have not been considered in this project because they are more cumbersome to install and are more readily affected by the aggressivity of water.

In this connection, attention will be paid to the fact that the attack can also be from outside the pipe (groundwater, swampy areas, or just humid acid soil, especially peat and those soil containing calcium Sulphate). uPVC was not selected due to their prone to bursting and short standard lengths that leads to more joints with low leak tightness.

HDPE has been selected for use by the project because among other factors it is generally unaffected by water, can be rolled therefore has low transport costs, fusion welded joints offer significantly improved leak tightness thus reducing loses due to leakages, long standard lengths therefore fewer joints, and is also least costly compared to steel pipes. However, steel has been proposed for sections of the pipelines where the terrain is

very steep and rocky and for sections where crossings are required such as road, drain and valleys. Moreover, steel pipes will be used within all chamber which include, air valve, washout and/or offtake chambers.

8.5.2. Cover and Slope of Pipes

All the pipelines shall be laid in straight lines between the different gradient changes. The slopes shall not be below 0.5% for diameters 200mm and less and 0.2% for diameters above 200mm. The pipes shall be laid with a cover varying from a normal minimum of 0.6m to a normal maximum of 2min order to minimize the number of changes in pipe grade. The minimum cover over unprotected pipes in areas where heavy traffic is frequent shall be 1m. Pipelines in road reserves should be located at least 1.5m from the edge of the road reserve. Pipelines below road surfaces are to be laid as recommended by the Ministry of Roads and Public Works

8.6. Project Benefits

The Project will directly result to realization of social and economic benefits described in section of this assessment and summarized below:

- The Project shall lead to realization of TWWDA strategic goals of improving safe water supply.
- The Project addresses improved water supply that underpins the Kenyan economic and social developments (Vision 2030) and its associated Medium-Term Plan (MTP) IV, Bottom-Up Economic Transformation Agenda (BETA), Sustainable Development Goal (6) which is the new 2030 agenda and expands Millennium Development Goal (MDG) as guided by resolutions of Rio+20 conference.
- The goal focuses more on investment in adequate infrastructure in water sanitation, Hygiene, water quality/quantity, wastewater management, water scarcity and use efficiency, integrated water resource management and protection of water related ecosystems.

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

9.1. Purpose and Objectives of ESMMP

The specific objectives of the ESMMP are to:

- Act as a binding agreement and guide for the contractor to follow the Environmental and Social Management and Monitoring Plan (ESMMP), including adhering to the approval conditions set by NEMA.
- Serve as a key reference for overseeing environmental and social monitoring tasks for the supervising consultant, contractor, and client management, encompassing necessary progress updates.
- Offer precise guidelines for managing and lessening the negative impacts of project activities on the environment.
- Provide directives to project staff on procedures aimed at environmental conservation and reducing environmental harm, aligning with the project's objective of achieving minimal to no incidents.
- Record environmental issues and recommended protective steps, ensuring that remedial measures are executed promptly.

9.2. Auditing of ESMMP

TWWDA and the contractor shall conduct regular audits to the ESMMP to ensure that the system for implementation of the ESMMP is operating effectively. The audit shall check that a procedure is in place to ensure that:

- The ESMMP being used is the up-to-date version.
- Variations to the ESMMP and non-compliance and corrective action are documented.
- Appropriate environmental training of personnel is undertaken.
- Emergency procedures are in place and effectively communicated to personnel.
- A register of major incidents (spills, injuries, complaints) is in place and other documentation related to the ESMMP.
- Ensure that appropriate corrective and preventive action is taken by the Contractor once instructions have been issued.

9.3. Management Responsibility of ESMMP

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 who will be involved in the project. The following entities should be involved in the implementation of this ESMMP:

(i) TWWDA/NIWASCO

(ii) NEMA

(iii) Contractor

(iv) Design Consultant

(v) Tharaka Nithi County Government

9.3.1. Tana Water Works Development Agency/Nithi Water and Sanitation Company

TWWDA in conjunction with NIWASCO the proponent, will be charged with the responsibility of ensuring that the proposed development has been put up in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender documents, selection of renowned environmentally conscious contractors and supervision to ensure that the objectives of this ESMMP are met.

9.3.2. National Environment Management Authority (NEMA)

NEMA's responsibility is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government of Kenya in the implementation of all policies relating to the environment.

9.3.3. The Contractor

The persons/firms contracted to construct the proposed water supply distribution – Last Mile Connectivity for Chogoria Water Supply Project will be required to comply with the requirements of the ESMMP within this report. To ensure strict compliance environmental specifications of this ESMMP should form part of the contract documents.

9.3.4. Consultant

The sourced consultant will have to ensure that the proposed ESMMP is up to date and is being used by the contractor. Periodic audits of the ESMMP will have to be done to ensure that its performance is as expected.

9.3.5. Tharaka Nithi County Government

The relevant departmental officers in Tharaka Nithi local authorities should be called upon where necessary during Project implementation to provide the necessary permits and advisory services to the Project implementers.

9.4. Emergency procedure during construction and operation phase of the project

An emergency means unforeseen happening resulting in serious or fatal injury to employed persons or the neighboring communities. In the event of an emergency during construction, the workers shall: -

(i) Alert other persons exposed to danger.

(ii) Inform the OSHA coordinator.

(iii) Do a quick assessment on the nature of emergency.

(iv) Call for ambulance.

When emergency is over, the OSHA coordinator shall notify the workers by putting a message: "ALL CLEAR". In the event of such an emergency during operation the workers shall:

a) Alert other persons exposed to danger.
b) Ring the nearest police station and ambulance service.

The proponent has already put measures to respond to emergencies like alarms and a fire assembly point there are also trained staff can assist in case of emergency.

9.5. ESMP for the Preconstruction and Construction Phase

Table 9-1: Proposed ESMMP for Construction phase

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
Seeking approvals from NEMA for ESIA and Approval of plans from County and National Government, KERRA, KURA and KeNHA Approvals on usage of Right of Way	Delay in implementation of the Project due to objections and stop orders	Low	• The Contractor shall ensure that all pertinent permits, certificates and licenses have been obtained prior to any activities commencing on site and are strictly enforced/ adhered to. • The Contractor shall maintain a database of all pertinent permits and licenses required for the contract as a whole and for pertinent activities for the duration of the contract.	TWWDA & Contractor(s)	Number of approvals / permits issued	500,000
Access to the wayleave/Pipeline laying and excavation	Displacement, business closure/loss	Low	• Contractor to ensure hawkers are safely guided on safe areas to continue with their businesses. • Businesspersons to be encouraged to temporarily move to spaces not impacted by project. • Excavations and pipe laying to be conducted off business hours. • Temporary crossing points to be established along the excavated channels to facilitate customer crossings. • Continuous engagement with business owners to ensure their continuous involvement in project decisions. • Restored to the greatest extent possible all pavements impacted on by their construction works in accordance with the ESMP. • Implementation of the project SEP	Contractor (s) & Proponent	Number of public outcry due to displacement, road closure and business disruption	400,000
Environmental and Social Training and Awareness	Risks of Environmental and Social degradation risks and occupational health and safety related accidents	High	• The Contractor and sub-contractors shall be aware of the environmental requirements and constraints on construction activities contained in the provisions of the ESMMP. • The Contractor will be required to provide for the appropriate Environmental Training and Awareness as described in this ESMMP in his costs and programming.	Contractor (s)	• Number of Trainings Held • Availability of Training reports • Attendance list of participants during	250,000

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
			• An initial environmental awareness training session shall be held prior to any work commencing on site, with the target audience being all project		the training sessions	
HIV/AIDS awareness and prevention campaign	Risks of Increased HIV and Aids transmission in the area	Medium	• The campaign shall include training of facilitators, information posters in more frequented areas in the campsite and public areas, availability of promotional material (T-shirts and caps), availability of condoms (free) and theatre groups. • The Contractor shall institute HIV/AIDS awareness and prevention campaign amongst his workers for the duration of the contract, contracting and implementing organization with preference for an organization already working on this issue in the Project area.	Contractor (s)	• Number of Trainings Held • Availability of Training reports • Attendance list of participants during the training sessions	300,000
Local Labor / Employment	Delay in Project implementation due to opposition from aggrieved community members	Medium	• Wherever possible, the Contractor shall use local labor, women must be encouraged to be involved in construction work. • The contractor shall ensure compliance to the gender balance as required by the 2/3 gender rule	Contractor (s)	• Number of workforces employed from the local community. • Number of female employed	No direct cost associated
EMP management records	Risks of non-conforming to ISO 9001 on QMS and ISO 14001 on EMS	Medium	• The updated version of the EMP should be kept on site. • Copies of all necessary permits and licenses should be kept on site. • All site-specific plans prepared as part of the updated ESMMP. • All related environmental, social, health and safety management registers and correspondence, including any complaints. • A register of audit non-conformance reports and corrective actions	Contractor (s)	• Number of available permits on site. • ISO audit report on non-conformities. • Number of corrective measure adopted	250,000

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
Earth moving and excavations (Vegetation clearance, channeling, and site preparations)	• Health and Safety risks • Air pollution • Social nuisance • Destruction of drainage systems and road pavements	Medium	• Provide notices, signage & information to the public for their safety at all locations. • Install barriers along walkways, crossings and public places affected by the works for public safety. • Where the drainage system and pavements might be intervered with, restoration to be done after construction activities are completed • Where there are potential for nuisance from dust generation, ensure earth moving is under dump conditions (consider watering where necessary) • Inform immediate communities or stakeholders of the activities	Contractor(s)	• Accidents occurrence incidences • Cases of respiratory complication at nearby health center	650,000
	Vegetation Cover destruction Loss of biodiversity	Low	• Construction activities will be limited to Project sites/routes which already exist therefore no destruction to vegetation cover	Contractor(s)	• Soil erosion extend and intensity on site	No direct cost
	Loss of topsoil	Low	• Stock piling of topsoil, construction material and wastes should be done only at designated sites approved by the supervising engineer, erosion prevention through berming of loose soil sites should be done in all areas susceptible to agents of erosion	Contractor(s)	• Soil erosion extend and intensity on site	No direct cost
	• Public Health and safety risks Worker Occupational safety risks	Medium	• Notify public the intent to cut sections of the road for safety precautions. • Provide signage and safety information in all work areas. • Ensure compliance by workers with safety safeguards including the OHS, provision of safety gear and enforcement of application	Contractor(s) & Resident Engineer (RE)	• Accidents occurrence incidences	500,000
	Disruption of amenities (access roads, services lines and driveways) causing	Medium	• Notify other services providers and • Open small sections that can be reinstated within the shortest period to avoid public disruption.	Contractor(s) & Resident Engineer (RE)	• Number of complaints from community due to	No direct cost

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
	inconveniences to the community		• Mark the lines to avoid conflicts with other activities		lack of certain services	
Materials sourcing, from burrow pits and quarries delivery and storage	Environmental and Safety risks associated with burrowing and opening up of new quarry sites	High	• The Contractor will be responsible for ensuring that appropriate authorization to use the proposed borrows pits and quarries have been obtained before commencing activities. • Topsoil shall be stripped prior to removal of borrow and stockpiled onsite. This soil shall be replaced on the disturbed once the operation of the borrow site or quarry is complete. • Construction material sources should be environmentally sustainable (approved) • Delivery routes and modes of transport should be approved. • Material storage on site not to be internal or external nuisance	Contractor(s) & Resident Engineer (RE)	• Environmental status of reinstated burrow pits • Complains from the community on burrow pits and material transportation	450,000
Concrete / cement batching plant	Risks associated with water resource pollution, noise and vibration and air pollution from dust this could lead to respiratory problems	High	• Where required, a Concrete batching plant shall be located more than 20m from the nearest stream/river channel. • Topsoil removed from the batching plant site and stockpiled. • Contaminated storm water and wastewater runoff from the batching area and aggregate stockpiles shall not be permitted to enter streams but shall directed to a pit where the water can soak away. • Suitable screening and containment shall be in place to prevent windblown contamination associated with any bulk cement silos, loading and batching. • Cleaning of equipment and flushing of mixers shall not resulting pollution of the surrounding environment	Contractor(s) & Resident Engineer (RE)	• Number of incidences of Environment pollution around the plant	300,000

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
Waste generation and disposal	Risks of contaminating surface and underground water resources	High	• Construction wastes (residual earth, debris and scrap materials) to be removed for safe disposal. • Encourage recycling where possible (concrete debris for access road surfacing), • Contaminated organic matter in the work areas to be isolated for safe disposal. • Material residuals to be disposed off in accordance with established regulations.	Contractor(s) & Resident Engineer (RE)	• Number of complaints from community not happy with waste management of the contractor	1,500,000
Spoil Storage site	Risks of solid waste mismanagement leading to pollution	Medium	• Preferably to be located on land already cleared wherever possible. Communities shall be involved in the site location to avoid conflict. • The need to be more than 20 meters from water courses and in a position that will facilitate the prevention of storm-water runoff from the site from entering the watercourse. • Contouring of spoil site to approximate natural topography and drainage and/or reduce erosion impacts on the site. • The Contractor shall ensure that the placement of spoil is done in such a manner to minimize the spread of materials and the impact on surrounding vegetation and that no materials 'creep' into 'no-go 'areas.	Contractor(s) & Resident Engineer (RE)	• Number of complaints from community not happy with waste management of spoil material	Contractor best management practice
Occupational Health and Safety	Risks of Accidents, Injuries or death of workers or community member	High	• Provide construction workers with personal protective gear (gloves, gum boots, overalls and helmets), • Provide temporary toilets and bathrooms for the construction workers at the work sites. • Provide onsite first aid kit accessible by the workers on need. • Isolate the site for access by the local communities during the construction for their safety and health.	Contractor(s) & Resident Engineer (RE)	• Accidents occurrence incidences	750,000

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
			• Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the resident engineer			
Storage of fuel oils, lubricants, chemicals, and flammable materials	Hazards of fire outbreak, oil and chemical spills	High	• Follow specifications of the Occupational Health and Safety Act, EMCA1999 and others in the development and operation of stores.	Contractor(s) & Resident Engineer (RE)	• Incidence of reported cases of fuel leaks and fire incidences	No direct cost associated
Sanitation issues resulting from both solid and liquid wastes on site.	Risks associated with waterborne diseases exposed to community and workforce	Medium	• The Contractor shall adhere to laws relating to public health and sanitation. • All temporary/ portable toilets or pit latrines shall be secured to the ground to the satisfaction of the RE to prevent them from toppling over. • A wash basin with adequate clean water and soap shall be provided alongside each toilet, Staff shall be encouraged to wash their hands after use of the toilet, in order to minimize the spread of possible disease	Contractor(s) & Resident Engineer (RE)	• Incidence of reported cases of water related diseases among the workforce and neighbor community	No direct cost associated
Noise and Vibration control from plant and equipment	Risk to health and safety of community and workers	Medium	• The Contractor shall keep noise level within acceptable limits and construction activities shall, where possible, be confined to normal working hours in the residential areas. • Hospitals and other noise sensitive areas shall be notified by the Contractor at least 5 days before construction is due to commence in their vicinity. • Any complaints received by the Contractor regarding noise will be recorded and communicated to the RE. • The Contractor must adhere to Noise Prevention and Control Rules of April 2005	Contractor(s) & Resident Engineer (RE)	• Reported complaints from neighbor community and institutions	No direct costs associated
Traffic management on site	Risks of Accidents, Injuries or death of workers or community member	High	• Strict use of warning signage and tapes where the trenches are open & active sites.	Contractor(s) & Resident Engineer (RE)	• Accidents occurrence incidences	600,000

Activity	Associated Impact	Impact Levels	Proposed Management Actions	Responsibilities	Monitoring Indicator	Budget
			• Employ and train road safety Marshalls who will be responsible for management of traffic on site. • Contractor to provide a traffic management plan during construction to be approved by the resident engineer			
Air Quality	Air pollution causing respiratory disorders to human	High	• Workers shall be trained on management of air pollution from vehicles and machinery. All construction machinery shall be maintained and serviced in accordance with the contractor's specifications. • The removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible. • The contractor shall not carry out dust generating activities (excavation, handling, and transport of soils) during times of strong winds. • Vehicles delivering soil materials shall be covered to reduce spills and windblown dust. • Water sprays shall be used on all earthwork's areas within 200metres of human settlement	Contractor(s) & Resident Engineer (RE)	• Cases of respiratory complication at nearby health center	No direct anticipated
Contractor de - mobilization and site reinstatement	Associated risks of environmental degradation	High	• The site is to be cleared of all construction materials, including litter prior to hand over. • Fences, barriers, and demarcations associated with the construction phase must be removed from the site. • Fences, barriers, and demarcations associated with the construction phase must be removed from the site. • Rehabilitation Activities of Environmental Cases identified must continue throughout the defect liability period	Contractor(s) & Resident Engineer (RE)	• Closeout audit report findings	No direct anticipated
Total						**6,450,000**

9.6. ESMP for Operation Phase

Table 9-2: Proposed ESMMP for the operation phase

Issue	Action required	Responsible party	Provisional Budget
Risk of encroachment and construction of structures on the water easement corridor	• Mapping and installation of beacons to which illustrate the width of the pipeline reserve. • Regular inspection of the pipeline corridor for encroachment. • Prosecution of encroaches as required by City County By laws on way leaves and road reserves maintenance. Conduct public sensitization programs on importance not interfering with way leaves and public reserve land.	NIWASCO & Tharaka Nithi County Government	To be established at operation phase and included in the operation of the projects
Risk of water pipeline bursts leading water wastage (Non-Revenue Water percentages increase) Water system leaks can reduce the pressure compromising its integrity and ability to protect water quality (by allowing contaminated water to leak into the system)	• 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)	NIWASCO	To be established at operation phase and included in the operation of the projects
Risk of illegal connection to the water pipeline	• This is common in the informal settlements where residents illegally tap the water pipeline. • This will require constant inspection by NIWASCO 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 NIWASCO	NIWASCO	To be established at operation phase and included in the operation of the projects
Water Discharges during flushing/cleaning of pipes to remove sediments The major environmental aspect of water pipe flushing is the discharge of flushed water, which may be high in suspended	• Identify environmental issues that need mitigation during Project operation. • Develop management plans and procedures needed to address the environmental concerns. • Monitor and evaluate the performance against set targets. • Set a budget for environmental management, and restorations. • Schedule for revising and updating the ESMMP.	NIWASCO	To be established at operation phase and included in the operation of the projects

Issue	Action required	Responsible party	Provisional Budget
solids, residual chlorine, and other contaminants that can harm surface waterbodies.	• Initiate sensitization programmes on best practices on solid waste management right from the source, sorting, transportation & disposal. Conducting an initial audit in the first year of operation of the projects and subsequent annual audits of the operational activities		

9.7. Decommissioning

Project decommissioning involves the process of safely closing or dismantling a project and its facilities once they reach the end of their useful life or operational period. It aims to minimize environmental impacts, restore sites to their natural state or prepare them for future use, and address any social implications, ensuring compliance with relevant regulations and standards.

At the end of its design life, the proposed project will undergo decommissioning. This can take two forms:

(i) Abandoning the pipeline.

(ii) Removing the pipeline from the ground and restoring the area.

In case of the first option, there will be minimal damage and disturbance to the environment. However, if the Proponent opts for the second option, the impacts will be far reaching. Apparently, these impacts compare favorably to the impacts in the Construction Phase. Thus, similar mitigations to those of construction phase will apply. The responsibility of the implementing decommissioning phase ESMMP will be shared between the Contractor and the Proponent.

9.7.1. Decommissioning Flow Chart

The Project has been designed to operate effectively for over 20years. If 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.

Step	Action	Actor
1	**Initiation** Development of an Objective Worksheet and checklist incorporating references, legal and policies Undertake decommissioning audit	Proponent then
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	Proponent then
3	**Prepare and Award Contract** Prepare a contract that incorporates validated Project information and award to a Contractor as per the Procurement rules.	Proponent then
4	**Execute Decommission Works** Implement design elements and criteria on the Project in accordance with specifications and drawings. Inspect during decommissioning and at	Contractor

Step	Action	Actor
	Project completion to ensure that all design elements are implemented according to design specifications.	
5	**Commissioning Environmental Management Plan**	Contractor
6	**Non-Conformance, Corrective/Preventive Action** Determine root cause. Propose corrective measures. Propose future preventive measures.	Contractor

10. CONCLUSIONS AND RECOMMENDATIONS

10.1. Conclusions

There was upmost acceptability and goodwill from the enterprises and community living around the project area. There are major environmental and social issues both positive and negative associated with the construction, operation, and decommissioning of the proposed project. Mitigation measures have been proposed in every negative impact raised in construction, operation, and decommissioning under the environmental and social management plan (ESMP) for consideration in these various stages of the proposed project.

The ESIA and preparation of this Comprehensive Project Report was carried out to fulfil legal requirements, as outlined in the Environmental Management and Co-ordination Act (1999), and the Environmental (Impact Assessment and Audit) Regulations (2003) revised in 2015&2019. Mitigation measures for the potentially significant and/or adverse environmental and social impacts and safety risks have been provided as an integral part of this ESIA report. The positive impacts outweigh the negative impacts. The listed negative impacts can be corrected with the proposed mitigation measures, and it is also economically viable therefore the project should be allowed to proceed.

10.2. Recommendations

The following are some of the recommendations made to minimize or mitigate for the adverse environmental and social impacts from the proposed project:

(vii) There is need for rigorous implementation of the Environmental Management and Monitoring Plan which will facilitate the mitigation and/or prevention of potentially adverse environmental impacts.

(viii) The proposed ESM&MP should be followed fully by the contractor with the supervision from the proponent. A report on the findings from the monitoring of the ESM&MP right from implementation all through to decommissioning phase submitted quarterly.

(ix) The mitigation measures proposed should be followed by the proponent as it is highlighted in this ESIA report.

(x) The design, construction and operation should be carried out in accordance with the specific report for the proposed project.

(xi) All contractor's employees and any other person visiting the site should be provided with appropriate PPE and trained on their proper use.

(xii) On completion of the Civil Works, NIWASCO to commission an Independent Consultant to undertake an initial Environment, Social, Health and Safety Audit as required by Environment Impact Assessment and Audit Regulations of 2003. The audit will identify non-conformities which the Contractor together

with NIWASCO will address through the defect's liability period of the Project. This audit will also form basis of annual Project self-audits by NIWASCO.

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12. APPENDICES

12.1. Appendix 1: Minutes of Public Participation Meetings

Chogoria Water Minutes....pdf

12.2. Appendix 2: Attendance list of the Public Participation Meetings

Kairuni chief's office attendance list.pdf

chogoria chief's office attendance list.pdf

12.3. Appendix 3: Filled Questionnaires

Questionnaires for Chogoria Water Supply Project_LMC.pdf

12.4. Appendix 4: EIA License for Chogoria Water Supply Project

Chogoria Water Supply_EIA License.pdf

TANA WATER WORKS DEVELOPMENT AGENCY

THE PUBLIC PARTICIPATION MINUTES FOR THE LAST MILE CONNECTIVITY OF THE CHOGORIA WATER SUPPLY PROJECTS HELD ON 15TH, FEBRUARY, 2024 AT CHOGORIA CHIEF'S CAMP IN THARAKA NITHI COUNTY AT 11: OOAM

MEMBERS PRESENT

Attendance List Attached

AGENDA

The agenda of the meeting was as follows:

- Preliminary matter
- Introduction and Presentation of the Last Mile project to the community
- Comments and Concerns of the Community
- Recommendation
- Closing remarks

MIN 1/15/02/2024: PRELIMINARY MATTER

The area chief Mr Mutembei called the meeting to order promptly at 11:00 a.m. and set a tone with a prayer led by one of the community members creating a conducive environment for the meeting's agenda to proceed smoothly.

The chief then welcomed everyone to the meeting and extended a heartfelt invitation to the Tana Water Works Development Agency and Environmental consultants' team to express themselves freely. He explained to the members of the community the intentions of the meeting regarding the current state of their water supply project. He further expressed the joy of the community in regards to the last mile connectivity of the Chogoria Water supply project. Additionally, he encouraged every community member to voice their thoughts and concerns regarding the project, emphasizing an open and inclusive atmosphere for discussions. He then opened the floor for the representative from the Proponent's side (Tana Water Works Development Agency) Eng. Mwenda to take over the meeting.

MIN 2/15/02/2024: INTRODUCTION AND PRESENTATION OF THE PROJECT

Mr. Mwenda from TWWDA gave his opening remarks and explained to the members of the community the objectives of Tana Water Works Development Agency in ensuring sustainable water works within their area of Jurisdiction in Tharaka Nithi County.

He went on to elaborate that the agency is currently proposing for the addition of Last Mile Connectivity of the Chogoria Water Supply project within Chogoria in Maara Sub-County. He emphasised that the comprehensive project aims at bridging gaps in water access, sanitation, and water resource management within the 1st phase of the Kenya Small Towns and Rural Water Supply and Sanitation Project.

He later explained to the community members that public consultations in regards to the projects are what has led to the convention of the meeting. He asked members of the community to feel free to ask any question and raise any concern as he welcomed one of the ESIA consultants Mr Mutuma to take over the floor.

Mr Mutuma provided crucial insights and remarks aimed at fostering sustainable development and environmental responsibility. He emphasized the importance of integrating environmentally sustainable practices into the last mile connectivity project. This includes implementing measures to minimize the ecological footprint, ensuring proper waste management, and preserving local biodiversity. Moreover, he also highlighted the necessity of ensuring that the last-mile connectivity project is socially inclusive. This involves considering the needs of vulnerable and marginalized groups within the community. Special attention should be given to accessibility for people with disabilities and the elderly, fostering an inclusive and equitable development process. The consultant discussed the importance of designing infrastructure with resilience in mind, considering potential climate change impacts. This includes proper distribution systems and the incorporation of climate-resilient materials to enhance the project's longevity.

MIN 3/15/02/2024: COMMENTS AND CONCERNS OF THE COMMUNITY

NAME OF THE CONCERNED MEMBER	QUESTION ASKED	RESPONSE FROM THE TECHNICAL TEAM
Murungi Thirari	Will the implementing agency or the contractor repair the fence in case it is brought down during the excavation works?	Yes. The contractor shall endeavour to restore the fence or any damaged structure back to its original form as much as possible.
Anastacia Muthoni	Will part of the labour-force be taken from the local people or they will all come from a different region?	In a bid to grow the economy of the project area, the contractor shall be keen on hiring locals, especially for the unskilled labour.
Margaret Njeru	Due to the loss of utility of the land through which the water pipeline line will pass, will the affected persons be compensated and when will the compensation process commence?	Compensation for all persons that will be directly affected by the projects shall be done diligently following the Resettlement Action plan that shall be formulated by the consultant.
James Njagi	In case there is a burst pipe during the project operation phase, where can they report the incident?	After construction and successful commissioning of the water project, the TWWDA shall hand over the project to the area Water Service Provider; NIWASCO. Any reports about burst pipes or any other queries shall be

		reported to their field officers who will in return carry out quick repairs. NIWASCO the area water service provider shall provide hotline numbers on which they can be reached..

MIN 4/15/02/2024: CLOSING REMARKS

The team leader of the consultants addressed the community, assuring them that their grievances and wishes would be carefully considered and incorporated into the project's recommendations for consideration. He emphasized on the importance of sustainability and acknowledged the community's valuable input in shaping the project's outcomes. The ESIA consultant's remarks underscored the need for a holistic and sustainable approach to the Chogoria sewer and water last mile connectivity project. By prioritizing environmental responsibility, community engagement, social inclusivity, water quality, infrastructure resilience, and capacity building, the project can contribute significantly to the well-being of the community while minimizing its impact on the environment. The consultant's insights serve as a valuable guide for steering the project towards a more sustainable and socially responsible future.

The chief then took the step to formally conclude the meeting by making a few announcements regarding community development. The chairman thanked everyone for their active participation and fruitful contributions during the session.

There being no other business the meeting was adjourned with a closing prayer from Madam Anastancia Muthoni at 12:30 hrs.

CONFIRMED BY:

LEAD EXPERT	**THE PUBLIC ADMINISTRATION**
Eng. Bernadett Wairimu NEMA Reg No. 7394 11th, March 2024 Sign…… GREENVILLE NEXUS INTERNATIONAL LIMITED P. O. Box 50173 00100, NAIROBI TEL: 0700 130 101	**CHIEF CHOGORIA LOCATION:** Mr George Mutembei Mukaraku Date 13th March 2024 Sign:…… Office Of The President THE CHIEF CHOGORIA LOCATION Stamp:……..
TWWDA REPRESENTATIVE	
Gregory Mwenda 11th March 2024 Sign……	

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 MERU COUNTY

PROJECT: PROPOSED LAST MILE CONNECTIVITY OF CHOGORIA WATER and Sewerage SUPPLY PROJECT

PUBLIC PARTICIPATION LIST

VENUE ..... Chogoria church office ..... DATE ..... 15/2/2024 ..... TIME ..... 11:00 AM .....

S/ No.	NAME	VILLAGE/INSTITUTION	ID No	CONTACTS	SIGN	
1	ROBERT MURITHI GILBERT	KITHITUNI	13359100	0725292469		M
2	JAMES KABI MAVASHA	KAIRUNI	24657328	0721135759		M
3	JOHN GICONGA	KAIRUNI	21053734	0723795360		M
4	MURUNGI THIORARI	KAIRUNI	21387391	0705542423		M
5	Charles MUTHOIRI IDERI	KIMUCHIA	21616055	0793973181		M
6	ALVIN NGERU KABERA	KIMUCHIA	7458857	0720149120		M
7	PETERSON MARANGA	KAIRUNI	8861657	0727949659		M
8	JOHN K. NJERU	KAIRUNI	24633492	0728121522		M
9	ASHFORD M'IITI	KAIRUNI	7460739	0796083693		M
10	JASPER MARANGA MUNYUA	KAIRUNI	24622228	0729803534		M
11	MARTIN MUCHOKI	KAIRUNI	28961932	0726762[illegible]		M

The President Office of THE CHIEF CHOGORIA LOCATION

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 MERU COUNTY

PROJECT: PROPOSED LAST MILE CONNECTIVITY OF CHOGORIA WATER SUPPLY and sewerage PROJECT

PUBLIC PARTICIPATION LIST

VENUE: Chogoria Chiefs Office DATE: 7/02/2024 TIME: 11:00AM

S/ No.	NAME	VILLAGE/INSTITUTION	ID No	CONTACTS	SIGN	
12	LAWRENCE GUANTAI	KAIRUMI	9696877	0724501453	[signature]	M
13	AMARIA NKUENE	KAIRUNI	2438262	0729620375 0729962035	[signature]	F
14	MARGARET NJERU	KAIRUNI	11608762	0725713379	[signature]	F
15	MBAE SABARI	KAIRUNI	13251854	N/A	Mbaya	M
16	SARAH NKINGA MUKETHA	KAIRUNI	5098095	N/A	[signature]	F
17	ANASTACIA MUTHONI	KAIRUNI	13812089	0718674233	[signature]	F
18	GILBERT WANGIDHI	KAIRUNI	8857542	0769795572	[signature]	M
19	JULIUS NJERU	KAIRUNI	9908906	0726968587	[signature]	M
20	JAMES NJAGI	KAIRUNI	21528374	0752574390	NJAG.	M
21	GRACE NJERU	KAIRUMI	2462136	0720312039	[signature]	F
22	LINUS MURITI M'ITHIIA	KAIRUNI	7461098	0705400699	[signature]	M

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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 MERU COUNTY

PROJECT: PROPOSED LAST MILE CONNECTIVITY OF CHOGORIA WATER SUPPLY and sewerage PROJECT

PUBLIC PARTICIPATION LIST

VENUE ..Chogoria Chief's Office.. DATE..15/02/2024.. TIME ..11:00AM..

S/ No.	NAME	VILLAGE/INSTITUTION	ID No	CONTACTS	SIGN	
23	JEDIEL KIAMBI GITONGA	KABECHE	11610875	0726277174		M
24	MORRIS MUTUMA KIRIMI	ASST. CHIEF KIRAMO	26008048	0713148995		M
25	JONES MUGENDI MICHENI	ASST-CHIEF MURWEGO	22582370	0728244787		M
26	GEORGE MWIEMBEI M.	CHIEF CHOGORIA	13277164	0795124660		M
27	EUSEBIO. G. WAWERU	TWWDA	07025365 14	35782578		M
28	Barry Wanjiku	TWWDA	0768751227			F
29	Noel KOECH	Environment Expert	0716816405	33171998		M

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THE CHIEF
CHOGORIA LOCATION

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 THARAKA NITHI COUNTY

PROJECT: PROPOSED LAST MILE CONNECTIVITY OF Chogoria and water supply SEWERAGE PROJECT

PUBLIC PARTICIPATION LIST

VENUE Kairuni's chief office in Chogoria DATE 14/02/2024 TIME 4:15 P.M

S/ No.	NAME	VILLAGE/INSTITUTION	ID No	CONTACTS	SIGN	
1.	Bernadett Nkatsimu Njeroge	Greenville Nexus Int'l Ltd	24147035	0725 928 477		F
2	EUSEBIO GICHUKI KAWERU	TWWDA	35282578	0702536514		M
3	JONES MUGENDI MUCHENI	ASST CHIEF - MUKWEGO	22582370	0728244787		M
4	MORRIS MUTHAMA KIRIMI	ASST. CHIEF KIRIMA	26008048	0713148995		M
5	Gregory Mwenda Kirunga	TWWDA	34341831	0740780565		M
6	JEREMIAH MUTIGA NGARU	NIWASCO	33645561	0758517535		M
7	ROBERT MUTUGI	NIWASCO	24715001	0710246608		M
8	GEORGE MUTEMBEI MUKARAKU	NGAO-CHIEF CHOGORIA	11327164	0795124606		M

Office Of The President
THE CHIEF
CHOGORIA LOCATION

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

Proposed Last Mile Connectivity of Chogoria 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:

.....
.....IT WILL IMPROVE IN ENHANCING.....
.....CLEAN ENVIRONMENT.....
.....
.....

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

IT WILL DISRUPT TEMPORARILY OUR USUAL SMOOTH OPERATIONS

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 LEAVE THE AREA JUST AS THEY FOUND IT OR EVEN BETTER.

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

THE LOCAL MANPOWER TO BE EMPLOYED DURING THE CONSTRUCTION

THE LOCAL WATER TARIFFS ARE TOO HIGH AND UNAFFORDABLE TO MOST LOCALS.

Name: MWEMBEI KIRAUNI Date: 22/03/2024

Designation / Residence: AREA MANAGER. (CHOGORIA)

Contact: 0720799720

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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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:

IT Good for WATER TO BE IN good TIME

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

NO Negativity

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

[illegible] what will do it.

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

PEOPLE TO BE GIVEN WATER.
WATER PIPES THEY ARE NO MODERN.

Name: F. MUGAMBI JEREMIAH Date: 22/3/2024

Designation / Residence: CHOGORIA

Contact: 0720597105

Signature: [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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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:

Beter for the cleanines of our Environment.

Office Of The President THE CHIEF

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

No negativity

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

- Employing the local community.
- There are Taxes are very High.

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

Name: HIMROD MUTECH Date: 22/3/24

Designation / Residence: CHOGORIA.

Contact: 0725107913

Signature: [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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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:

.....Betterment.....of.....our.....Environment.....

.....

.....

.....

.....

Office Of The President
THE CHIEF
CHOGORIA LOCATION

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

no negativity

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

repairing water pipes.

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

Employing the Local Community

Name: Zachary Njue Ngaine Date: 22/3/2024

Designation / Residence: Retired Snr. Chief

Contact: Tel. 0723987945, P.O. Box 75, Chogoria.

Signature: [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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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:

clean environment.
safe residents from waterborne diseases

Office Of The President
THE CHIEF
CHOGORIA LOCATION

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

Blocking our business

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

Give notice while disconnecting water

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

Kindly employ our local guys

Check water tariffs (EWASCO)

Name: MILLICENT MUKAMI Date: 22/03/2024

Designation / Residence: CHOGORIA

Contact: MUKAMI 0728980646

Signature:

THANK YOU FOR YOUR RESPONSE

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

Proposed Last Mile Connectivity of Chogoria 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:

CLEAN THE ENVIRONMENT.
STOP POLLUTION OF ENVIRONMENT.
.....
.....
.....

Office Of The President
THE CHIEF
CHOGORIA LOCATION

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

DISTRUPTING BUSSINESS FROM AREA
BLOCKING BUSSINESS BY DIGGING STRECHES
/

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

REPLACE WHAT YOU HAVE REMOVED
TO USE LOCAL EXPERT:

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

TO ADMITE LOCAL PEOPLE SO THAT
CAN SEE THEY MUST THE PROJECT.
WATER TARRIF IS VERY HIGH TO DO
SOMETHING TO IT.

Name: ERNEST C. KINYUA Date: 22/3/2026

Designation / Residence: CHOGORIA

Contact 354 CHOGORIA

Signature KINYUA

THANK YOU FOR YOUR RESPONSE

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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:

- Appreciation of land/plot
.....
.....
.....
.....

Office Of The President
THE CHIEF
CHOGORIA LOCATION

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

– Interference with ~~[illegible]~~ Business

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

– Notification of when work is to be done

– Security measures during the works

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

– Employment of Locals

– Very High tarrifs (Niwasco) for water

Name: ~~[illegible]~~ JOHN GITONGA Date: 22/03/2024

Designation / Residence: CHOGORIA TOWN

Contact: 0723791655

Signature: [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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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:

Clean Water

Office Of The President
THE CHIEF
CHOGORIA LOCATION

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

Distruction of Houses

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

Pipes should be buried into soil.

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

Local people should be engaged of any work

Name: John Gitonga Thuku Date: 22/03/2024

Designation / Residence: Chogoria Town

Contact: 0723791655

Signature: Wathenya

THANK YOU FOR YOUR RESPONSE

EIA 23062800

nema
Mazingira Yetu | Uhai Wetu | Wajibu Wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

CERTIFICATE OF VARIATION OF ENVIRONMENTAL IMPACT ASSESSMENT LICENSE

Certificate No: **NEMA/EIA/VC/2183**

Application Reference No: **NEMA/EIA/VEIA/3525**

This is to certify that the Environmental Impact Assessment License No **NEMA/EIA/PSL/8726** issued on 12/9/2019 to **Tana Water Services Board.** of

P.O.Box 1912- 10100, Nyeri.

regarding

Proposed Chogoria Water Supply and Infrastructure.

whose objective is

Construction of Chogoria Water Supply and Infrastructure.

located at

Tharaka Nithi County.

has been varied to

Extend the EIA License validity period by an additional twenty four (24) months to allow completion of the project, subject to conditions on EIA License No. NEMA/EIA/PSL/8726 and the additional condition overleaf.

with effect from **03 May, 2024** in accordance with the provisions of the Act.

Date: **03 May, 2024**

Signature

(Seal)

Director-General
The National Environment Management Authority.

P.T.O.

ISO 9001 : 2015 Certified

1. The proponent shall **undertake annual Environmental Audit (EA)** to ascertain the efficacy of the impacts mitigation measures proposed in the Environmental and Social Management Plan (ESMP) and report compliance to the Authority by submitting the EA report within the first year of commencement/commissioning as stipulated in the EIA License and Section 68 (3) & (4) of EMCA, 1999 and Regulations 31 of the EIA/EA Regulations, 2003.

nema

mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESMENT LICENSE

License No: NEMA/EIA/PSL/8726

Application Reference No: NEMA/EIA/SR/1278

This is to certify that the Environmental Impact Assessment Study Report received from

Tana Water Services Board.

P.O Box 1912 - 10100, Nyeri.

submitted to the National Environment Management Authority in accordance with the Environmental Impact Assessment & Audit Regulations, 2003 regarding the:

Proposed Chogoria Water Supply and Infrastructure.

whose objective is to carry on

Construction of Chogoria water supply and infrastructure.

located at

Tharaka Nithi County.

has been reviewed and a license is hereby issued for the implementation of the project, subject to attached conditions

Issue Date : **09 December, 2019**

Signature

(Seal)

Director-General
The National Environment Management Authority.

P.T.O

ISO 9001 BUREAU VERITAS Certification

ISO 9001: 2008 Certified

1.0 General Conditions

1.1 This project is for the proposed Chogoria Water Supply and Infrastructure in Tharaka Nithi 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, Cap 387 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 provide the final project accounts (final project costs) on completion of construction phase. This should be done prior to project commissioning/operation/occupation.

1.10 The proponent shall comply with NEMA's improvement orders throughout the project cycle.

2.0 Construction Conditions

2.1 The proponent shall obtain the requisite approvals from the County Government of Tharaka Nithi and all other relevant Authorities prior to commencement of works.

2.2 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.

2.3 The proponent shall seek authorization from the Water Resources Authority for the proposed in-water works and for water abstraction, prior to commencement of works.

2.4 The proponent shall ensure strict adherence to the provisions of Environmental Management and Coordination (Noise and Excessive Vibrations Pollution Control) Regulations of 2009.

2.5 The proponent shall ensure strict adherence to the Occupational Safety and Health Act (OSHA), 2007.

2.6 The proponent shall ensure relocation, compensation and restoration of livelihoods for any project affected persons (PAPs) and develop a consultative plan for emerging issues and grievance redress mechanisms (GRM) as shall be prescribed in the Resettlement Action Plan (RAP).

2.7 The proponent shall continually consult with the County Government of Tharaka Nithi to ensure that pertinent issues relating to equitable sharing of the abstracted water are resolved amicably to ensure project sustainability.

2.8 The proponent shall ensure that workers are provided with adequate personal protection equipment (PPE), sanitary facilities as well as adequate training.

2.9 The proponent shall ensure strict adherence to the provisions of the National Construction Act of 2011.

2.10 The proponent shall ensure that no excavated debris or other forms of wastes are disposed off or deposited in the rivers.

2.11 The proponent shall ensure that all excavated material and debris is collected, re-used and where need be, disposed off as per the Environmental Management and Coordination (Waste Management) Regulations of 2006.

2.1 The proponent shall ensure that activities are undertaken during the day between 0800hrs and 1800hrs and on Saturday between 0800hrs to 1300hrs. No work shall be undertaken on Sundays; and that transportation of construction material to and from site is undertaken during weekdays and Saturdays only during the hours specified herein.

2.12 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 Tharaka Nithi with emphasis on approved land use for the area.

2.13 The proponent shall ensure strict adherence to the Environmental Management Plan (EMP) developed throughout the project cycle.

3.0 <u>Operational Conditions</u>

3.1 The proponent shall adhere to the conditions issued by the Water Resource Authority for in-water works and water use permits.

3.2 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.

3.3 The proponent shall ensure that the chemicals used for water treatment (such as Alum) are appropriately handled and disposed off as provided for in their respective Material Safety Data Sheets.

3.4 The proponent shall ensure that all waste water is disposed as per the standards set out in the Environmental Management and Coordination (Water Quality) Regulations of 2006.

3.5 The proponent shall ensure strict adherence to the provisions of the Environmental Management and Coordination (Air Quality) Regulations of 2014.

3.6 The proponent shall ensure that appropriate and functional efficient air pollution control mechanisms are installed to control all air emissions.

3.7 The proponent shall ensure that all drainage facilities are fitted with adequate functional oil water separators and silt traps.

3.8 The proponent shall ensure that rain water harvesting facilities are provided to supplement surface and ground water.

3.9 The proponent shall ensure that all equipment used are well maintained in accordance with the Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations of 2009.

3.10 The proponent shall ensure that all solid waste is handled in accordance with the Environmental Management and Coordination (Waste Management) Regulations of 2006.

3.11 The proponent shall ensure that all workers are well protected and trained as per the Occupational Safety and Health Act (OSHA) of 2007.

3.12 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 Tharaka Nithi,

Kenya Forest Service, Ministry of Health, Kenya Rural Roads Authority, Ministry of Land, Housing and Urban Development, Water Resources Authority, and other relevant Authorities.

3.13 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, equitable water supply mechanisms are designed, constructed and employed simultaneously with the proposed project.

4.0 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 of any system within 12 hours on the NEMA hotline No. **020 6006041/0786101100** 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.

5.0 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.