ENVIRONMENTAL AND SOCIAL COMPREHENSIVE PROJECT REPORT FOR THE PROPOSED KANGAKIMAK WATER SUPPLY SCHEME IN KANAODON LOCATION, TURKANA SOUTH SUBCOUNTY, TURKANA COUNTY

HORN OF AFRICA GROUND WATER FOR RESILIENCE PROJECT (HoAG4RP)-KENYA



Prepared by

CAS CONSULTANTS LTD

Consulting Engineers and Environmentalists

Prepared for

Department of Water Services

The County Government of Turkana

The Horn Of Africa Ground Water For Resilience Project (Hoagwrp) is funded by the World Bank and Implemented by the following Agencies

The County Government of Turkana

Water Sector Trust Fund

Minsitry of Water, Sanitation and Irragation

June 2025

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FACT SHEET

Project Name	Proposed Kangakimak Water Supply Scheme
Assignment Name	Environmental and Social Impact Assessment (ESIA).
Location	Kanaodon Location, Turkana South Sub-County, Turkana County
GPS Coordinates	2.51633 N, 35.40742 E
Project Description	Project components and construction activities include: i. Installation of #1 pump and solar panels; ii. Laying of 4,570 m of pipelines of different Outside Diameter (OD) sizes: ✓ OD 32-1,745m ✓ OD 50, 1,150m; and ✓ OD 90, 1675m. iii. Construction of 1 nr Elevated Steel Tank of capacity 100m^3; and iv. Construction of 4nr water kiosks, 1nr sheep/goat's trough and 1nr cattle trough.
Project cost	KShs 24,840,991.68,
Project Coordinator	The Ministry of Water, Sanitation and Irrigation (MOWSI), Kenya
Proponent	Water Sector Trust Fund (WSTF) P.O Box, 49699 – 00100 GPO Nairobi. Tel: +254 20 2729017 Email: info@waterfund.go.ke

DECLARATION

This ESIA Comprehensive Project Report was prepared in accordance with the requirements of the Environmental (Impact Assessment and Audit) (amendment) Regulations, 2019, pursuant to The Environmental Management and Coordination Act, (CAP 387) and acceptable international standards.

LEAD EXPERTS:

Name: Kibet Koech **NEMA Registration No.** 1609

Firm and Lead Expert License attached as Appendix I of the report.

Signature: ..... **Date:** _____

PROPONENT:
Water Sector Trust Fund (WSTF)
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For and on behalf of proponent: -

Name: .....

Designation: .....

Signature: .....

Date: .....

(Official stamp)

ESIA STUDY TEAM

Name	Position
Kibet Koech	Lead Expert
Sheila Akinyi	Social/SEAH Expert
Winnie Gachohi	Assistant Environmentalist
Maurice Ouma	Hydro-geologist

LIST OF ABBREVIATIONS

ASALs	Arid and Semi-Arid Lands
CBO	Community-based organization
CGA	County Government Act
CoC	Code of Conduct
CoK	Constitution of Kenya
CSO	Civil society organization
EIA	Environmental Impact Assessment
ESF	Environment and Social Framework
ESIA	Environmental and Social Impact Assessment
ESIRT	Environmental and Social Incident Reporting
ESMF	Environmental and Social Management Framework
ESMoP	Environmental and Social Monitoring Plan
ESMP	Environmental and Social Management Plan
ESS	Environment and Social Standards
FPIC	Free, prior, informed consent
GBV	Gender Based Violence
GC	Grievance Committee
GM	Grievance Mechanism
GoK	Government of Kenya
GRS	Grievance Redress System
HOA	Horn of Africa
HOAGW4R	Horn of Africa Groundwater for Resilience Project
IDA	International Development Association
IDPs	Internally Displaced Persons
IGAD	Intergovernmental Authority on Development
KNCHR	Kenya National Commission on Human Rights
LMP	Labour Management Procedures
MAR	Managed Aquifer Recharge
M&E	Monitoring and Evaluation
MDAs	Ministries, Departments and Agencies
MoFP	Ministry of Finance Planning
MoWSI	Ministry of Water Sanitation and Irrigation
NEMA	National Environment Management Authority
NGEC	National Gender and Equality Commission
NGO	Non-governmental Organization
NSAs	Non-State Actors
OD	Outside Diameter

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O & M	Operation and Maintenance
OHS	Occupation health and safety
OIP	Other Interested Parties
PA	Project Area
PAD	Project Appraisal Document
PAI	Project Area of Influence
PIU	Project Implementation Unit
PMC	Project Management Committee
PMU	Project Management Unit
PWDs	Persons with Disabilities
RPF	Resettlement Planning Framework
SDG	Sustainable Development Goals
SEAH	Sexual Exploitation, Abuse and Sexual Harassment
SEP	Stakeholder Engagement Plan
TOR	Terms of Reference
TURUWASCO	Turkana Rural Water and Sanitation Company
TURWASCO	Turkana Urban Water and Sanitation Company
WASHCORD	Water, Sanitation and Health Coordinator
WASREB	Water Service Regulatory Board
WB	World Bank
WHO	World Health Organization
WRA	Water Resources Authority
WRUA	Water Resources User Association
WSP	Water Service Provider
WSTF	Water Sector Trust Fund

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NON-TECHNICAL SUMMARY

1. Project Background

The Government of the Republic of Kenya (GoK), through the Ministry of Water, Sanitation and Irrigation (MoWSI), is implementing the Horn of Africa Groundwater for Resilience Project (HoAGWRP) with a credit from the International Development Association (IDA). The Project Development Objective is to increase the sustainable access and management of groundwater in the Horn of Africa borderlands. The project intends to benefit 1,500,000 people in the rural areas of the five counties of Turkana, Wajir, Garissa, Marsabit and Mandera through the rehabilitation, construction and sustainable management of boreholes as well as from aquifer restoration, recharge and conservation activities.

The HoAGWRP is set to rehabilitate approximately 400 rural water schemes across five counties in Kenya, including Turkana County. The project emphasizes the restoration of existing water infrastructure to enhance groundwater access and management. This initiative aims to improve water security and resilience against drought for communities in arid and semi-arid regions. The project is coordinated by the Ministry of Water, Sanitation, and Irrigation, with implementation support from the Water Resources Authority and the Water Sector Trust Fund, in collaboration with county water departments, in this case Turkana Rural Water and Sanitation Company (TURWASCO) in Turkana County.

To achieve this, the Water Sector Trust Fund (WSTF), hereinafter referred to as the 'Client' has commissioned CAS Consultants (referred to hereafter as 'the Consultant') to provide consultancy services for engineering designs, tender documentation and supervision of civil works during implementation, in addition to the statutory, environmental and social safeguards. Therefore, the consultancy service included Environmental and Social Impact Assessment Studies for the proposed sub projects.

2. Proposed Project

Kangakimak Water Supply Scheme (WSS) is a Groundwater-based Rural Water Supply Scheme (RWSS) identified by the County Government of Turkana for rehabilitation, upgrading and sustainable management under the program with a project implementation cost of KShs 24,840,991.68.

The proposed project facilities include rehabilitation of 1# borehole at location 2.516299 E and 35.40739 N. the proposed water supply scheme infrastructure include: -

i. Supply and installation of 4# Solar Photovoltaic Pumping (PVP) System for Kangakimak WSS.
ii. Supply and installation of 4,570 m of various HDPE Pipeline sizes ranging from OD 32mm to 90mm and pressure as summarized in table 1 below.

Table 1 Water supply and distribution pipelines

Scheme	Pipe Diameter (mm)	PN	Length (m)	Total length (m)
Kangikimak	32	16	1,745.00	4,570
	50	16	1,150.00	
	90	20	1,675.00	

iii. Construction of separate community water point for livestock and domestic use consisting of, kiosks and livestock troughs as summarized in table 2 below.

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Table 2 Community water points and livestock troughs

Scheme	Water Kiosks	Cattle Troughs (Length m)	Shoat Troughs (Length m)	Individual Connections
Kangakimak	4	1 (10)	1 (5)	5

iv. Construction/supply and installation of 1# 100m^3 water storage tank
v. Ancillary Works -Construction of a water service provider (WSP) administration building, pump house, control room, guard house and two toilet blocks (gender separated).

3. Project Location

The proposed rural water supply system is located in Kanaodon location, Katilu Ward within Turkana South Sub County, Turkana County. This scheme serves 7 major villages: Kaayong, Kangisaja, Nachemedei, Tukuum, Ekabekebeke, Abur and Nangorok villages. The total number of households dependent on the scheme for water service provision is 880 Households, and a population of 5,280 persons.

4. Land take for the water supply infrastructure

The estimated land requirement for the water supply infrastructure, excluding pipelines, is 8,540m^2 (2.11 acres) for the construction of the administration and guard house buildings, generator room, pump house, water storage tank, water kiosks & toilet blocks, solar panels support structure (PV Plant, and access roads. The land on which the infrastructure is proposed is communally owned, and unencumbered. However, a formal land transfer process is required, to transfer the earmarked land from communal ownership to public purpose under the trust of the Turkana County Government. The process has begun with the community having signed the land consent form.

The land acquisition process for access to unregistered community land (as Anchored in Community Land Act, 2016):-

i. Due Diligence (Section 8, CLA): Carry out background checks to determine the land's status, including its boundaries, existing use, customary tenure arrangements, and whether the community has initiated registration under the Act.
ii. Government Engagement (Sections 6, 7 & 8, CLA): Engage both the National Land Commission (NLC) and County Government since, under Section 6, county governments hold unregistered community land in trust on behalf of communities. Structured consultations should involve political leadership and relevant administrative officers at the local level.
iii. Community Consultations & FPIC (Sections 8, 15 & 21, CLA): Engage community structures—traditional leaders, elders, women representatives, youth, CBOs, and FBOs—in open and inclusive consultations. The Act emphasizes community participation and free, prior, and informed consent (FPIC) before any transaction or allocation.
iv. Benefit Sharing (Sections 36 & 37, CLA): Define clear, equitable, and transparent benefit-sharing arrangements for any investment or partnership. The CLA requires that benefits derived from community land accrue to the entire community, not just individuals or elites.
v. Community Consent (Section 8(4), CLA): Obtain written consent from the community through a prescribed community resolution/consent form. This aligns with the Act's requirement that decisions relating to community land use and allocation must be by a majority of registered adult members of the community.

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vi. Approval & Documentation (Sections 15, 30 & 37, CLA): Any agreement (investment, MoU, or partnership) must be approved in a community assembly or through the community land management committee (once registered). Approval should be by a majority of community members, with decisions recorded in minutes, filed with the county government, and, where relevant, registered with the NLC.

5. Legislative, Policy and Institutional Framework

The ESIA has been conducted in accordance with Section 58 of Environmental Legislation, Environment Management and Coordination Act (EMCA) 1999 and its subsidiary legislation, including the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019. The ESIA has also been done in line with the requirements of the World Bank (WB) Environmental and Social Framework (ESF) and the WB Environmental, Health and Safety Guidelines for Water and Sanitation. Pertinent national and county governments' laws, regulations, standards and guidelines governing environmental quality, health and safety, protection of fauna and flora species, environment, economic activities, siting and land use control as relevant to the site and its immediate environs were identified and reviewed.

The Ministry of Water, Sanitation, and Irrigation (MOWSI) prepared an Environmental and Social Management Framework (ESMF) to guide the development of proposed interventions under the HoAGWRP, and to ensure that all project activities systematically consider the key environmental, social, health and safety concerns, including compliance with the applicable national legislation and the World Bank ESF. The ESMF provides a framework for site-specific assessments, stakeholder engagement, and risk mitigation plans, ensuring that HoAGWRP activities in Turkana County address localized environmental and social impacts while adhering to World Bank ESF requirements. This alignment fosters coherence between global safeguards and national frameworks, streamlining regulatory approvals and sustainable project implementation.

A legal register listing all legislation, legal instruments relevant to the site has been prepared, indicating applicability to the site. In addition, permits and licenses that are required to be obtained during construction and operation of the sub-project have been identified.

6. Objectives of ESIA

1. Describe the proposed project and associated works together with the established E&S requirements in carrying out the proposed project;
2. Consider environmental, social, economic, cultural and legal considerations in regard to the proposed project as described above;
3. Identify and analyze alternatives to the proposed project;
4. To identify, in consultation with the interested and affected parties, all potential significant environmental and social impacts of the proposed project and recommend measures for mitigation;
5. To generate baseline data for monitoring and evaluation of how well the mitigation measures have been implemented by the proponent during the project cycle;
6. Develop an environmental & social management plan with mechanisms for monitoring and evaluating the compliance with the management measures

7. ESIA Methodology

The Environmental and Social Impact Assessment (ESIA) was based on the proposed project designs, and entailed desktop reviews of the available project information, review of the applicable legislation, field assessment of the baseline conditions, and discussion with stakeholders (including surrounding communities, county and national government officials, among others).

The project team provided the proposed project designs, including associated facilities transposed into the Project Area (PA); to conceptualize the project and its impacts on the PA. Discussions with government officers involved explaining the proposed project and soliciting their views on environmental and social aspects that need to be considered during the design and implementation of the project. The team carried out data collection through structured questionnaires, use of checklists, observations and photography, site visits, consultation with stakeholders and desk studies, and, where necessary, in the manner specified in the Environmental Management and Co-ordination Act (Impact Assessment and Audit) Regulations, 2019.

8. Stakeholder Engagement & Community Consultation

The main objective of the stakeholder engagement was to inform interested and affected parties about the proposed project and its likely effects, seek their views and concerns, and consider these in project designs and implementation arrangements. Consultations with various identified stakeholders begun in April 5, 2024 during site selection, environmental and social screening and eligibility assessments. From the initial community meeting, the community welcomed the project and expressed their commitment to support its implementation. The community reported that the water quality from the borehole is fit for human consumption. They requested for separate water access points for human and livestock. The community asked for borehole area protection to prevent destruction by flood water, as well as securing of the borehole infrastructure. They asked for extension of pipeline to the villages and institutions. These requests have been considered in the project final designs.

Project land requirement was discussed at this early stage, and the community voluntarily accepted to cede community land for the proposed water supply infrastructure. Land consent was formalized through the signing of a consent form by elected community representatives, and the formal process land transfer from community land to public land has been initiated.

The community prefer the repair and rehabilitation model of the county government. Upon enactment of the Turkana Water Act 2019, the mandate for management of rural water supply schemes shifts to the new created Turkana Rural Water and Sanitation Company (TURUWASCO). Currently, Turkana County Government are in engagement with the communities and their respective WSP over the transitioning of the services.

During ESIA study, Consultations were held with various Ministries and departments of the Turkana County Government with mandate on Health, Labor, Gender, and Education. Consultations were also held with TURWASCO, Water Resources Authority (WRA), National Environment Management Authority (NEMA), and various Community-based organization (CBOs) and Non-governmental Organizations (NGOs).

The project has prepared an Indigenous Peoples, Vulnerable and Marginalised Groups Planning framework which was adopted during the ESIA process, and will guide future project consultations and engagements.

A community baraza was held at Kangakimak settlement with community members in December 11, 2024. For the engagement with the community, the various groups including men, women, youths, community leaders, vulnerable groups, and households—were duly notified of the baraza. Meeting notices were posted well in advance, and mobilization efforts included the use of community mobilizers and social media platforms to maximize outreach. The meeting was held at an accessible venue within the target settlement, a location routinely used for public gatherings such as chief's barazas. Attendance was open to all, with no restrictions. Project information was

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disseminated in the local Turkana dialect, Kiswahili, and English, with translations provided by a community-appointed representative. Questions during the meetings were posed in Kiswahili, the local language, or English. Participants were encouraged to ask questions, offer feedback, provide recommendations, and seek clarifications on all aspects of the project. All inquiries and requests for additional information were comprehensively addressed.

The community welcomed the design feature of differentiated water access points for domestic and livestock use. Furthermore, the conveyance and distribution of water to the settlement were acknowledged as key measures to reduce collection time and enhance the safety of women and children. The installation of an elevated storage tank was also positively received.

During the ESIA disclosure on June 27, 2025, revised designs (with a reduced scope) were presented and appreciated, with the process ensuring inclusive participation through mobilization by local leaders and institutions. The meeting, held at a centrally located venue, allowed open discussion in local languages, with responses referenced to the CPR. Key concerns raised included gender equality, project timelines, environmental protection, SEAH and HIV/AIDS risks, and local employment, all addressed through project commitments and mitigation plans. The community was also informed of critical project milestones including acquisition of WRA and ESIA approvals, land transfer, contract award, construction, and eventual commissioning and operation.

9. Project Impacts

Lack or inadequate water supply in any locality leads to poor sanitation, poor health and hygiene standards hence contributing to water borne diseases and low quality of life. Traveling far distances in search of water also wastes a lot of time that would have been used on more productive activities. It is also economically unfriendly to the community as a lot of funds will be used in treating both water and people who fall victims of water borne diseases.

10. Anticipated Positive Impacts

The project positive impacts include access to safe drinking water, sustainable access to water, enhanced community resilience to drought and climate change, improved local economy and livelihoods.

The table below highlights some of the key anticipated negative impacts.

Table 3: Anticipated Risks and Impacts

Risks and Impacts	Descriptions of impacts	Mitigation measures
Water Resource Management	The community boreholes can significantly increase water availability, which is beneficial to local communities. However, improper management may lead to over-extraction, causing a decline in groundwater levels, potentially	- Implement sustainable water extraction practices based on groundwater recharge rates. - Introduce water management plans and monitoring systems to track water levels and ensure responsible use. - Conduct regular hydrological studies to assess the long-term sustainability of the borehole. - Obtain water abstraction permits from WRA.

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Risks and Impacts	Descriptions of impacts	Mitigation measures
	depleting the water source.	- Comply with the Water Resources Regulations 2021.
Vegetation Clearance	Exposure to water and wind erosion.	- Limit vegetation clearance to the construction width. - Consult the Kenya Forest service (KFS) on appropriate trees to plant suited to the local environment especially around areas such as storage tank site, administration building, pump house and sanitation facilities).
General Materials Handling, Use and Storage	Pollution of soil, water and air.	- All materials shall be stored within the Contractor's camp unless otherwise approved by the RE. - Dispose off wastes as per the applicable laws and regulations. - Provide adequate sanitation facilities for both on and off-site teams. - All imported fill, soil and/or sand materials shall be free of weeds, litter and contaminants. Sources of imported materials shall be listed and approved by the RE. - The Contractor shall ensure that delivery drivers are informed of all procedures and restrictions (including 'No go' areas) required. - Any electrical or petrol driven pumps shall be equipped and positioned so as not to cause any danger of ignition of the stored product. - Collection containers (e.g. drip trays) shall be placed under all dispensing mechanisms for hydrocarbons or hazardous liquid substances to ensure contamination from any leaks is reduced. - Regular checks shall be conducted by the Contractor on the dispensing mechanisms for all above ground storage tanks to ensure faulty equipment is identified and replaced in timely manner. - Only empty and externally clean tanks may be stored on bare ground. All empty and externally dirty tanks shall be sealed and

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Risks and Impacts	Descriptions of impacts	Mitigation measures
		stored on an area where the ground has been protected.
Water Quality Degradation	During rehabilitation, there may be a risk of contaminating groundwater or surface water with construction materials, waste, or fuel. If not managed properly, this can compromise the quality of water source.	- Implement strict waste management protocols during the construction phase. Ensure all materials used for rehabilitation are non-toxic and do not leach into the groundwater. - Conduct water quality testing before and after rehabilitation to ensure water safety.
Soil Erosion and Sedimentation	The activities involved in the construction phase of the project may have a major negative short-term impact on soil. The rolling terrain where the proposed borehole is located and the erratic rainfall experienced make it particularly vulnerable to soil erosion which could lead to the degradation of the land as well as loss of topsoil. This can result in sedimentation of water sources and disruption of the local landscape.	- Excavation work in the hilly areas should be avoided in rainy days - Replant vegetation around the construction site to stabilize soil and reduce erosion. - Soil excavated should be utilized for backfilling and the remaining soil being spread evenly and compacted.
Waste disposal	Liquid and solid waste will be generated in the course of construction. The wastes range from general to hazardous categories. This impact is short term. However, the disposal mechanism of the wastes can have long term consequences.	- Develop and implement a waste management plan. - Providing appropriate waste collection bins at designated points on site for purposes of waste segregation. - Engage licensed waste handlers for final disposal of wastes. - Track collection, holding and disposal of all wastes including hazardous wastes. - Training and awareness creation on Safe Waste Disposal in construction sites and camps for all workers.

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Risks and Impacts	Descriptions of impacts	Mitigation measures
		- Prepare Waste Disposal Plan for every construction site.
Air pollution	Emissions mainly associated with combustion of fuel from the construction vehicles and equipment. These emissions may be in the form of oxides of nitrogen as well as volatile organic carbons. Similar to other combustion processes, emissions from vehicles include CO, NOx, SO2, and VOCs. This will be potentially high in construction areas especially where there are human settlements and institutions like schools, health centres among others.	- Emissions from the construction vehicles should comply with national or international standards. - Regardless of the size or type of vehicle, operators should implement the manufacturer recommended engine maintenance plans; - Ensure that all vehicles involved in the transport of construction material and staff, and machinery involved in the construction is properly maintained and serviced. - Machines must not be left idling for unnecessary periods of time; this will save fuel and reduce emissions.
Particulate Matter	The most common pollutant involved in fugitive emissions is dust or Particulate Matter (PM). This is released during certain operations, such as transport and open storage of solid materials, and from exposed soil surfaces. The sensitive receptors include schools, health centres and human settlements.	- Use of dust control methods, such as covers, water suppression, or increased moisture content for open materials storage piles, or controls;
Noise and vibration	The site preparation and construction phases of the project will result in negative impact to the ambient noise and vibration in the project area. However, for temporary periods	- Construction activities should be restricted to day time only. - Construction activities should be undertaken through the use of small mechanical devices e.g., tractors and manual labour, as much as practically possible. - Where possible low noise producing (silenced) machinery and instruments should

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Risks and Impacts	Descriptions of impacts	Mitigation measures
	restricted to construction phase only, the cumulative impact of the construction activities occurring simultaneously may increase the noise and vibration levels in the area significantly.	be employed to reduce the impact of noise on the existing residents and workers. - Compliance to Noise and Excessive Vibrations Regulations 0f 2006 - Provide personal protective equipment (PPEs) to the construction workers. -
Community Health and Safety	Health and safety risks, hazardous materials, traffic disruptions and security	- Ensure the safety of residents by providing safety signs at hazardous sites/places in the project area/works. - Hoarding off working sites to protect the public or unauthorized persons. - Use of safety signs and warnings on sites with high risks such as the elevated tank sites and deep excavations. - Implement the traffic management plan. - Training and education of communities and project workers on SEAH, Emergency Response Plans (ERP). - Implementation of the stakeholder engagement plan (SEP).
Occupational Health and safety	Use of heavy machinery and various activities for construction work may pose safety hazards to the workers and the community.	- Develop and implement an occupational safety and health management plan. - Ensuring that the drivers and machine operators hired to work on the site are qualified. - Provided all workers with appropriate PPE. - Regular training on health and safety in line with OSHA 2007. - Regular maintenance of machines and equipment's. - Comply with OSHA 2007 Regulations. - Adherence to the programme of works to avoid workers being overworked. - Regular training on drug abuse and mental health issues. - Hoarding hazardous sites.

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Risks and Impacts	Descriptions of impacts	Mitigation measures
Labour influx	The influx of migrant workers may increase incidences of communicable diseases, conflict, insecurity, theft, SGBV and increased pressure on social amenities.	- Implement the project labour influx management plan. - Prioritize local labour force. - Regular community and project workers training, awareness and sensitization on HIV/AIDS, Mental Health and Drug Abuse. - Clear and culturally sensitive GM and SEAH/GBV procedures at the project site. - Contractors provide adequate welfare amenities for their staff including accommodation and supplies. - All project workers sign the Code of Ethical Conduct (CoC)
SEAH and GBV	SEAH and GBV risks to the communities and project workers.	- Domesticate and implement the Project's SEAH Prevention and Response Plan. - Induct and regularly train the community and project workers on SEAH and GBV obligations. - Sensitize the communities on GBV/SEAH. - Regular M&E of SEAH and GBV aspects.
Children Rights, Protection of Children and Child labour	Child labour and the risk of violence against children.	- No engagement of minors in the project directly or indirectly. - Compliance to children Act 2022. - Conduct child protection training for workers, contractors, and local leaders. - Display clear signage at the site warning against child labour and abuse - Erect fencing or barriers to prevent children from accessing the site and other ancillary sites e.g. quarries, borrow pits. - Include a strict prohibition on child Labor in all contractor agreements and CoCs for each worker - Client and consultant to conduct regular labour inspections to ensure compliance. - Sensitize parents, teachers, and local leaders on the risks of child abuse around construction sites

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Risks and Impacts	Descriptions of impacts	Mitigation measures
Security	Cattle rustling and banditry poses a risk to the Project workers and community members	- Sub projects to adopt the project security management plan. - Equitable sharing of project and subproject opportunities across the communities and settlements. - The Water Resources User Association (WRUA) supervised by TURWASCO and TURUWASCO should develop a sub project community water sharing plan that will result in a framework for the equitable and sustainable distribution of water resources. - Fence off/secure sub project infrastructure.
Exclusion of vulnerable groups from consultations and inclusion in designs	Exclusion of PwD, vulnerable groups meeting the criteria in ESS 7, women, children and elderly from consultations and inclusion of their views in accessible facility design	- Adopt Indigenous Peoples/Vulnerable and Marginalized Groups (IP/VMG) Plan - Schedule meetings at convenient times and locations to accommodate women, persons with disabilities, and other vulnerable groups. - Ensure that local engagement plans adopted for the site specify need for the E and S focal points to engage directly with vulnerable groups. - Apply universal design in infrastructure to ensure accessibility for persons with disabilities to the water points. This will include dedicated consultations with the PwDs to understand their needs. - Ensure that consultations are culturally appropriate, accessible, including the use of sign language interpreters, braille, and vernacular languages. - Incorporate gender-sensitive and culturally appropriate design considerations
Forced labour in procurement supply chain	Supply chain labour risks	- Bidder requirements to submit a past forced labour performance declaration, and a declaration of ongoing Bidder commitment to prevent, monitor and report on any forced labour; - Include in contracts with Subcontractors/ suppliers/ manufacturers of *materials (pipes, fittings, solar panels and equipment)* obligations to prevent Forced Labor among the staff, employees, workers and any other person

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Risks and Impacts	Descriptions of impacts	Mitigation measures
		employed or engaged by the Subcontractor/ supplier/ manufacturer - The Contractor, including its Subcontractors/ suppliers/ manufacturers, shall not employ or engage forced labour. Forced labour consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.
Land Take (water supply pipelines, water kiosks and livestock troughs)	Physical displacement and loss of livelihood risks	- Alignment of water pipelines along public roads and spaces to avoid any physical and/or economic displacement as much as possible, or infringement on the land rights holders. - Community consultation on siting of livestock troughs and water kiosks. Where additional land is required for the project, follow procedures to clarify the legal status of land rights holders; Engage with local authorities and traditional institutions to ensure customary rights are documented and recognized in project planning; The project is being implemented among Indigenous People/Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (SSAHUTLC), ESS7 requires that broad community support through FPIC from both the community and individuals with land claims be sought for; - Engage both community leaders and individual land users and address expectations and grievances proactively; - Develop and formalize access and use agreements between WSTF and the land rights holders (both communal and individual); - Provide community-level benefits for communal compensation, and land-for-land, cash compensation at replacement cost, or livelihood support for those with use rights or structures; establish a GRM that includes customary and formal pathways, with trusted community representatives and accessible procedures

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11. Grievance Mechanism

A grievance committee (GC) has been established at national and county levels chaired by the project manager, and the relevant staff will be included as necessary depending on the complaint (procurement, finance, monitoring and evaluation (M&E), GBV advisor and communication). The social specialists will compile minutes for the meetings and follow up the grievance resolution process. The GRC will meet monthly to review minor complaints, progress on complaints resolution, review the development and effectiveness of the GM, and ensure that all staff and communities are aware of the system and the project.

Immediate meetings will be held in case of significant complaints to be addressed at the MoWSI PCU and County PIU. For serious or severe complaints involving harm to persons, communities or the environment or those which may pose a risk to the project reputation, the County social specialist should immediately inform the social specialist or head of the PCU, who will inform the WB within 48 hours as per the Environmental and Social Incident Reporting requirements.

At the community level, the WWUAs with strong representation of disadvantaged and vulnerable groups will receive complaints directly from the communities, contractors, or schools and forward to the county social specialist to support resolution and follow up. The Ward Water Users Association (WWUAs) will be the key link between the county team and the community, and the members will be useful in the feedback loop. Figure below presents the structure to be adopted by the project in managing grievances.

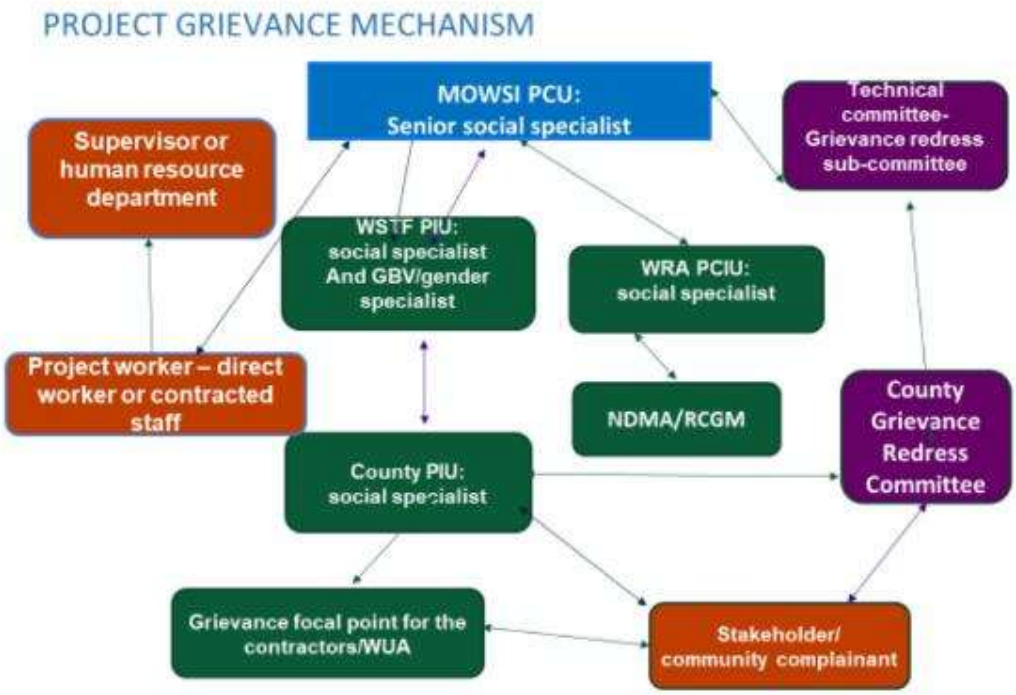


Figure 1 Project Grievance Mechanism

12. ESMP Implementation

In order to ensure the sound development and effective implementation of the ESMP, it will be necessary to identify and define the responsibilities and authority of the various persons and organizations that will be involved in the project. The table below summarizes the entities that

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will be involved in the implementation of this ESMP. It is necessary for all the responsible parties identified to retain the environment and social officers to support the ESMP implementation and oversight:

Table 4 ESMP Institutions and Roles.

Institution/Entity	Specific Officer(s)	Role
Ministry of Water, Sanitation and Irrigation (National Project Coordination Unit) TURWASCO.	Environmental and Social Safeguards Officers	Project-wide Supervision and oversight on ESMP Implementation Quarterly Reporting on ESMP Implementation Incident investigation and reporting
Water sector Trust Fund	Environmental and Social Safeguards Officers	Component-wide Supervision and oversight on ESMP Implementation Quarterly Reporting on ESMP Implementation Incident investigation and reporting
Turkana County Government (S-PIU)	Environmental and Social Safeguards Officers	County-wide Supervision and oversight on ESMP Implementation Quarterly Reporting on ESMP Implementation Incident investigation and reporting
Resident Engineer	Environmental and Social Safeguards Officers	Scheme-level supervision and oversight on C-ESMP Implementation; Quarterly Reporting on C-ESMP Implementation Incident investigation and reporting
Contractor.	Environmental and Social Safeguards Officers	Implementation of the C-ESMP; Regular (at least monthly) reporting on progress of C-ESMP implementation Incident notification, investigation and reporting
National Environmental Management Authority. Directorate of Occupational Safety & Health Services.	Compliance Officers	Periodic/adhoc site inspections for compliance with statutory requirements

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13. Cost of ESMP Implementation

The indicative costs for implementing the ESMP are not provided, as per the applicable FIDIC General Conditions of Contract; the costs of implementing the construction-phase ESMP (C-ESMP) are to be borne by the Contractor and shall therefore be integrated within the Contractor's Bill of Quantities. The ESMP provisions shall be provided to bidders for the works contract, for their accurate estimation of costs. However, a separate cost is provided for HIV/AIDS Awareness training and sensitization, Stakeholder Engagement Plan Implementation, Grievance Redress Mechanism Implementation, and SEAH and GBV training and sensitization.

14. Conclusions

The environmental, and social Impact Assessment (ESIA) of the proposed project has been conducted in accordance with national legislative requirements, the World Bank ESF, and good international industry practice (GIIP).

In order to mitigate the expected negative impacts and to make the project sustainable, an ESMP has been prepared, and it includes: the impacts, mitigation actions; the monitoring and enforcement requirements; and the responsible persons/organizations.

The proposed project will bring a net positive environmental, economic, social and health benefits to all living within the Project Area.

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Chapter 1 Introduction

1.1. Background Information

The Ministry of Water, Sanitation and Irrigation (MoWSI) is implementing the Horn of Africa Groundwater for Resilience Project (HoAGWRP) with a credit from the International Development Association (IDA). The Project Development Objective is to increase the sustainable access and management of groundwater in the Horn of Africa borderlands. The project intends to benefit 1,500,000 people in the rural areas of the five counties of Turkana, Wajir, Garissa, Marsabit and Mandera through the rehabilitation, construction and sustainable management of boreholes as well as from aquifer restoration, recharge and conservation related activities.

The project also envisions to benefit institutions that work on ground water at the National, County and transboundary levels. These include the Ministry of Water, Sanitation and Irrigation (MOWSI), the Water Resources Authority (WRA), the Water Sector Trust Fund (WSTF), the Regional Center on Ground water, the National Drought Management Authority (NDMA), the Turkana Urban Water and Sewerage Company (TURWASCO) and the Rural Water Service Schemes of participating ASAL counties. These institutions groundwater management will be strengthened by giving more visibility to ground water through policies, strategies, regulations and guidelines.

The HoAGWRP project is structured to be delivered in four components as follows:

i. **Component 1 – Delivering inclusive groundwater services to priority Areas**

This component will fund groundwater conservation, infrastructure development and service delivery improvement activities in the five borderland counties of Turkana, Marsabit, Mandera, Wajir, and Garissa. The component comprises two interrelated sub-components:

- **Sub-component 1. A:** Development of nature-based solutions for strengthening groundwater conservation, sustainable use, and recharge of seven selected aquifers in the ASALs of Kenya
- **Subcomponent 1. B:** Rehabilitation of an estimated 400 groundwater-based rural water supply schemes, enhancement of the designated drought-response strategic boreholes network, and mainstreaming Operations and Maintenance (O&M) of groundwater infrastructure in the

Under sub component 1B, the HoAGWRP is set to rehabilitate Kangakimak water schemes in Katilu Ward, Turkana South Sub County, Turkana County.

To achieve this, the Water Sector Trust Fund (WSTF), hereinafter referred to as the 'Client' has commissioned CAS Consultants (referred to hereafter as 'the Consultant') to provide consultancy services for engineering designs, tender documentation and supervision of civil works during implementation of the proposed interventions in Turkana County. This also includes preparation of the statutory environmental and social safeguards instruments (ESIA), and supervision of the implementation of the C-ESMP by the contractor.

1.2. Project Rationale

The HoAGWRP project is set to benefit people living in the rural communities and will focus on groundwater management, development and use. The project will also contribute to climate change adaptation and building the capacity of groundwater institutions which will equip key actors with the requisite know-how to anticipate groundwater impacts and manage groundwater potential and possibilities for the counties and the project's development and rehabilitation of

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groundwater infrastructure which will augment the availability of freshwater to enhance climate change adaptation.

The Horn of Africa Ground Water Resilience Project (HoAGWRP) in Turkana County addresses critical water scarcity challenges caused by prolonged droughts, erratic rainfall, and climate change impacts. Groundwater is the county's primary water source, yet existing infrastructure is inadequate, with many boreholes non-functional or inefficiently managed. The project focuses on rehabilitating boreholes and strengthening water supply systems to ensure reliable access to clean water for domestic use, livestock, and agriculture. By improving the distribution network, the project will expand water coverage, enabling more rural residents to access water closer to their homes, reducing the burden of long-distance water collection. This enhances climate resilience, supports livelihoods, reduces waterborne diseases, and aligns with Sustainable Development Goals (SDG 6 on clean water and SDG 13 on climate action), fostering sustainable water management and improved public health in vulnerable rural communities.

1.3. Kangakimak Water Supply Scheme.

The proposed Kangakimak scheme is located in Kanaodon location, Katilu ward in Turkana South Sub County as shown in the figure below. This scheme serves 7 major villages: Kaayong, Kangisaja, Nachemedei, Tukuum, Ekabekebeke, Abur, and Nangorok Village. The targeted population to be served by the Kangakimak Water Supply Scheme is 5280 people in 880 households.

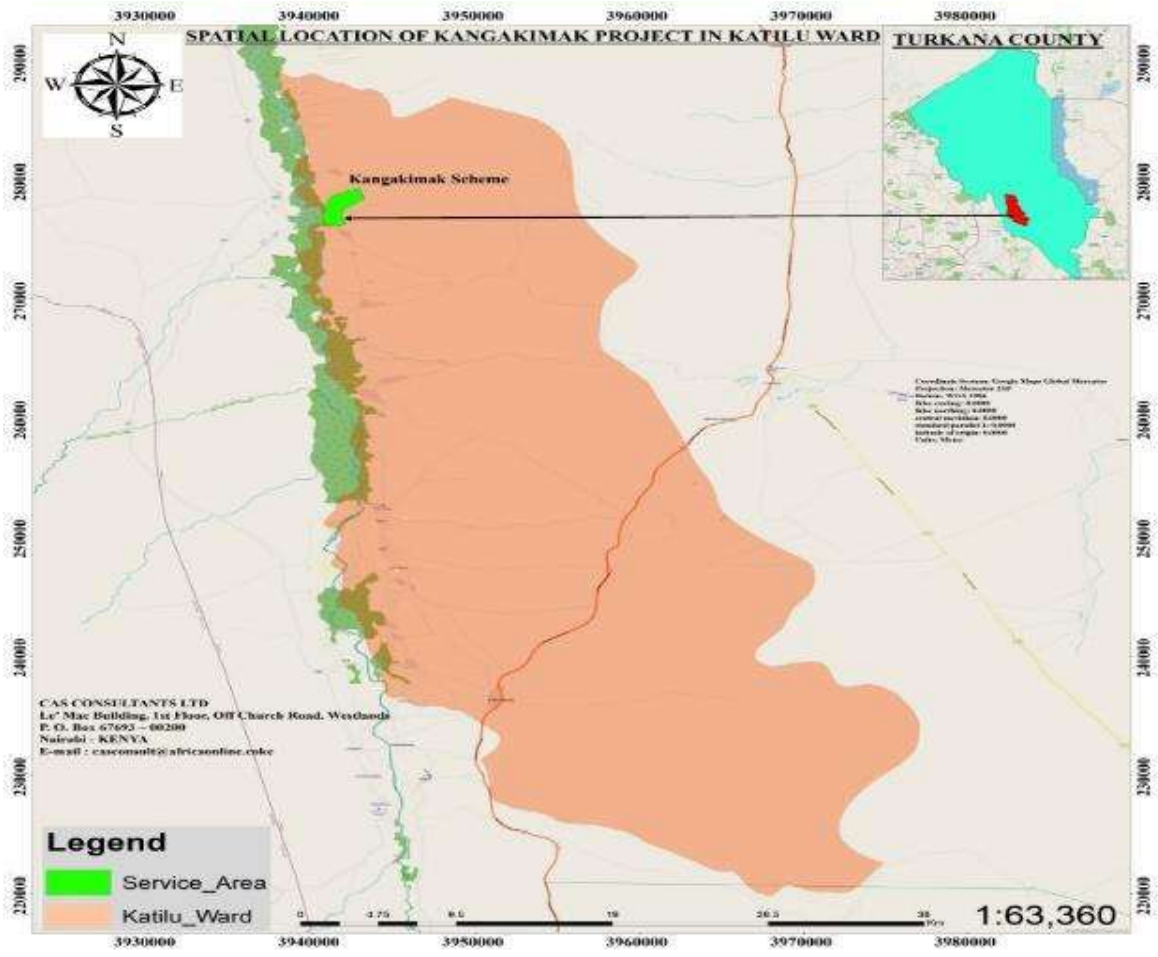


Figure 2 Project Location Map

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1.3.1. Project Components

i. Project solarization
ii. Supply and installation of 4750M of various HDPE Pipeline sizes ranging from OD 32mm to 90mm;
iii. Construction of separate community water point for livestock and domestic use
iv. Construction/supply and installation of 100m3 water tank.
v. Construction of Administration building, Pump House Control room, guard house and two toilet blocks
vi. Estimated capital cost is Kshs 24,840,991.68
vii. Project duration is 12 months construction and 12 months defects notification period.

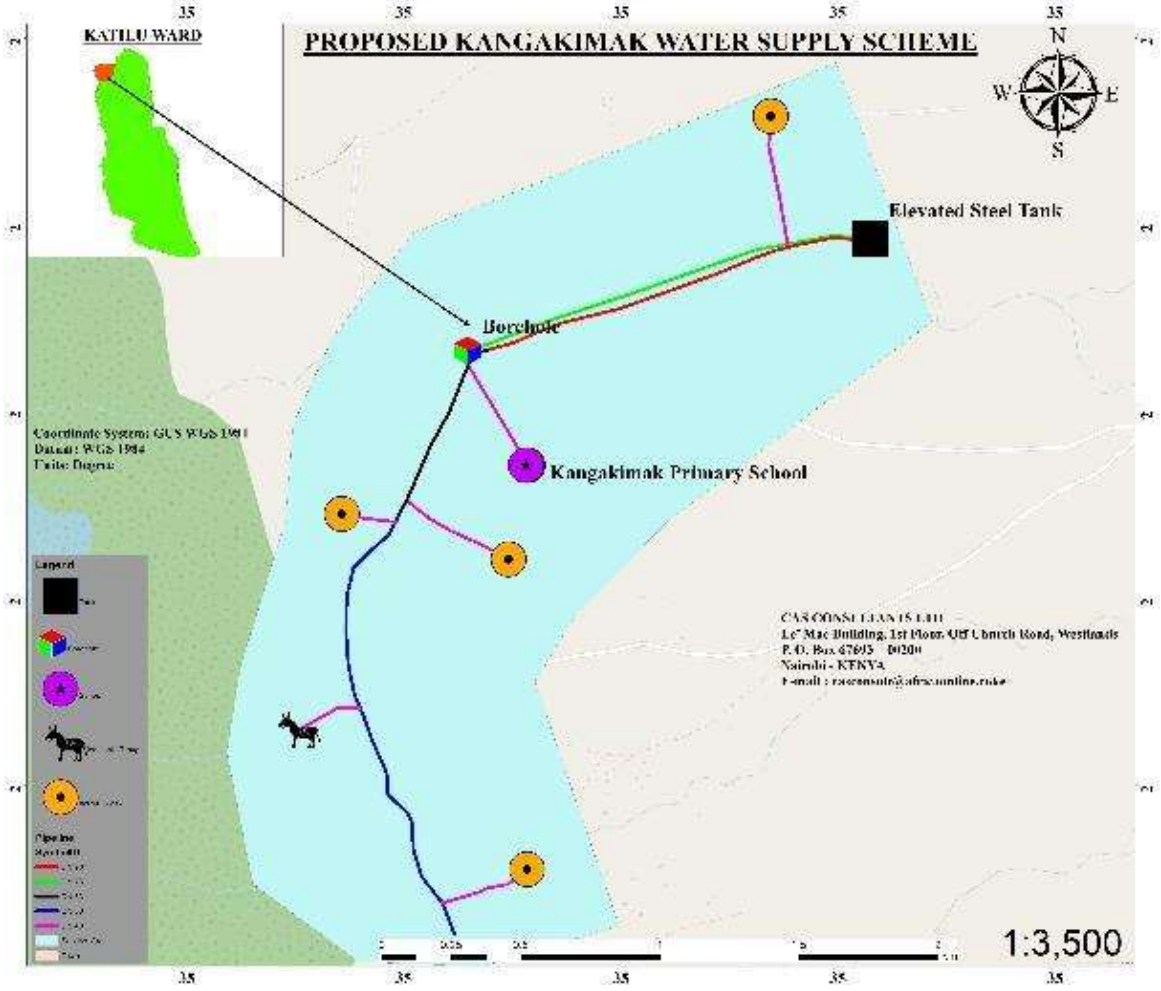


Figure 3 Project Area of Influence

1.4. Project Activities

The project activities will include the following:

Construction and Rehabilitation Works will involve extensive earthworks and excavation to create foundations for critical structures such as water tanks and pipeline networks. Materials like reinforced concrete, high-density polyethylene (HDPE) pipes, and precast concrete components will be utilized to ensure durability and compliance with international standards. Rehabilitation will include the cleaning, repairing, and lining of existing water storage tanks,

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installation of non-corrosive pipes, and implementation of measures to prevent water contamination. The pipelines will be carefully embedded in selected fill materials, ensuring stability and protection from environmental stressors. Concrete thrust blocks will be provided at strategic pipeline bends to mitigate pressure forces, while gabions and riprap will be installed for slope stabilization in erosion-prone areas.

Electro-Mechanical Installations will include the deployment of advanced pumping systems such as centrifugal pumps and solar-powered submersible pumps, catering to the specific needs of rural water supply schemes. Diesel generators will be installed as backup power sources to maintain operations during outages. Solar panels will be designed to resist UV exposure and tropical conditions, ensuring longevity. Electrical works will incorporate the installation of low-voltage distribution boards, control panels, and safety mechanisms. All materials will conform to relevant British and Kenyan standards, ensuring robustness against harsh environmental conditions. These installations will be designed with energy efficiency in mind, reducing operational costs while enhancing the reliability of the water supply system.

Testing and Commissioning of the facilities will involve rigorous procedures to ensure that all components meet operational and safety standards. Water storage tanks will be filled incrementally and tested for watertightness over a seven-day period, during which leakage rates must not exceed 0.3% of the total volume. Pipelines will undergo pressure testing to detect potential weaknesses, while water quality will be analysed to ensure compliance with bacteriological and chemical safety standards. The water storage facilities will be filled to capacity with water and left for three days to confirm they are watertight, while chlorination of the tanks will ensure their cleanliness before final use.

Capacity building and training efforts will be embedded to empower TURWASCO personnel to manage and maintain the rehabilitated systems. Training will cover the operation of pumps, generators, and solar power systems, as well as preventive maintenance of mechanical and electrical installations. Manuals and operational guides will be provided to ensure knowledge retention and promote independent management by the community. These activities will aim to create a skilled workforce capable of addressing potential system challenges, ensuring long-term sustainability.

1.5. Project Implementing Institutions

1.5.1. Ministry of Water, Sanitation and Irrigation (MoWSI)

A Project Coordination Unit (PCU) has been established at the national level, while Project Implementation Units (PIUs) have been formed at the IA level—specifically at the Water Sector Trust Fund (WSTF). The PCU and PIUs are each headed by a Program Manager or Coordinator and are supported by a small team of technical and administrative experts, including:

The PIU environment and social safeguards officers will be responsible for Environment and Social Management Plans (ESMPs) effective implementation, monitoring, and evaluation. At the county level, Sub-PIUs will be responsible for executing the Grievance Redress Mechanism (GRM) and the Stakeholder Engagement Plan (SEP) at the project site level, with regular reporting to the PIU. In turn, the PIUs will submit monthly reports to the PCU and quarterly reports to the World Bank.

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1.5.2. Water Sector Trust Fund

The **Water Sector Trust Fund** (WaterFund) is a Kenyan State Corporation under the Ministry of Water, Sanitation and Irrigation and established under the Water Act, 2016, with the mandate to provide conditional and unconditional grants to the Counties and to assist in financing the development of and management of water and sanitation services in the marginalised and underserved areas. WSTF is one of the two Implementing Agencies in the HoAGWRP

1.5.3. TURWASCO & TURUWASCO

The Turkana Urban Water Company has formally assumed management of the Lodwar Water and Sanitation Company (LOWASCO) following enactment of the Turkana County Water Act 2019, The Act also anchored the establishment of Turkana Rural Water and Sanitation Company. The two WSPs mandate is to serve residents of Turkana County both urban and rural with water supply and sanitation services. TURWASCO is the project implementing agency and TURUWASCO is the project beneficiary.

Currently, the Kangakimak scheme is operated by the community through a committee elected by the community members. Upon enactment of the Turkana County Water Act 2019, Kangakimak borehole and Kangakimak water supply scheme shall be handed over to TURUWASCO for operations and maintenance. The Act provides for institutionalization of rural water supply schemes to ensure their sustainability. The Turkana County Government through the Ministry of Water Services and SPIU have held consultations with the community and their representative committee on the hand over. This process has acceptance by all parties.

1.6. Objectives of the Assignment

The specific objective of this assignment was to undertake Environmental and Social Impact Assessment (ESIA) for the proposed Kangakimak Water Supply Scheme. The ESIA will identify key environmental and social issues related to the interventions, and design appropriate mitigation measures for the potential risks and impacts identified. ESMP and monitoring plan will be provided in the report. The ESIA provides information to enable approval of the proposed intervention by the National Environment Management Authority (NEMA), and guidance on environmental and social management during project implementation.

1.7. ESIA Scope

1. Assess the anticipated environmental and social impacts of the proposed works/RWSS.
2. Estimate costs of the impacts and mitigation measures.
3. Identify institutional and training needs to implement mitigation measures, as well as knowledge transfer needs and effective approaches for engaging the Communities.
4. Conduct environmental and social impact assessment and prepare an environmental and Social Management Plan (ESMP) including proposed activities, cost effective budget estimates, schedules, staffing and training requirements, and other necessary support services required to implement the mitigating measures.
5. If there are resettlement issues, conduct the RAPs/ARAPs/LRPs and identify required steps for full implementation, including any compensation where necessary before construction.

1.8. ESIA Methodology

The approach to this exercise was structured such as to cover the requirements under the EMCA 1999 (Amendments 2015), as well as the EIA Regulations (Amendments 2019) and World Bank

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Environmental and Social Framework (ESF). The assessment involved an understanding of the project background, the interim designs and the implementation plan as well as project commissioning. In addition, the baseline information was obtained through physical investigation of the site and the surrounding areas, interviews with a sample of surrounding community, photography and most important discussions with the client and the design team.

1.8.1. Desk Reviews

A desktop review was conducted prior to site visit. Documents reviewed include:

- ✓ Feasibility study reports and preliminary designs of the proposed project;
- ✓ Project proposals.
- ✓ EMCA 1999 (Amendments 2015) and EIA Regulations (Amendments 2019); and
- ✓ World Bank ESF.
- ✓ Environmental & social screening Checklist.
- ✓ County Integrated Development Plan 2023-2027.

1.8.2. Field Assessment

The physical evaluation of the project area was carried out with specific focus on the environmental and social issues. The environmental issues assessed include, water sources and water quality, drainage and hydrology, air quality, sanitation and hygiene, biodiversity and sources of environmental pollution. The social issues include; settlement patterns, socio economic activities, land use, presence of traditional/cultural sites in the area etc.

1.8.3. Public Participation

Three public participation meetings were held in the project area: Kangakimak. The key objective being sharing of project information, collect concerns from the public/ community and also to discuss with the relevant stakeholders on the issues raised to the proposed project. In Summary the representation was drawn from Turkana County Government, Local administration, representations from learning & religious institutions, and general public; specifically, beneficiaries. The ESIA study meeting was held on December 11, 2024 with 58 male and 28 female participants. A detailed report on the outcomes of stakeholder consultations is presented in chapter 5 of this report.

1.8.4. Key Informants Interviews

During the study, several key informant interviews/consultations were conducted with various Turkana County Government and National government officials including: -

i. Catholic Diocese of Lodwar;
ii. Water Resources Authority;
iii. Department of Education;
iv. Children's Office;
v. County Coordinator (Turkana County Government);
vi. Public health officers; and
vii. Labour Office.

1.8.5. Socio Economic Survey

The socio-economic survey was conducted within the project area Kangakimak, with target respondents being the anticipated project beneficiaries. The information gathered was based on (a) review of secondary data and (b) collection of primary data, both qualitative and quantitative. The quantitative data was gathered through administration of questionnaires and qualitative data

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through informant interviews, focused group discussions and public consultative meetings organized through the area local administration.

1.8.6. Secondary Socio-economic Data

This information was largely drawn from the Kenya National Bureau of Statistic, The Kenya Population and Housing Census VII on Population and Household Distribution by Socio Economic Characteristic, August 2019 and findings from household survey undertaken during the ESIA process within the month of December 2024. The Socio-economic survey questionnaire is attached as Appendix IX.

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Chapter 2 Project Description

2.1 Location of the Borehole and Water Supply Pipelines

The Kangakimak Water Supply Scheme is located in Turkana South Sub-County, Katilu Ward, Kanaodon location. The scheme as proposed serves seven major villages. Summary of the borehole locations is presented in Table 6.

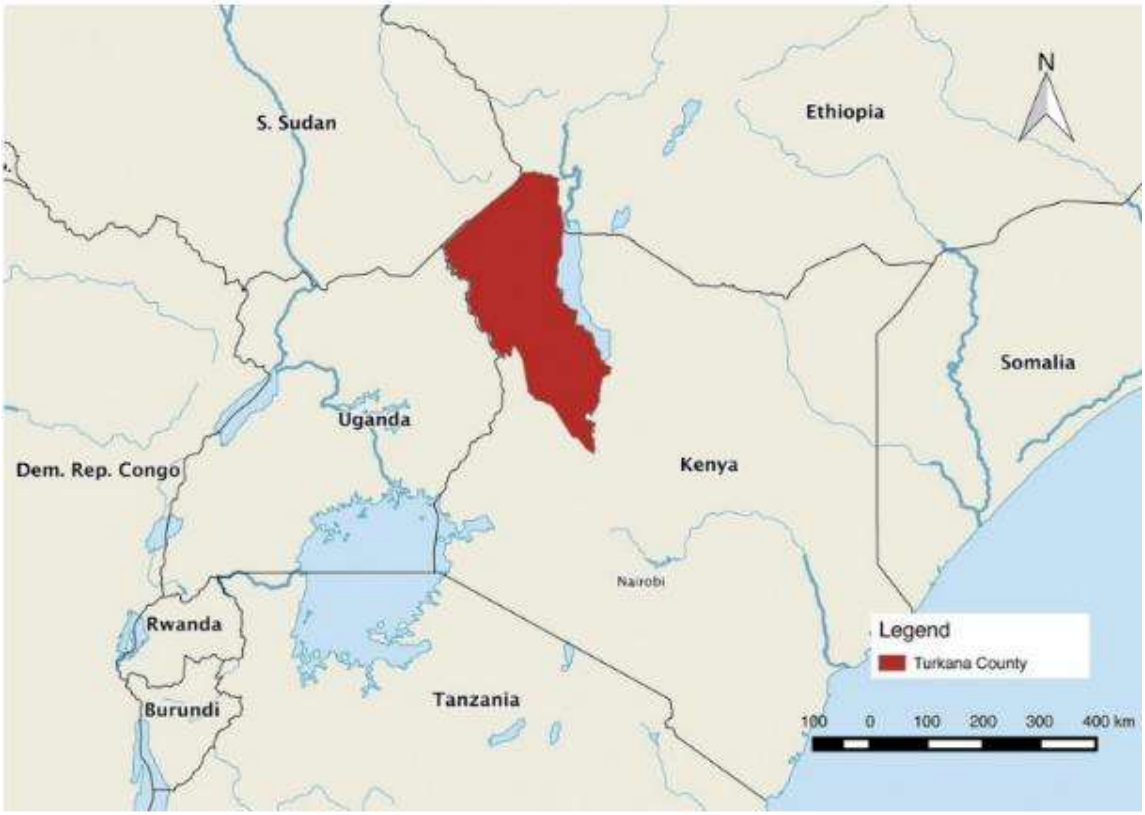


Figure 4 Map of Turkana County

2.2 Current Water Supply Constrains in Kangakimak

Currently, the water supply system is not optimal due to functionality and operational challenges.

Table 5 Summary of Boreholes in Kanaodon

Borehole	Reported Yield	BH Depth	Installed Capacity	Power Source	Tanks	Distribution System	Operational Status	BH Coordinates
Kangakimak BH	7 m³/h	87	7 m³/h	Solar	10m³ plastic Tank	None	Operational	2.51633 N, 35.40742 E

2.1.1 Kangakimak Borehole

The Kangakimak Borehole, located at the coordinates 2.51633 N, 35.40742 E, is currently facing significant challenges. This borehole, drilled and equipped in 2013, with a reported yield of 7 m^3/h and a depth of 87 meters. Of the 46 installed solar panels, 4 are disconnected, and 12 are cracked. The inverter has been damaged due to a blown 3-phase live cable. The water meter has rusted, and the tank structure has also rusted at the tank chamber and base, although the foundation remains intact.

It could not be established whether an ESIA of the drilling and equipping of the borehole was conducted at the time of borehole drilling in 2013. A Hydrogeological Assessment Report on the

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site was also not available for perusal. Borehole regularization with WRA will be necessary to ensure that the site is adequately mapped and monitored as per the water resource management regulations. Borehole test pumping and water quality tests were done in 2024 for regularization of the borehole with WRA. This ESIA Report will be submitted to NEMA for compliance with EMCA.

2.1.2 Operation and maintenance of Kangakimak Borehole

The village water committee currently manages the scheme, which receives technical support from the Turkana South Sub-County water officer. For minor breakdowns, the villagers contribute funds to purchase necessary items. At the same time, the remaining amount goes toward paying the security guard. Furthermore, the county government assists the community with major repairs. Upon rehabilitation, the water supply scheme will be operated by TURWASCO.



Figure 5 Blown out inverter



Figure 6 Cracked solar panel

2.2 Proposed Project Kangakimak Water Supply Scheme)

The proposed scope of work shall include:

1. Provision of solar photovoltaic pumping (PVP) system installations for Kangakimak WSS, with components trackable using a barcode system and remote performance monitoring system. A submersible borehole pump powered by a solar PV array shall be sized to meet the specified water demand for the month of July. The PVP system is to include a backup operation for low solar radiation or increased water demand via a changeover switch to diesel generator power

Table 6 Borehole Details

Borehole	Coordinates		Yield (m3/h)	Safe Yield (m3/h)	Pumping Head (m)	Pump Specs	Solar Arrays	Generator KVA
	Easting	Northing						
Kangakimak	2.516299	35.40739	13	9.1	214	SP 9-44	40	25

2. Supply and installation of 4.75 Km of various HDPE Pipeline sizes ranging from OD 32mm to 90mm and pressure rating as detailed below

Table 7 Water Supply Pipe Details

Scheme	Pipe Diameter (mm)	PN	Length (m)	Total length (m)
Kangakimak	32	10	1,745	4,570

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Scheme	Pipe Diameter (mm)	PN	Length (m)	Total length (m)
	50	10	1,150	
	75	12.5	301	
	90	12.5 & 25	1,374	

3. Construction of separate community water point for livestock and domestic use consisting of:
    - ✓ 4# Water kiosks each complete with an automated water dispensing ATM designed to offer a reliable and user-friendly way to access and pay for water using a keypad, screen, tag pay option, and integration with M-Pesa for payment processing.
    - ✓ Construction of 1# Camel and Cattle Trough - cattle/camel trough with an internal dimension of 10mx1.1m.
    - ✓ Construction of 1# Shoats Trough - sheep/goat trough of internal dimension 5mx1.1m.
    - ✓ 1# Individual Connection - Supply and installation of institutional and individual connection watering points connection kits, which include Prepaid smart metering, offtake tee, steel standpipe with a tap, an average of 25m long DN25 connection pipe and 1.2m 20mm diameter HDPE.

Table 8 Summary of water kiosks, and livestock troughs

Scheme	Water Kiosks	Cattle Troughs (M)	Shoat Troughs (M)	Individual Connections
Kangakimak	4	1 (10)	1(5)	1

4. Construction/supply and installation of 1# 100m3 water storage tank.
5. Ancillary Works -Construction of Administration buildings, Pump House Control room, guard house and sanitation facilities as detailed in the drawings

2.3 Project Land Requirement

Kangakimak borehole is located on communal land. To facilitate the implementation of the project, land consent forms have been signed by the Kangakimak community, granting permission to the project to utilize the designated land for borehole infrastructure development and its appurtenance. The construction of water kiosks, elevated storage tank, and other project components will be undertaken within the agreed communal land boundaries. For the pipeline network, the project will utilize the existing road reserve, ensuring minimal land disturbance and avoiding conflicts over land ownership. This alignment will also facilitate easier access for maintenance and repairs while ensuring the sustainable and efficient distribution of water to the targeted beneficiaries. Turkana County Government is in the process of transferring land from communal land to public land through issuance/registration of a title deed. Signed land consent form is attached as Appendix X. The total land requirements will amount to 8,540 square meters or 2.11 acres.

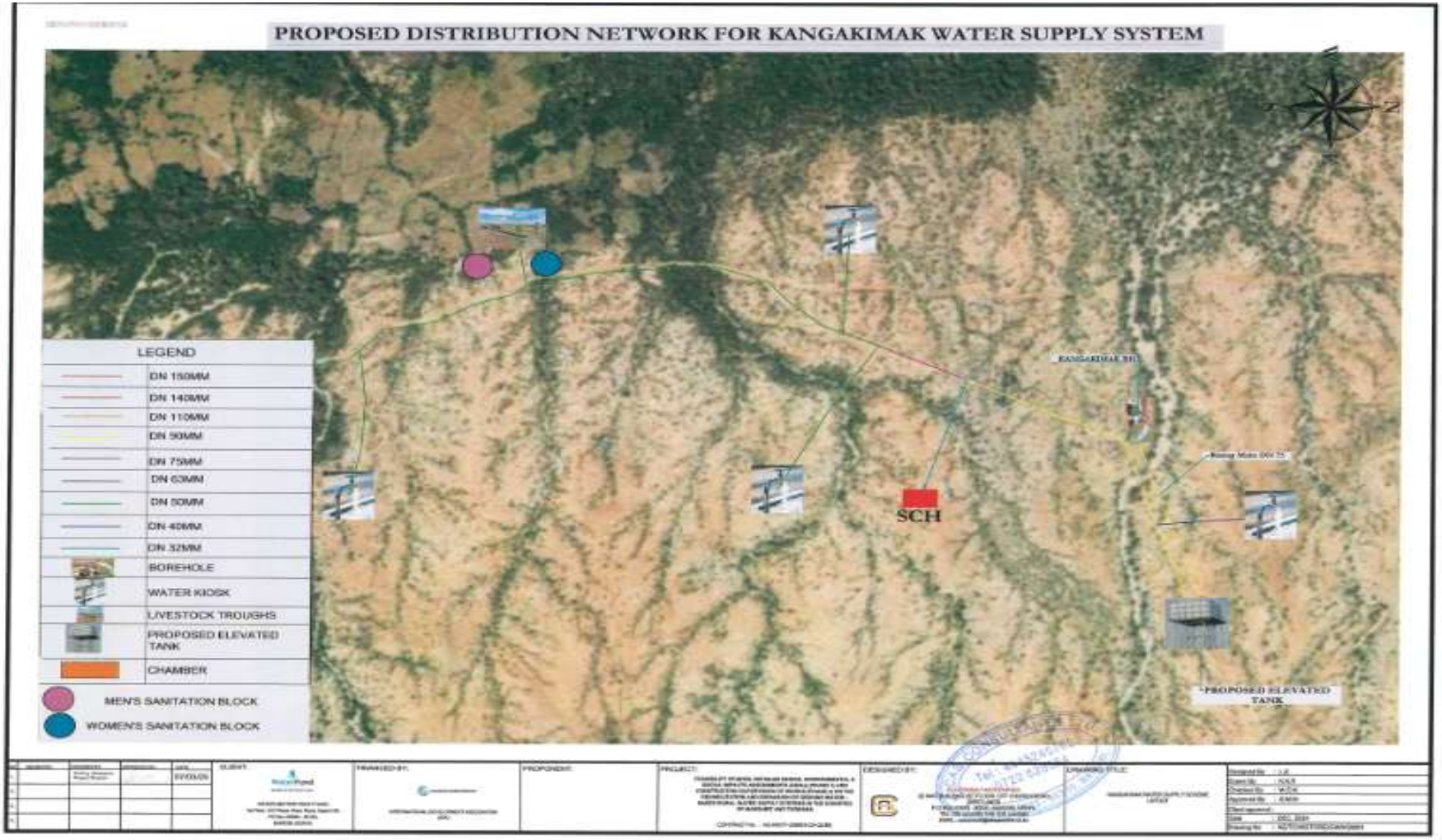
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Table 9 Project land requirements

Item	Description	Size in Sqm	Size in Acres
1	Kangakimak borehole site, diesel generator room, guard House building, septic tank, solar panels support structure (PV Plant), footpaths, surge vessel, valve chambers, flood protection, 6 m access road, etc.	4,000	0.988
2	Elevated Steel Tank 100 m3, Valve Chambers, access road, etc..	500	0.123
3	Livestock watering points	4,000	0.988
4	Water Kiosks (4Nr)	40	0.098
	Total	8,540	2.110

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2.4 Water Quality

The water quality from the proposed borehole meets the portable water quality standards provided by the Water Quality Regulations, Water Regulations 2019 and WHO. Water quality test results are attached as Appendix VII.

2.5 Real-time remote monitoring, data-logging and remote-control

Installation of electromagnetic meters, control valves and actuators, level sensors and SCADA system to enable a Web-based monitoring interface is proposed. This will ensure continuous remote real-time monitoring of current operational status and some performance parameters; capture and store historical trends data-logging of key performance parameters and operational status as well as allow for an Optional remote control of the pumping system.

2.6 Fencing off the Facilities

It is proposed that the borehole site and the associated solar and electoral mechanical works and where possible the elevated steel tank as proposed above be fenced with chain-link on concrete posts.

2.7 Project Materials, Equipment and Machinery

The materials to be used shall include but not limited to; screen, gravel pack, sanitary seal, water, cement, sand, solar panels, building stones, hardcore, fencing post, GI pipes and fittings, wire mesh, submersible pump, concrete fencing posts, chain link, barbed wire, bracing posts, plastic tanks, enamel paint, emulsion paints, red oxides, steel casement door, steel casement windows, reinforcement bars, formworks and damp-proof membrane among other materials.

2.8 Equipment and Machinery

The anticipated works will require use of the following machinery and equipment on site; backhoe excavator, water bowser, tipper truck, double cab pick-up, poker vibrator, concrete mixer, dewatering pump, pressure testing kit, and plate compactor among others.

2.9 Labor Force

The project is estimated to engage 20 skilled and semi-skilled persons and 50 non-skilled laborers. However, the exact number of personnel to be involved in the project may change. The contractor will be required to give priority to youths from the local community when hiring construction workers. The workforce will be employed for the duration of all construction works and reduced to 1 operator, clerk and plumber during operations and maintenance.

2.10 Anticipated Waste Material and By-products

The anticipated waste materials shall include demolition debris, wood waste, electrical waste, soil cutting, waste metals, plumbing waste, plastics, organic waste, waste oil and fuel among others.

2.11 Project Stages and Activities

2.11.1 Preconstruction Phase

The ESIA is a crucial part of this process, identifying areas of environmental and social concern and recommending appropriate mitigation measures to be implemented during the construction, commissioning, operation, and decommissioning phases. The proponent prepared a detailed proposal to justify the need for the project and to evaluate its suitability in meeting the water demand of PA.

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The project design involved extensive groundwork activities, including a reconnaissance survey, topographical survey, analysis of the hydrology of the water offtake source, identification of water demand, development of the design layout, and preparation of associated Bills of Quantities (BOQ) and tender documents. Additionally, interaction with local communities to gather first-hand information regarding physical features and desired design considerations is conducted at this stage. Implementation schedules are also prepared during this phase. Further, the ESIA study uses the design outputs to determine the quantifiable impacts and recommend an appropriate management plan to eliminate or mitigate them.

2.11.2 Construction Phase

Borehole rehabilitation – Borehole cleaning, replacing parts, replacing pumps and installation of solar panels.

Construction of water storage tanks and associated infrastructure – construction of offices, water kiosks, livestock water troughs, and steel tank.

Site Clearing and Trenching - Given that the proposed pipeline will pass through the project site within the established road reserves, minimal vegetation may need to be cleared to facilitate the establishment of temporary campsites and the laying of the pipeline. The pipeline construction width is estimated to be 3m and a depth of 900mm.

Public Amenities – the project pipelines are long access and feeder roads in the PA. These features may be disrupted during construction and therefore need to implement the project traffic management plan and stakeholder engagements to mitigate on community disruptions.

Pipe Laying - This stage will involve the transportation of the pipeline, placing the pipes in the trenches, pipe joining works, and backfilling.

Reinstatement of construction areas including backfilling, levelling and compaction of lose soils.

2.11.3 Operation Phase

Currently, the borehole is managed as a community-operated scheme. However, with the enactment of the Turkana County Government Water Act 2019, the responsibility for water supply services was transferred to the Turkana County Government. As a result, the Ministry of Water Services (TCG) is engaging with the community and the water committee to facilitate the transition of the water supply scheme from community management to TURUWASCO (Turkana Rural Water and Sanitation Company).

The water supply system will be monitored to ensure it conveys the designed flows and adheres to allowable volumes from the abstraction sources. This monitoring process will be continuous, with regular checks along the pipeline to detect and address any leakages or illegal connections that may occur over time.

2.11.4 Decommissioning Phase

Should the pipeline be decommissioned, process will include the safe removal of equipment and infrastructure, restoration of affected areas to their original condition, and the implementation of monitoring measures to verify the effectiveness of restoration efforts. All activities will be conducted in accordance with approved decommissioning plans and regulatory requirements to mitigate any potential long-term impacts on the environment and local communities.

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Chapter 3 Legislative, Policy and Institutional Framework

This chapter presents a review of the current policy, legal and regulatory framework applicable to environmental management of the proposed rehabilitation, equipping and expansion of the Kangakimak Water Supply Scheme.

3.1 The Constitution of Kenya

The constitution of Kenya, 2010 spells out the fundamental rights of every Kenyan citizen. Article 42 of the bill or rights of the Constitution provides that 'every Kenyan has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures.' Article 43 defines the right of each person to clean and safe water in adequate quantities. Article 58 requires the State to put in place affirmative action programmes designed to ensure that minorities and Marginalised groups have reasonable access to water, health services and infrastructure. The Constitution goes further ahead and stipulates under article 69 of part II, chapter 5 (environmental and Natural Resources) that the State shall;

i. Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
ii. Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;
iii. Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;
iv. Encourage public participation in the management, protection and conservation of the environment; Protect genetic resources and biological diversity;
v. Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;
vi. Eliminate processes and activities that are likely to endanger the environment; and
vii. Utilize the environment and natural resources for the benefit of the people of Kenya.

Moreover, every person has been mandated to cooperate with the State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources. In addition to the environmental and natural resources provision, part 1 of the same chapter emphasizes the following;

i. Land use and management shall by law benefit local communities
ii. Community land is protected from encroachment by State.
iii. Law shall protect Rivers, forests and water bodies.
iv. Equitable access to land.
v. All lawful land rights are secured; only someone who has stolen land needs to worry.
vi. County governments will manage land in trust of the people in accordance with the constitution.

In addition to these provisions, article 70 provides that if a person alleges that their right to a clean and healthy environment recognized and protected under article 42, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress.

Relevance

The Constitution of Kenya stipulates for sustainable and sound management of the environment in relation to development projects. In article 69, the project proponent is mandated to cooperate with State organs and other persons to protect and conserve the environment. The project should

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therefore ensure compliance with the constitution in so far as ensuring sustainable development. Moreover, the proposed project should aim at ensuring sustainability of the livelihoods and biological resources within the project area while taking cognizance to the powers given under the constitution to communities and individuals to enforce their rights through legal redress.

3.2 Kenya Vision 2030

The Kenya Vision 2030 provides the national development blueprint for the period 2008 to 2030 emanating from the Economic Recovery Strategy for Wealth and Employment Creation. It aims at making Kenya a newly industrializing middle-income country providing high quality life for all its citizens by the year 2030. The vision has been developed through an all-inclusive stakeholder consultative process, involving Kenyans from all parts of the country. The vision is based on three pillars namely; the economic pillar, the social pillar and the political pillar.

The Kenya Vision 2030 economic pillar aims at providing prosperity of all Kenyans through an economic development programme aimed at achieving an average GDP growth rate of 10% per annum over the next 25 years from the year 2008. The social pillar seeks to build a just and cohesive society with social equity in a clean and secure environment '. On the other hand, the political pillar aims at realizing a democratic political system founded on issue-based politics that respects the rule of law, and protects the rights and freedoms of every individual in the Kenyan society.

Relevance

The Vision for the water and sanitation sector is "to ensure water and improved sanitation availability and access to all by 2030". Kenya is a water-scarce country with renewable fresh water per capita at 647 m^3 against the United Nations recommended minimum of 1,000 m^3. The water strategy aims to intensify Kenya's access to safe water and better sanitation using the national network of water services boards, and the private sector, where necessary. In the vision, specific strategies will be introduced to raise standards of the country's overall water, resource management, storage and harvesting capability. Some of the flagship projects for water and sanitation include the rehabilitation and expansion of urban water supply and sanitation in the key satellite towns identified under the economic pillar. The proposed project will directly contribute towards achievement of objectives of vision under the environment and social pillar through provision of the planned Water Distribution Network Investments.

3.3 Policy Framework

The following key policies are relevant to the project:

Table 10 Relevant Policy Framework

Policy	Relevance
Environmental Policy, 2012	This assessment will develop an environmental and social management and monitoring plan to mitigate the impacts that may result during the construction and operation phases of the proposed water project. This tool is aimed at promoting coordination of environmental management of the project such that sensitive ecosystems are not destabilized by the subsequent project activities
The National Water Policy 2021	While this policy enhances a systematic development of water facilities in all sectors of socio-economic progress, it recognizes the by-products of this process as wastewater. The policy requires that those who pollute water bodies must pay the full cost of remediation of the contaminated water; in tandem with the

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Policy	Relevance
	"Polluter Pays Principle." The proposed water supply project aims at providing sufficient and good quality water supply to residents of Kangakimak. The proponent will put in place strategies and plans for a wastewater management system during construction and operations considering that the project area sanitation aspects remain low.
Land Policy 2009	The proposed water project shall be located within the existing road reserves and as such, the proponent is required to ensure environmental protection of the subject land and respect land rights in the proposed project area.
National Policy on Gender and Development 2019	This policy will be referred to during Project implementation, especially during hiring of staff to be involved in the project, procuring of suppliers and sub consultants and sub-contractors to the project.
Kenya National Climate Change Action Plan	This strategy provides guidelines on climate resilience, sustainable resource management, and adaptation measures that have to be complied with to ensure the proposed water supply project is environmentally sustainable and aligns with the national climate goals.
HIV/AIDS Policy, 2009	This policy shall provide a framework to both the project proponent and contractor to address issues related to HIV and Aids. The Policy will be complied with during implementation of the proposed water project. The tender document and contract should incorporate implementation of HIV awareness initiatives during the construction phase of the proposed water project.
National Occupational Health and Safety Policy of 2020	The proposed project will provide employment opportunities to many workers in various categories during construction and operation. The project will develop a work place health and safety policy and a health and safety management plan.
Kenya Environmental Sanitation and Hygiene Policy 2016-2030.	This policy outlines the standards and guidelines for ensuring proper sanitation and hygiene. It aims to prevent waterborne diseases, promote public health, and ensure safe and sustainable water management. Incorporating its principles into this ESIA ensures the proposed water project aligns with national health objectives, mitigates adverse environmental and social impacts, and enhances the community's quality of life by providing safe water and adequate sanitation facilities.
National Sustainable Waste Management Policy 2021	The project will develop a waste management plan that aims at creating a circular economy by reducing or preventing waste generation at the source and reuse of materials; effective and affordable waste collection and disposal.

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3.4 Relevant SDGs

The project aligns with several Sustainable Development Goals (SDGs) due to its focus on water, climate resilience, institutional strengthening, and community empowerment.

Table 11 Sustainable Development Goals (SGDs)

SDG	Relevant Targets	Contribution of the Project
SDG 6: Clean Water and Sanitation	**Target 6.1:** Achieve universal and equitable access to safe and affordable drinking water for all.	The project improves access to safe and affordable drinking water to Kangakimak settlement.
SDG 5: Gender Equality	**Target 5.4:** Recognize and value unpaid care and domestic work.	Reduces the burden on women and children who are primarily responsible for water collection, thus promoting gender equality.
	Target 5.5: Ensure women's full participation in decision-making.	Women involvement in the project consultation process.
SDG 13: Climate Action	**Target 13.1:** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.	Enhances community resilience to drought and climate change by improving groundwater infrastructure and management.

3.5 Legislative Framework

3.5.1 The Water Act 2016

The Act generally provides for the development and managing of water resources, managing use of water resources, managing of water rights, development of facilities, managing the quality of water service provision, water related dispute resolution and financing of water resources development activities. The Act is relevant to the proposed project and will provide the institutional management from water resource development to water services provision to the consumer at household level. The project implementing agency (TURWASCO) for Kangakimak Water Supply Scheme shall be required to work closely with the following institutions as stated in the Act; the Water Resources Authority (WRA), and the Water Services Regulatory Board (WASREB).

Relevance.

In order to regularize the borehole with WRA, the proponent will submit the test pumping and water quality test results. WRA will issue permit for abstraction of water as well as monitor the borehole water quantity and quality.

The Water Services Regulations 2021

To govern water services provision by the service provider. The rules highlight the role of the water supply provider in provision of the water supply services, the delivery of quality services to the consumers and also ensuring environmental management. TURUWASCO is aligned to the requirements of the regulation.

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3.5.2 The Environmental Management and Co-ordination Act, 1999

The main objective of EMCA and the related Regulations is to provide for the establishment of an appropriate legal and institutional framework including procedures for the management of the environment in Kenya. The Act further aims to improve the legal and administrative co-ordination of the diverse sectoral initiatives in the field of environment so as to enhance the national capacity for its effective management. In addition, The Act seeks to harmonize all the 77-sector specific legislation touching on the environment in a manner designed to ensure protection of the environment. This is in line with national objectives and sustainable development goals enunciated in Agenda 21 of the Earth Summit. As such, in terms of environmental management, EMCA provides a comprehensive and an appropriately harmonized legal and institutional framework for the handling of all environmental issues in Kenya and supersedes all sectoral laws.

The EMCA 1999 provides that every person in Kenya is entitled to a clean and healthy environment in accordance with the constitution. The Act also acknowledges that public participation is important in the development of sustainable policies, plans and processes for the management of the environment. Anyone alleging the denial, infringement, violation or threat to their right to a clean environment and healthy environment is empowered to seek legal redress in the Land and Environment Court. The court may make certain orders to stop the offence and would be guided by the principle of public participation among other sustainable development principles.

Relevance

Under EMCA, NEMA has gazetted legal tools that govern conduct of EIAs and general environmental protection. The proposed project has been screened against these tools with results outlined below.

Some key Sections of the Act relevant to the proposed project are:

Table 12 Summary of Applicable Clauses of EMCA

Section 3 – Entitlement to Clean and Healthy Environment.	The project shall maintain a clean and healthy environment and the proponent and its contractors has a duty to safeguard and enhance environmental management in accordance with sub-sections 1, 2, 3, 4, and 5.
Section 78 – Air quality	The proponent shall enforce air quality standards and be maintained as per NEMA's Standard and Enforcement Review Committee requirements.
Section 87 – Handling and Disposal of Wastes	The proponent shall adhere to the disposal of wastes requirement in such a manner as not to cause pollution to the environment or ill health.
Section 102 – Excess Noise	Noise during construction of the project especially from the construction vehicles and machinery is prohibited and shall be maintained to the desirable levels as is also pointed out in Cap 394.

The subsidiary legislations under EMCA are discussed in detailed as follows:

i. Environmental Management and Co-ordination (Water Quality) Regulations 2006:

The Water Quality Regulations provide for the protection of lakes, rivers, streams, springs, wells, and other water sources. The regulations also stipulate that all industries should refrain from any

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actions, which may directly or indirectly cause water pollution. This regulation gives quality standards for water supply for domestic. The table below shows the water quality parameters.

Table 13: Quality Standards for Domestic Water (NEMA)

No	Parameter	Guide Value (max allowable)
1	pH	6.5 – 8.5
2	Suspended solids	30 (mg/L)
3	Nitrate-NO_3	10 (mg/L)
4	Ammonia –NH_3	0.5 (mg/L)
5	Nitrite –NO_2	3 (mg/L)
6	Total Dissolved Solids	1200 (mg/L)
7	Scientific name *(E.coli)*	Nil/100 ml
8	Fluoride	1.5 (mg/L)
9	Phenols	Nil (mg/L)
10	Arsenic	0.01 (mg/L)
11	Cadmium	0.01 (mg/L)
12	Lead	0.05 (mg/L)
13	Selenium	0.01 (mg/L)
14	Copper	0.05 (mg/L)
15	Zinc	1.5 (mg/L)
16	Alkyl benzyl sulphonates	0.5 (mg/L)
17	Permanganate value (PV)	1.0 (mg/L)

Source: Water Quality Regulations - 2006 (NEMA)

ii. Environmental Management and Co-ordination (Waste Management) Regulations 2006:

The Waste Management Regulations sets out standards for handling, transportation and disposal of various types of wastes. The regulations stipulate the need for facilities to undertake, in order of preference, waste minimisation or cleaner production, waste segregation, recycling or composting. These regulations provide guidelines on how to store, transport and dispose any wastes generated during the construction. Some of these wastes may fall under the hazardous wastes category and thus require disposal arrangements.

Relevance

The Contractor will follow the Waste Management Plan to carry out segregation, storage, transportation and disposal of waste at all the operational areas (Office, and Construction site).

iii. Environmental Management and Co-ordination (Noise and Excessive Vibrations) Regulations 2009:

The regulations define noise as any undesirable sound that is intrinsically objectionable or that may cause adverse effects on human health or the environment. The regulations prohibit any person from making or causing to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. The Contractor will be expected to meet the noise level requirements as provided in the following schedules of the regulations and also carry out noise level monitoring:

Schedule 1 – Noise levels at residential and commercial sites

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Schedule 2 – Noise levels at Construction sites

Relevance

The Contractor to observe noise level requirement according to the regulations.

Table 14: Maximum Permissible Noise Levels – Residential and Commercial (NEMA)

Zone		**Sound Level Limits dB(A) (Leq,14 h)**		**Noise Rating Level (NR) (Leq,14 h)**	
		Day	Night	Day	Night
A.	Silent Zone	40	35	30	25
B	Places of worship	40	35	30	25
C.	Residential: Indoor Outdoor	45 50	35 35	35 40	25 25
D.	Mixed residential (with some Commercial and places of entertainment)	55	35	50	25
E.	Commercial	60	35	55	25

Source: Noise and Excessive Vibration Pollution Control) Regulations, 2009

Table 15:Maximum Permissible Noise Levels for Construction Sites (NEMA)

Facility		**Maximum Noise Level Permitted (Leq) in dB(A)**	
		Day	Night
(i)	Health facilities, educational institutions, homes for disabled etc.	60	35
(ii)	Residential	60	35
(iii)	Areas other than those prescribed in (i) and (ii)	75	65

Source: Noise and Excessive Vibration Pollution Control) Regulations, 2009

iv. Environmental Management and Co-ordination (Fossil Fuel Emission Control) Regulations 2006:

The Fossil Fuel Emission Control Regulations provide for acceptable emission standards in Kenya. Section 4 of the regulations state that any internal combustion engine for motor vehicles and generators must comply with the emission standards provided for in the First Schedule of those regulations. Hence, anyone who operates such engines whether on the road, street, public highway or any premises, which emits smoke in excess of the emissions standard in the First Schedule contravenes the regulations and is liable to prosecution. Section 8 provides that any person intending to use any fuel catalysts other than those permitted by the authority to disclose it and seek prior approval. Establishments (including construction sites) that use generators as alternative sources of energy must take account of the regulation on the emission standards.

Relevance

This regulation is applicable to the proposed project since there will be use of equipment that depend on fossil fuel as their source of energy. The requirements of the regulation must be implemented to eliminate or reduce air quality degradation.

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Sections of the regulation citing the standards of recommended emission levels will be given to the contractor and or pinned at strategic points in the contractor's field offices.

v. Environmental Management and Coordination (Air Quality) Regulations, 2014:

These regulations provide for the safeguarding of the ambient air quality and give guidelines to prevent and control air pollution. The first and seventh schedules of the regulations provide a list with associated emission limits of prohibited, controlled, and un-controlled air pollutants. The regulations also give ambient air quality tolerance limits. The regulation is relevant to the construction works (including transportation).

Relevance

The Contractor will be required to observe the limits for Air Quality as provided in Schedule 1 – Ambient Air Quality Tolerance Limits. The Proponent shall ensure that the Contractor observes the policy and regulatory requirements and implement the mitigation measures proposed in this report.

vi. **The Environmental Impact Assessment and Audit Regulations 2003 (Legal Notice No. 101)**

Regulation 24 – EIA Licence: - Environmental Impact License shall be issued after the authority approves the study report under regulations 23 and shall be issued in form.

Regulation 28 – false or incorrect information: -Substantial change or modification and when project poses an environmental threat or revelation that information or data given by the license were false, incorrect or intended to mislead.

Regulation 24 – Annual Environmental Audit: - Annual environmental auditing after presentation of an EIA study report shall be undertaken by the licensee to ensure the implementation of environmental management plan is audited on regular basis, an audit report submitted to NEMA annually and ensuring that the criteria to audit is based on environmental management plan developed during the EIA process or after the initial audit.

Regulation 40 - Monitoring changes after project implementation

Monitoring by NEMA and Lead Agencies shall be done to establish any possible changes in the environment and their possible impacts, immediate and long-term effects of its operations, identify and determine parameters and measurable indicators and conduct changes that occurred after implementation.

Relevance

The proposed project must comply with the requirements of the regulations that also include conducting regular monitoring and annual audits. The project requires an EIA license from NEMA before commencement of any activity.

3.5.3 Public Participation Act, 2016

The Act provides a general framework for effective public consultations. It gives effect to the constitutional principles of democracy and the participation of the people. The Act, therefore, gives effect to the principles of public participation as provided for in the constitution. Participation is anticipated to promote transparency and accountability in decision making, promote community ownership of public decisions and promote public participation and collaboration in project governance processes.

Relevance

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The engagement of the stakeholders has been conducted under this project to ensure ownership as well as incorporation of their opinion in the decision-making process.

3.5.4 Land Act, 2012, Land Registration Act 2012 and the National Land Commission Act 2012.

The Land Act was enacted by Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes. The Act applies to all land declared as (a) public land under Article 62 of the Constitution; (b) private land under Article 64 of the Constitution; and (c) community land under Article 63 of the Constitution and any other written law relating to community land.

The Land Act guarantees security of tenure for land under (a) freehold; (b) leasehold; (c) such forms of partial interest as may be defined under the Act and other law, including but not limited to easements; and (d) customary land rights, where consistent with the Constitution and guarantees equal recognition and enforcement of land rights arising under all tenure systems and non-discrimination in ownership of, and access to land under all tenure systems. Under the Lands Act 2012, The Wayleaves Act, Cap 292 and The Land Acquisition Act, Cap. 295 have been revoked but Sections 8 and 9 allow for Compulsory Acquisition as an option in acquiring land for public utility.

Relevance

Land will be a major factor in the implementation of the proposed project facilities and resolution of any emerging conflicts will require consultation of these Acts. Land within the project area was noted to be communal. And the local leadership was willing through the county government to ensure necessary measures are taken to allocate land for the implementation of the proposed project facilities.

Turkana County Government is in the process of regularizing and registering all parcels of land proposed for the water supply infrastructure in consultation with the communities in the PA.

3.5.5 The Community Land Act 2016

The proposed projects shall be on public land parcels as well as the proposed water transmission facilities which may trigger the Act. Matters dealing with land at the project site shall be guided by the principles and values set out in this act. The Act in part VIII stipulates the procedure to be adopted in settling disputes and conflicts involving community land in the event of such. The water transmission facilities shall be located on existing road wayleaves, which is held in trust by the KeRRA and the county government on behalf of the communities. During the eligibility assessments the community elected representative who took the survey team along the proposed pipeline route and the location points of water kiosks, elevation tanks and the livestock watering trough points. The representatives signed land resolution and consent permits allowing the construction of community water supply facilities as provided for in the project screening reports attached as Appendix X.

3.5.6 County Government, Act 2012

The County Government Act provides local governance principles, guides the planning and development process, and community participation in the development process. The Act guided the consultation process to reduce conflicts between project implementing agency (MOWSI). WRA shall be in charge of monitoring data collection and analysis during the operation of the borehole. The Act spells out the functions and roles of involved agencies at deferent level of governance. Through the Act the operation of the borehole shall be under TURUWASCO which is

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mandated for water service provision on behalf of the county. The act was also complied with by consulting the local people before any development is implemented

3.5.7 The Wildlife Management and Conservation Act 2013

The Wildlife and Conservation Act deals with the conservation and management of wildlife in Kenya. The Act provides that wildlife should be conserved so as to yield optimum returns in terms of cultural, aesthetic, scientific and economic benefits. The Act requires that full account be taken of the inter-relationship between wildlife conservation and land use. The Act controls activities within the national parks, which may lead to the disturbance of wild animals. Unauthorized entry, residence, burning, damage to objects of scientific interest, introduction of plants and animals and damage to structure are prohibited under this law.

Relevance

The construction activities will make mitigation provisions for any wildlife which might be within the project area.

3.5.8 The Occupational Safety and Health Act, 2007

This Act of Parliament was enacted to provide for the health, safety and welfare of persons employed in workplaces and for matters incidental thereto and connected therewith. Part II of the Act provides the General duties that the occupier must comply with respect to health and safety in the workplace. Such duties include undertaking S&H risk assessments, S&H audits, notification of accidents, injuries and dangerous occurrences. Several sections under this part are applicable to the project.

This Act will provide some guidance on the mitigation measures for any negative impacts in particular those concerning the workers within the site. Section 17 of the Act further highlights the importance of an employer or in this case Contractor to ensure the health and safety of persons other than his/her employees. As such this Act also ensures the inclusion of community health and safety in this ESIA.

Relevant

The project construction, operation and decommissioning activities will have occupational, public health, safety and security issues that have to be mitigated and monitored and this ESIA proposes a number of mitigation measures as provided under Chapter 7 and 8.

3.5.9 Public Health Act (Cap 242) of Revised Edition 2012

This legislation requires that Local Authorities now County Government take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable for injurious or dangerous to human health. Part IX section 115 states that no person shall cause nuisance or condition liable to be injurious or dangerous to human health.

Part XI section 129 of the Rules states in part "It shall be the duty of every local authority to take all lawful, necessary and reasonably practicable measures for preventing any pollution dangerous to health of any supply of water which the public within its district has a right to use and does use for drinking or domestic purposes and purifying such supply so polluted". Section 130 provides for making and imposing on local authorities and others the duty of enforcing rules in respect of prohibiting use of water supply or erection of structures draining filth or noxious matter into water supply as mentioned in section 129.

Relevance

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The construction of the proposed project has potential for pollution risks related to soil, water, air and noise during construction. The contractor will need to ensure that air and water pollution is controlled and does not affect workers and people within the project site area

3.5.10 Malaria Prevention Act (Cap 246)

The act provides for prohibition of propagating the breeding of malaria vectors or spreading of malaria due to project related activities. The proposed project area in general records cases of malaria which may increase with the introduction of the project. The design and operation activities of the project should not encourage breeding of malaria vectors through water stagnation areas due to leakages. Though the soils of the project area were noted to be sandy and highly porous

3.5.11 HIV/AIDS Prevention and Control Act (Act No.14 of 2006)

The Act provides for measures of prevention, management and control of HIV and AIDS. It Promotes public health, counselling, support and care for those affected or living with HIV. Part 11, Section 7 requires HIV and AIDs education in the workplace. The government is expected to ensure provision of basic information and instruction on HIV and AIDs prevention and control to; Employees of all Government Ministries, Departments, Authorities, and Other Agencies; and Employees of Private and Informal Sectors. The information on HIV/AIDs is expected to be treated with confidentiality at the workplace.

Relevance

This Act will ensure that the project makes provision for Voluntary Counselling and Testing (VCT) for the workers. This will greatly contribute to management of HIV and AIDS and bringing down stigmatization.

3.5.12 The National Gender and Equality Act, 2011

National Gender Equality Commission is a constitutional Commission established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to Article 59 of the Constitution. NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination. Gender mainstreaming in the project will ensure that the concerns of women and men form an integral dimension of the project design, implementation, operation and the monitoring and evaluation ensures that women and men benefit equally, and that inequality is not perpetuated.

Relevance

The project will ensure gender equality is addressed by achieving the two thirds gender rule.

3.5.13 The Employment Act, 2007

The Employment Act, 2007 defines the fundamental rights of employees including the basic conditions of employment of workers. It also regulates employment of children under section 56 which makes it illegal to employ children under the age of 13 years. Children between ages 13 – 16 years can be employed in light work while those between 16 and 18 are considered employable.

Relevance

The contractor on site will be required to employ casual labourers (those who are engaged on need basis and paid daily) from the communities where the project is located during construction. The basic conditions of employees should be observed to avoid unnecessary conflicts during the

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construction works. The Contractor shall pay the entire amount of the wages earned by or payable to the workers. Payment of such wages shall be done at the end of a working day, or other agreed interval, at or near the place of work. The Contractor shall also ensure that all statutory deductions are submitted without delay to appropriate government agencies e.g., Kenya Revenue Authority, NSSF, SHA, among others.

3.5.14 Persons with Disability Act, 2003, Chapter 133

This Act protects the rights of PWDs, ensuring they are not marginalized and that they enjoy all the necessities of life without discrimination. The Act guarantees that: (1) No person shall deny a person with a disability access to opportunities for suitable employment; (2) A qualified employee with a disability shall be subject to the same terms and conditions of employment and the same compensation, privileges, benefits, fringe benefits, incentives, or allowances as qualified able-bodied employees; and (3) An employee with a disability shall be entitled to exemption from tax on all income accruing from his employment. A PWD is entitled to exemptions which apply with respect to exemptions and deductions as described in Schedule 42 subsection (2) of the Act, among other provisions, within this Act that should be complied with all parties involved.

3.5.15 The Children Act, 2001

This Act protects the welfare of children within the Country. The Act identifies Children as a person below the age of 18 years old and protects them from exploitation. Of particular importance to this project is section 10, which protects the child from:

• Economic exploitation. Any work that interferes with his/her education or is harmful to the child's health or physical, mental, spiritual, moral, or social development.

Relevance

The Act shall be applied to regulate any kind of engagement or employment of underage to the project activities on site. No person without national identity card or any other document distinguishing adults and underage shall be allowed to work on site.

3.5.16 The Sexual Offences Act, 2006

This Act protects people and employees from any unwanted sexual attention or advances by staff members. This act ensures the safety of women, children and men from any sexual offences which include rape, defilement, indecent acts.

Relevance

This law will govern the code of conduct of the Contractor's staff and provide repercussions of any wrongdoing. The code of conduct will ensure that sexual rights are protected.

3.5.17 Physical Planning Act (Cap. 286)

This Physical Planning Act, Cap. 286 provides for the preparation and implementation of physical development plans. Section 36 of the Act provides for environmental impact assessments and states that if in connection with a development application a local authority is of the opinion that proposals for industrial location, dumping sites, sewerage treatment, quarries or any other development activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an environmental impact assessment report'.

Relevance

The Water Department of Turkana County Government will apply for the development permits from the Physical Planning Department of Turkana County Government.

3.5.18 The Work Injury Benefits Act, 2007

Part V provides for compensation to employees for work related injuries and disease contracted in the course of their employment and for connected purposes. Key sections of the Act include the obligations of employers; right to compensation; reporting of accidents; compensation; occupational diseases; medical aid etc.

Relevance

The proponent/contractor shall comply with all requirements of the Act i.e. putting in place an insurance cover that shall protect employees, should their employees incur injuries or die in the course of work.

3.5.19 Climate Change Act 2016

Under Section 3 of the Act, the objectives of the Act include building resilience and enhancing adaptive capacity to the impacts of climate change.

Relevance

The project ensures that it integrates climate resilience by promoting sustainable groundwater management, adaptation, and mitigation measures. It mandates compliance with national climate policies and goals, such as water security, disaster risk reduction, low-carbon development, and ecosystem conservation, enhancing community resilience to droughts and climate variability.

3.5.20 National Museums & Heritage Act, 2006

An Act of Parliament to consolidate the law relating to national museums and heritage; to provide for the establishment, control, management and development of national museums and the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya; to repeal the Antiquities and Monuments Act (Cap. 215) and the National Museums Act.

Relevance

The proponent shall follow due procedures including notification of the National Museums in case of unearthing any antiquity to ensure they are protected and conserved to promote cultural resources in the context of economic development of the Country.

3.5.21 The Sustainable Waste Management Act 2022

The act establishes the legal and institutional framework for the sustainable management of waste, towards the realization of the constitutional provision on the right to a clean and healthy environment and for connected purposes. The objects of the act are: promote sustainable waste management; improve the health of all Kenyans by ensuring a clean and healthy environment; reduce air, land, fresh water and marine pollution; promote and ensure the effective delivery of waste; create an enabling environment for employment in the green economy in waste management, recycling and recovery; establish an environmentally sound infrastructure and system for sustainable waste management; promote circular economy practices for green growth; mainstream resource efficiency principles in sustainable consumption and production practices; and inculcate responsible public behaviour on waste and environment.

The act provides for general principles including: the polluter pays principle in which the cost of cleaning up any element of the environment that has been damaged by pollution, the cost of the beneficial uses of the environment that have been lost as a result of the pollution, and any other costs associated with or incidental to the pollution shall be paid by the polluter; and zero waste principle in which products and processes are designed and managed to reduce the volume and toxicity of waste and materials, and to conserve and recover all resources, and to prevent the

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burning or burying of resources, in order to treat waste as a resource that can be harnessed for wealth creation, employment and the reduction of pollution.

The Act provides for public and private entities to segregate waste and section 13 provides for extended user responsibility.

Relevance:

The client and contractors should adhere to this Act. The Act calls for sustainable waste management by ensuring zero waste generation and if unavoidable, intervention measure (reduce, recycle, repurpose etc.) should be in place. Also, the Act states the generator of the waste is responsible for its management and safe disposal.

3.6 World Banks Environmental and Social Standards

Table 15 below provides the overview of the relevant Environmental and Social Standards for the project.

Table 16 World Bank's Environmental & Social Standards

	E & S Standards	Relevance
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	Requires the proponent to subject project to assessment and management of social risks and impacts, develop ESMPs and monitoring tools for the identified risks and impacts.
ESS2	Labor and Working Conditions	The project will entail some works activities and the ESS2 is relevant in ensuring that no child or forced labour is involved and that working conditions in the works activities will comply with both national legislations and this ESS.
ESS3	Resource Efficiency and Pollution Prevention and Management	The project will involve construction of water infrastructures which will make use of different materials both hazardous and non-hazardous and generate wastes that will require disposal. Sinking of boreholes requires proper management to avoid contamination of the groundwater. Use of this water once it comes to the surface by multiple users also presents the risk of contamination and generation of wastewater by multiple users. Under ESS3 and what is prescribed under the local laws such as the Water Act and Environmental Management and Coordination Act (EMCA) these objectives will be achieved by putting in place proper management measures for potentially hazardous substances and generated waste also covered by ESS1.
ESS4	Community Health and Safety	The water infrastructure may pose hazards to human beings and livestock while water provision infrastructure is associated with hazards such as insecurity and communicable diseases from labour influx, leakage, flooding, contamination, and water-borne diseases which may pose a danger to users

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	E & S Standards	Relevance
		and non-users alike. Appropriate provisions within the ESMP and instruments such as Labor Influx Management Plan and community emergence and response plans have been prepared to appropriately mitigate these issues.
ESS7	Indigenous peoples/sub-Saharan African Historically Underserved traditional local Communities	This contributes to poverty reduction and sustainable development by ensuring that projects supported by the Bank enhance opportunities for Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities to participate in, and benefit from, the development process in ways that do not threaten their unique cultural identities and well-being. In regard to ESS 7, Turkana community is considered as an Indigenous peoples/sub-Saharan African Historically Underserved traditional local Communities. However, the scope of the project is within a localised community (Kangakimak settlement) inhabited by the local Turkana community who are the sole/majority of the project beneficiaries. As such the project as designed is solely to benefit indigenous peoples/Sub-Saharan African historically underserved traditional local communities. As part of its design, the project adopted the World Bank's FPIC guidelines and the HoAGW4RP IP & VMG Planning Framework as stand-alone guiding documents, which provided the foundation for securing broad community support. Adopt the Indigenous Peoples/Vulnerable and Marginalized Groups (IP/VMG) Plan.
ESS8	Cultural Heritage	Sets out measures designed to protect cultural heritage throughout the project life-cycle.
ESS10	Stakeholder Engagement and Information Disclosure	This Standard applies to all projects supported by the Bank through Investment Project Financing. The report incorporates a Stakeholder Engagement Plan (SEP) proportionate to the nature and scale of the project and its potential risks and impacts.

3.7 Institutional Framework

3.7.1 Water Sector Trust Fund (WSTF)

The Water Sector Trust Fund (Water Fund) is a Kenyan State Corporation under the Ministry of Water, Sanitation and Irrigation and established under the Water Act, 2016, with the mandate to provide conditional and unconditional grants to the Counties and to assist in financing the development of and management of water and sanitation services in the marginalised and underserved areas including: -

- ✓ Community level initiatives for the sustainable management of water resources

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- ✓ Development of water services in rural areas considered not to be commercially viable for provision of water services by licensees
- ✓ Development of water services in the under-served poor urban areas
- ✓ Research activities in the area of water resource management and water services, sewerage and sanitation.

In the HoAGWGP is the project proponent and has engaged the Consultant CAS Consultants Limited for this assignment including the ESIA studies.

3.7.2 National Environment Management Authority (NEMA)

The National Environment Management Authority (NEMA) is established under Section 7 of the Environmental Management and Co-ordination Act Cap 387 NEMA is the institution with the legal authority to exercise general supervision and co-ordination over all matters relating to the environment and is the principal instrument of the Government charged with the implementation of all policies relating to the environment. NEMA is the body that coordinates and administers the Environmental Impact Assessment (EIA)/ Environmental Audit (EA) on behalf of the Cabinet secretary for Environment and Natural Resources. EIA/EA is applicable to both public and private sector development projects and programmes. A scheduled activity will not receive the necessary authorization from NEMA to proceed or continue operating, until all EIA/EA requirements have been fulfilled and accepted by NEMA.

1.8.7. National Environment Complaints Committee

The National Environment Complaints Committee performs the following functions:

i. To investigate any allegations or complaints against any person or against the Authority in relation to the condition of the environment in Kenya;

ii. To investigate on its own motion, any suspected case of environmental degradation, and to make a report of its findings together with its recommendations thereon to the Cabinet Secretary;

iii. To prepare and submit to the CS, periodic reports of its activities which report shall form part of the annual report on the state of the environment under section 9(3);

iv. Undertake public interest litigation on behalf of the citizens in environmental matters; and

v. To perform such other functions and exercise such powers as may be assigned to it by the CS.

3.7.3 Environmental and Land Court

The Court was established under Section 4 of the Environment and Land Court Act No. 19 of 2011. It has the Jurisdiction to hear any other disputes relating to environment and land.

3.7.4 Project Institutional Framework

Table 16 highlights the key regulatory institutions that shall be involved in the management of the project activities during implementation and operation phases. Therefore, coordination and consultations shall be required at different levels depending on the activity at hand.

Table 17: Project Institutional Framework for the HoAGWRP

No.	Institution	Responsibility
1.	The Water Resources Authority	The Authority develops principles, guidelines and procedures for the allocation of water resources, use of water resources, manage the water resources, assess and reassess water resources potential, receive and determine applications for abstraction permit for water use, monitor and enforce conditions attached to the permit for water use. The authority will also regulate and protect water resource quality in the proposed project area. The rehabilitated borehole shall also be under the Authority as an institution mandated to monitor ground water aquifers. Therefore, the proposed boreholes shall be co- managed by WRA for collection of monitoring data and TURWASCO for water provision.
2.	Turkana County Government	The County government Act 2012 sets the development agenda in the Counties by indicating the functions of the devolved system. Water services provision is a devolved function, and the development coordinator (MOWSI) will be required to work with the county governments to realize the implementation of the proposed project. Therefore, County Government will support the project proponent to ensure smooth implementation of the project through provision of various permits, wayleave or and the associated water transmission facilities.
3.	Water Service Regulatory Board (WASREB)	Shall monitor compliance to standards at design, construction, operation and maintenance of the water facilities of the proposed project. After project implementation, the board will determine and prescribe the standards for provision of water services as well as evaluate and recommend water tariffs for the proposed project where need be.
4.	TURUWASCO	The existing Kangakimak water supply schemes is reported to be under the management of community WRUAs. Once the proposed project is completed, it will be operated and managed by TURUWASCO through an MoU with the community. The water utility company is the main water service provider in Turkana County. The project shall therefore be operated by TURUWASCO for service provision or as shall be agreed with the community. TURUWASCO will be responsible for overall implementation of the ESMP recommendations during operation phase of the project.
5.	The National Environment Management Authority (NEMA)	The authority through the county office shall be in charge of Overall management and co-ordination of all matters relating to the environment impacts of the project in the proposed development area through the County Director of the

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No.	Institution	Responsibility
		Environment. NEMA will review the ESIA CPR/ESMP report and issue license.
6.	Interior and coordination of national government (County Commissioner)	The County Commissioner's office shall come in hand to resolve any emerging conflicts between borehole water users in the event of such arising during project operation. The office shall also resolve strive among the locals and any visiting groups accessing water during drought periods. This is anticipated during influx of communities from other areas seeking livestock watering during droughts.
7.	The National Land Commission	The institution will resolve land adjudication issues including land registration and management for the proposed project facilities whenever need arises.
8.	Directorate of Occupational Safety and Health Services (DOSHs)	Registration of the construction site and commissioned water project as workplaces**.** Enforce occupational safety and health act requirements.
9	National Council for Persons with Disabilities (NCPWD	The NCPWD oversees all matters relating to PWDs, including: (i) statutory responsibility for facilitation of disability mainstreaming programmes; (ii) formulating and developing measures and policies designed to achieve equal opportunities for PWDs; (iii) cooperating with the government; (iv) recommending measures to prevent discrimination against PWDs; and (v) registering persons with disabilities and institutions and organizations giving services to PWDs. The NCPWD has officers in all counties and a documented list of persons with disabilities that could inform implementation of the project. The officers could also support the process of translating documents and communicating with PWDs (e.g., sign language and braille).

3.8 Legal Register

A legal register listing all legislation, legal instruments relevant to the site has been prepared, indicating applicability to the site. In addition, permits and licenses that are required to be obtained by the project during construction and operation has been provided.

Table 18 Legal Register

No.	Licenses/Permits	Legislation
	ESIA License for project	EMCA 1999
	Water extraction permits from water resource authority	Water Act 2016
	Workplace Registration License from DOSHS	OSHA 2007
	NEMA License to transport waste	EMCA 1999
	NEMA Noise Vibration Permit	EMCA 1999

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3.9 Applicable International Conventions and Agreements

Table 19Applicable International Conventions and Agreements

Conventions & Agreements	Description
Vienna Convention on the Protection of the Ozone Layer	Aims to protect the ozone layer by regulating the production and use of substances that deplete it. Relevant for projects affecting atmospheric conditions or chemical usage.
United Nations Convention on Biological Diversity (UNCBD)	Focuses on the conservation of biological diversity, sustainable use of its components, and fair sharing of benefits arising from genetic resources. Key for projects impacting ecosystems.
The 1992 United Nations Framework Convention on Climate Change (UNFCCC)	A treaty aimed at mitigating climate change by reducing greenhouse gas emissions and promoting global cooperation on climate action. Relevant for projects contributing to emissions or climate policy.
Rio Declaration on Environment and Development	Sets out principles for sustainable development, balancing environmental protection with economic growth. Provides a framework for making environmentally and socially responsible decisions in development.
African Convention on the Conservation of Nature and Natural Resources	Aims to protect Africa's natural resources, promote biodiversity, and prevent degradation. Essential for projects involving land use or natural resource exploitation in Africa.
Earth Summit on Sustainable Development Agenda 21	A global action plan for sustainable development across social, economic, and environmental sectors. Guides projects toward sustainable practices.
Convention on International Trade in Endangered Species (CITES)	Protects endangered species from over-exploitation through international trade regulations. Relevant for projects that may involve trade or use of endangered species.
International Labour Organization (ILO)	Promotes fair labour practices, social protection, and rights at work. Ensures that projects align with international labour standards.
The Paris Agreement	A legally binding international treaty on climate change, aiming to limit global temperature rise and enhance climate action. Relevant for projects that may impact climate change or require emission reductions.
The World Commission on Environment and Development	Introduced the concept of sustainable development, focusing on meeting present needs without

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(The Brundtland Commission of 1987)	compromising future generations. Informs development policies and projects with a focus on sustainability.
United Nations Convention to Combat Desertification (UNCCD)	Focuses on preventing land degradation, particularly in dryland areas, and restoring desertified land. Relevant for projects that impact land use or ecosystems in arid regions.
The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)	Addresses gender equality and the empowerment of women, ensuring women's rights in all areas of life. Guides projects to promote gender equity.
The African Charter on Human and Peoples' Rights (Banjul Charter)	Protects human rights and freedoms in Africa, ensuring respect for individual and collective rights. Projects must adhere to principles of human dignity, equality, and justice.
Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa (Maputo Protocol)	Focuses on the protection and promotion of women's rights in Africa. Ensures projects are gender-sensitive and promote equality.
The ILO Convention No. 169 on Indigenous and Tribal Peoples	Recognizes the rights of indigenous and tribal peoples, particularly concerning land, resources, and culture. Projects must respect the rights of these communities, especially in land and resource management.

All the policies and laws can be put in table and relevance to the project... some are in tables and others in narratives

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Chapter 4 Baseline Information

4.1 Overview

Turkana County is the second largest of 47 counties in the Republic of Kenya. It covers an area of 68,680 km^2, accounting for 13.5% of the total land area in Kenya (Turkana County Investment Plan, 2016-2020). It lies between Longitudes 34° 30'E and 36° 40'E and between Latitudes 10° 30'N and 50° 30'N. Turkana is located in the northwest of Kenya and borders Uganda to the west, South Sudan and Ethiopia to the north and northeast respectively. Internally, it borders West Pokot and Baringo Counties to the south, Samburu County to the southeast, and Marsabit County to the east as shown in Figure 6 below.

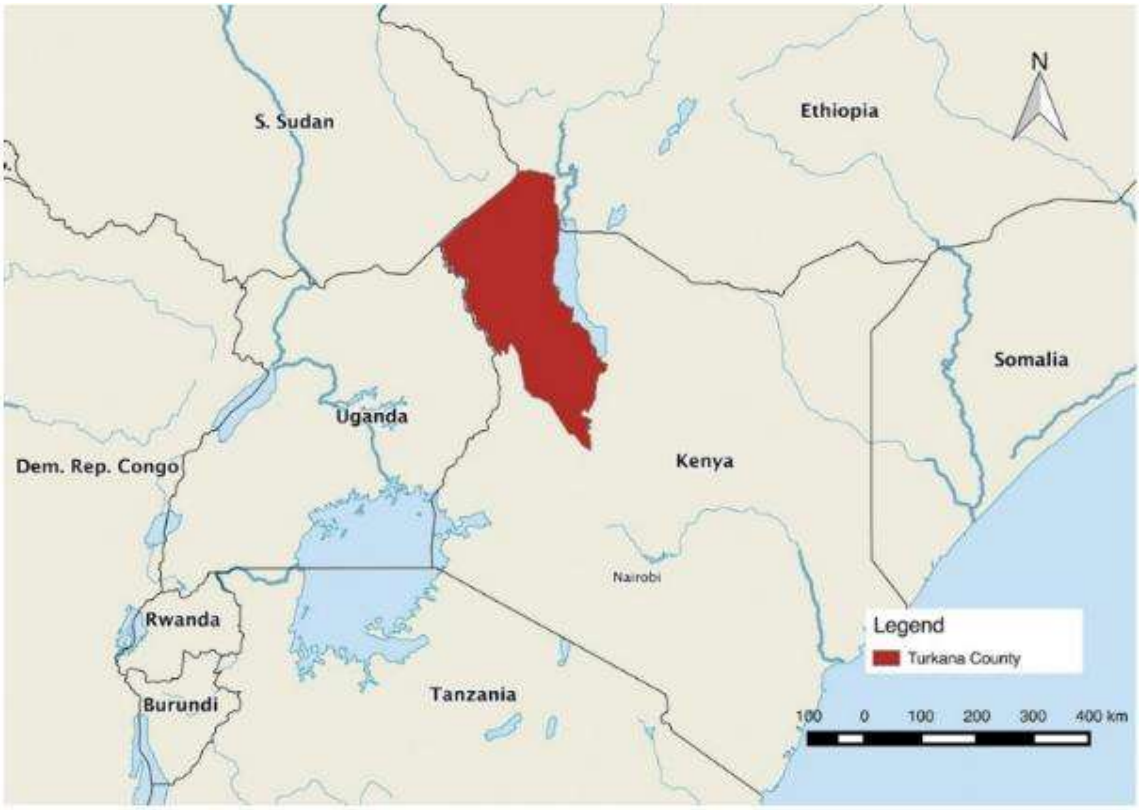


Figure 7 Map of Turkana County

The total population of Turkana County is 926, 976 (478,087 males; 448,868 females; 21 intersex) with a population density of 14 persons/km^2 and 164,519 households (KNBS 2019). The populace is predominantly pastoralist (70%) and only 20% engage in crop farming.

Administratively, the County is subdivided into 7 sub counties as shown in Figure 7 below: Kibish, Turkana North, Turkana West, Turkana Central, Loima, Turkana South and Turkana East. Turkana South is the Focal sub county for this project which has 5 village units and the project will serve Kangakimak village in Kanaaodon location.

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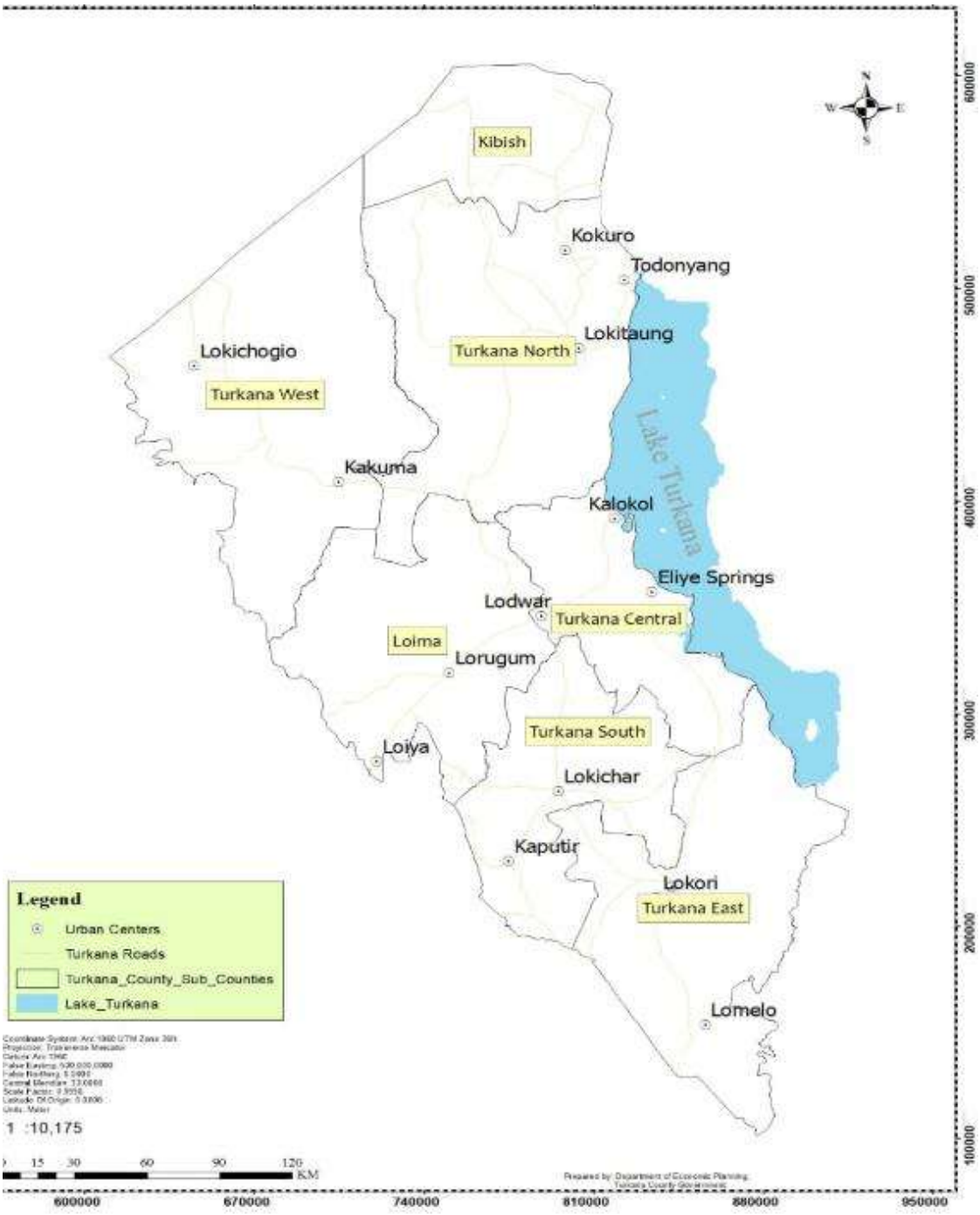


Figure 8 County's Administrative and Political Units

Settlement patterns in Turkana County correspond with natural resource endowment. Low population densities in the rural areas and high population in towns and market centres exhibit this where economic opportunities prevail. Areas around the lake and along rivers have a high density. Turkana South with an area of 7,045 Sqkm is projected to have a population of 165,403 persons in the year 2025 (CIDP 2023-2027).

Table 20 Population Distribution in Turkana County in 2019.

Sub-County	Male	Female	Intersex	Total
Kibish	18651	18117	1	36769

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Sub-County	Male	Female	Intersex	Total
Loima	54531	53453	1	107795
Turkana Central	93145	92160	-	183305
Turkana East	76871	61643	12	138526
Turkana North	32810	32408	-	65218
Turkana South	**78402**	**75329**	**5**	**153736**
Turkana West	123867	115758	2	239627

Source: 2019 Kenya Population and Housing Census

The gender distribution is as shown in Figure 8 below.

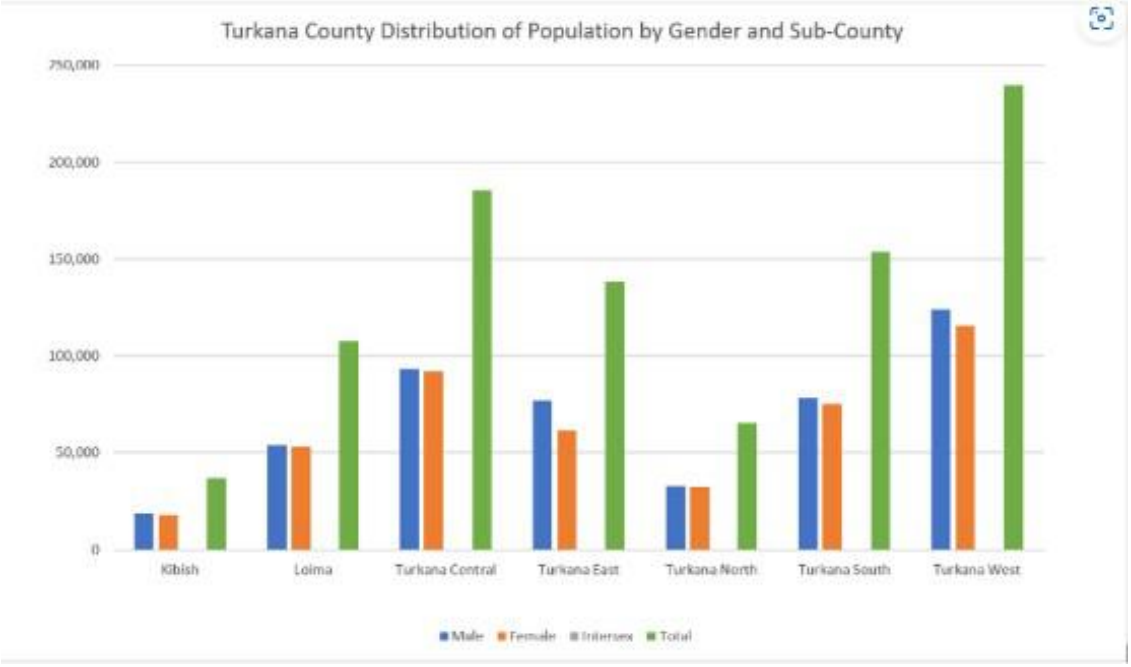


Figure 9 Gender Distribution in Turkana County

Source (CIDP 2023-2027)

Turkana South sub county has 5 wards Lokichar, Katilu, Lobokat, Kaputir and Kalapata. The sub county headquarters is Lokichar town which is about 80 km from Lodwar town, the county headquarters. The project area is in Katilu ward as shown in the figure below.

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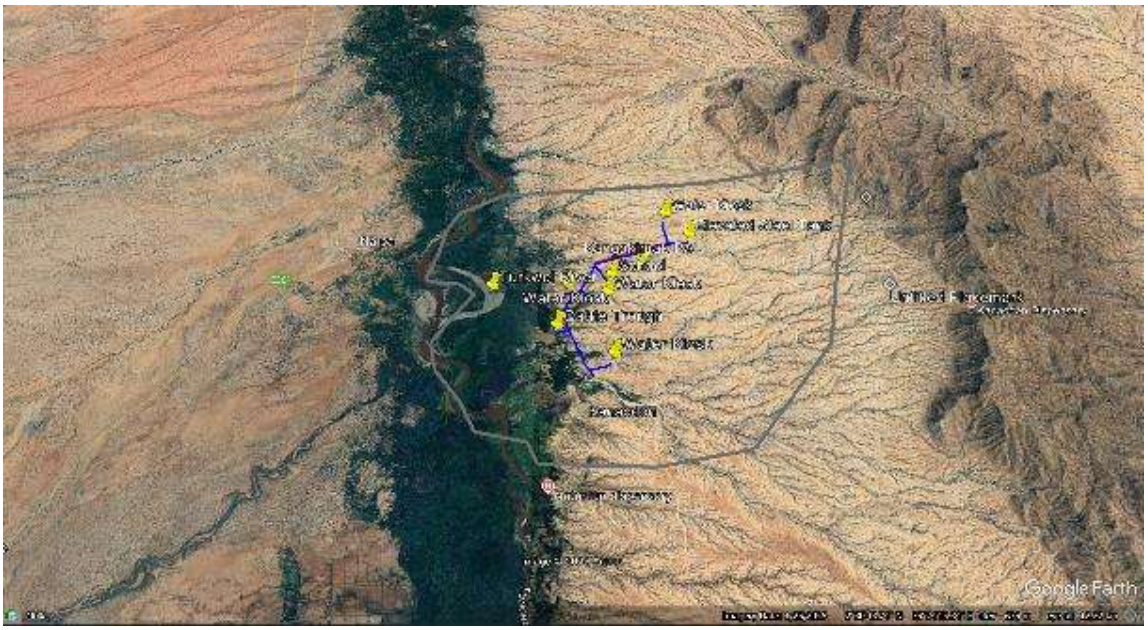


Figure 10 Project Area within Katilu Ward

4.2 Physical environmental condition

4.2.1 Climate

Turkana South Sub-County characteristically is defined by warm and hot climate (Sultan, 1970). Turkana county has temperatures of 20˚C to 41˚C with an average of 30.5˚C (Government of Kenya, 2013). The region has two rainfall seasons, where in the months of April to July experiences the long rains and the months of October to November happens the short rains in the range of 52 mm to 480 mm per year and an average of 200 mm (Turkana County Government Report, 2015).

Aridity characterizes the climate in Turkana, annual rainfall distribution is described in **Error! Reference source not found.**. Annual rainfall distributes concentrically and the centre is the mouth of River Turkwel to Lake Turkana. The area of Minimum rainfall is downstream River Turkwel having below 200mm/yr and maximum rainfall area is the mountain range around the border to Ethiopia having more than 900mm/yr.

The Mean annual temperature distribution is also described in **Error! Reference source not found.**. Rainfall and temperature show the same distribution trend as elevation. That is, rainfall distribution is proportional to elevation and temperature is inversely proportional to elevation. The High temperature area is downstream of River Turkwel and Lake Turkana coastal zone and low temperature area is mountain range around the border to Uganda.

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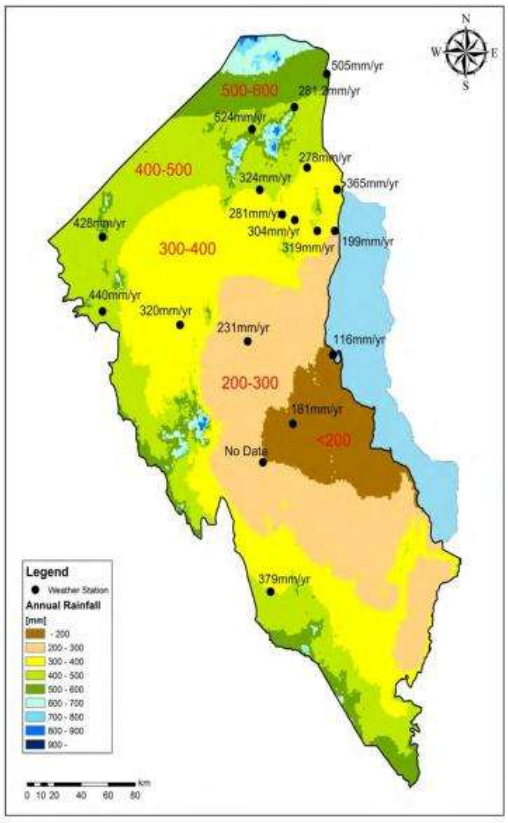


Figure 11 Mean Annual Rainfall Distribution Map

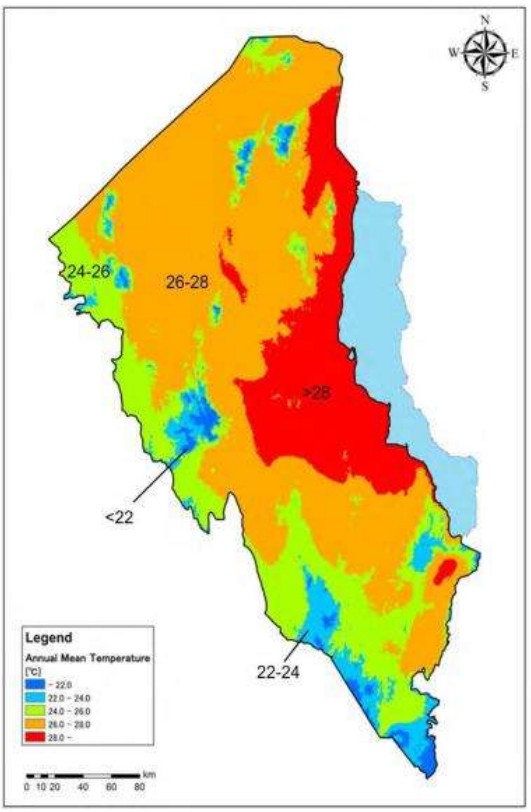


Figure 12 Mean Annual Temperature Distribution Map

Source JICA 2015

The PA has subtropical steppe climate (Classification: BSh). The yearly temperature is 32.22ºC and it is 9.72% higher than Kenya's averages. Kangakimak typically receives about 52.72 millimetres (2.08 inches) of precipitation and has 77.78 rainy days (21.31% of the time) annually as shown in the figure 12 below.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	39.79 (103.62)	40.84 (105.51)	40.84 (105.51)	39.79 (103.62)	38.74 (101.73)	38.74 (101.73)	37.7 (99.86)	37.7 (99.86)	39.79 (103.62)	38.74 (101.73)	38.74 (101.73)	38.74 (101.73)	40.84 (105.51)
Average high °C (°F)	36.78 (98.2)	37.82 (100.08)	37.38 (99.28)	35.5 (95.9)	34.78 (94.6)	34.32 (93.78)	33.54 (92.37)	33.85 (92.93)	35.41 (95.74)	35.96 (96.73)	35.21 (95.38)	35.61 (96.1)	35.52 (95.94)
Daily mean °C (°F)	33.04 (91.47)	34.0 (93.2)	33.51 (92.04)	32.28 (90.1)	31.75 (89.15)	31.3 (88.34)	30.59 (87.06)	30.78 (87.4)	31.99 (89.58)	32.67 (90.81)	32.06 (89.71)	32.32 (90.18)	32.22 (90.0)
Average low °C (°F)	27.09 (80.76)	28.11 (82.6)	26.76 (80.77)	27.07 (82.17)	27.61 (81.7)	27.19 (80.94)	26.53 (79.93)	26.66 (79.99)	27.22 (81.0)	28.01 (82.42)	27.1 (81.32)	27.19 (80.94)	27.18 (81.16)
Record low °C (°F)	12.57 (54.63)	20.94 (69.69)	21.99 (71.58)	17.8 (64.04)	23.04 (73.47)	23.04 (73.47)	20.94 (69.69)	18.85 (65.93)	23.04 (73.47)	23.04 (73.47)	21.99 (71.58)	20.94 (69.69)	12.57 (54.63)
Average precipitation mm (inches)	24.76 (0.97)	13.4 (0.53)	58.23 (2.29)	136.8 (5.39)	81.17 (3.2)	34.81 (1.37)	44.77 (1.76)	47.5 (1.87)	16.85 (0.67)	48.32 (1.94)	84.9 (3.34)	41.09 (1.62)	52.72 (2.08)
Average precipitation days (≥ 1.0 mm)	2.47	2.07	7.05	13.98	8.95	4.0	8.19	5.42	2.88	6.19	10.19	6.28	5.48
Average relative humidity (%)	35.27	39.17	47.23	51.9	51.51	46.71	47.11	46.17	42.67	44.21	49.72	42.91	44.56
Mean monthly sunshine hours	12.03	12.18	11.99	11.81	11.86	12.01	11.87	12.01	12.11	12.04	12.06	12.09	12.02

Figure 13 PA Weather by month

Source: Weather and Climate - The Global Historical Weather and Climate Data.

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The wind speed in the project area is moderately high, with wind speeds of 20-30Kph experienced in the months of October -March and moderate speeds in the months of April to September.

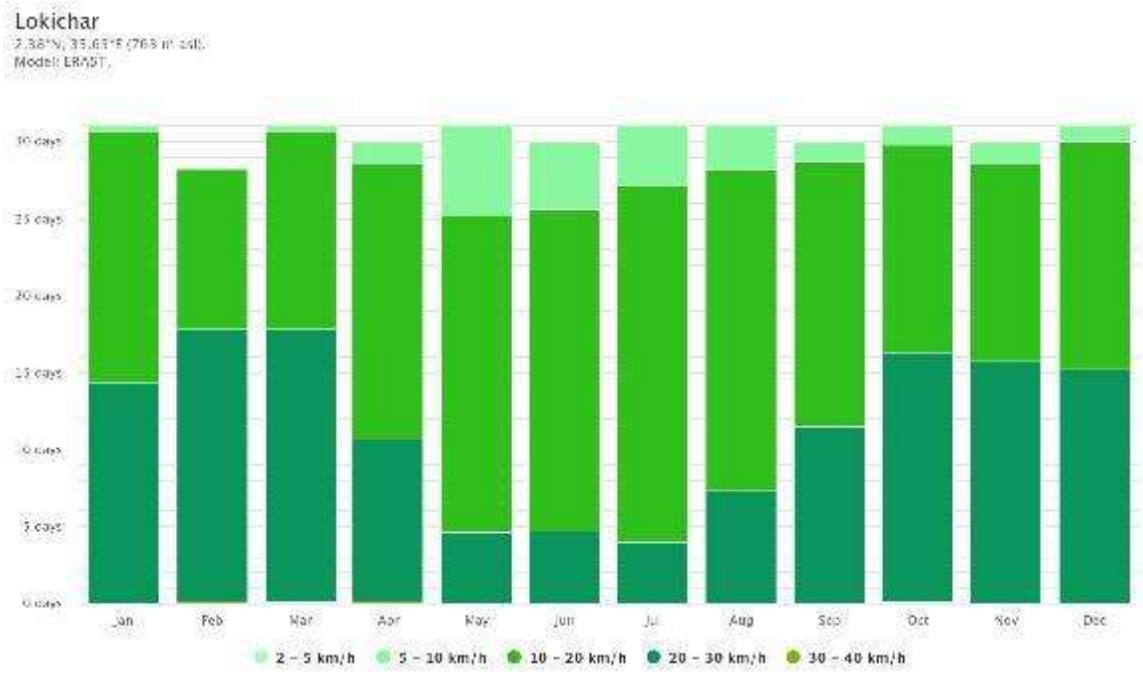


Figure 14 Project area wind speed

Source: - meteoblue.

4.2.2 Ecological Conditions

The ecology of Turkana South is characterized by arid and semi-arid plains, low rainfall, and high temperatures. The region's ecology is also influenced by the seasonal flooding of rivers into Lake Turkana.

The Agro-climatic zones that transect through Turkana South Sub County include zones V and VI which ranges from semi-arid to arid. The flora of the PA is generally riverine forest, shrublands, and dwarf shrublands. The vegetation is influenced by the Turkwell river, climate change, grazing, and invasive species as shown in figure below.

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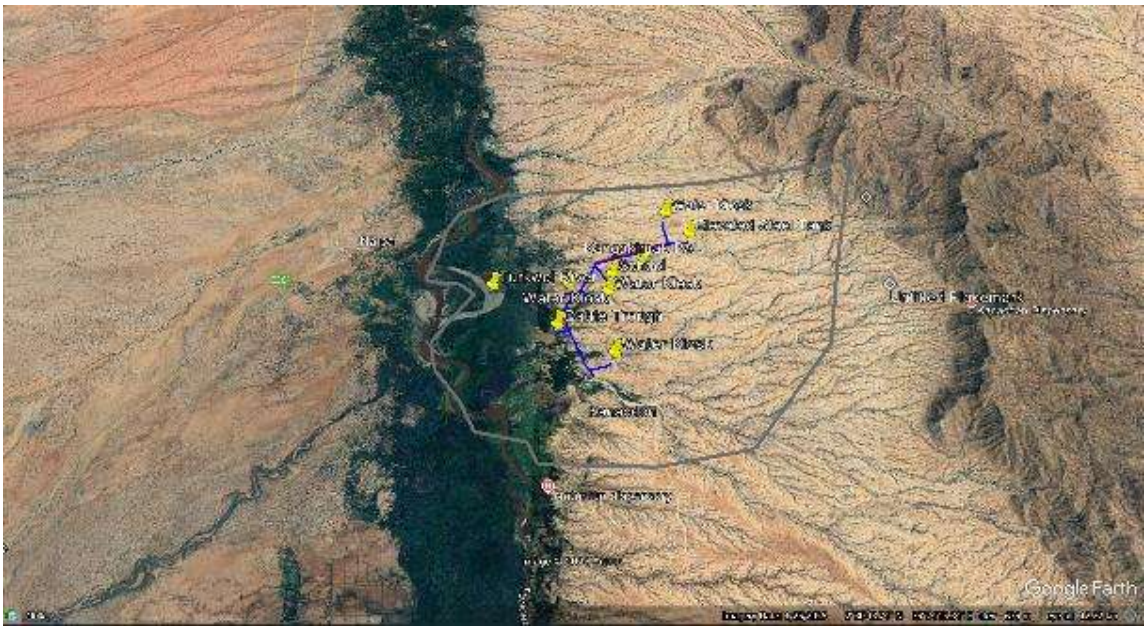


Figure 15: Google Earth Image showing the project location

Vegetation cover is dominated by stands or thickets of *Acacia tortilis*. In the most densely vegetated areas along riverbanks and beneath *Acacia tortilis* stands, *Withania somnifera*, *Maerua Spp*, *Acyranthes aspersa* and *Cynodon dactylon.* Along road sections and cleared areas, bushes of *Prosopis juliflora* are observed succeeding the natural vegetation.



Figure 16: Existing elevated plastic tank at the site

Small wild animals are found around the project area and include; baboons, monkeys, gazelles, crocodiles, wild dogs, hyenas, foxes, lizards, hares and other rodents. There will be minimal

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interference with their terrestrial habitats. The project area does not have fauna that are threatened.

4.2.3 Geology & Soils

Turkana South is dominated by: metamorphosed sediments of the Basement System; Tertiary rocks represented by plugs and dykes of nephelinites or alkali basalt and; Quaternary rocks that consist of soils, alluvium, scree and ironstone capping (McCall, 1964).

The PA soils are moderately well drained loose loamy sand to sandy clay loam. The mid slopes have sealed and capped sodic soils that enhance runoff and gully formation while the toe slopes have extensive bare patches that enhance windblown erosion. The soils are classified as Solonchaks Xerosols, and Arenosols [Sombroek et al. (1982)].

4.2.4 Hydrogeology

The Sub-County is an arid and semi-arid land and thus availability and access to water remains the biggest problem facing the people of PA. The key water sources supplying the rural parts in Turkana South Sub-County presently are unprotected hand dug wells, streams and boreholes. The hydrogeological situation of the region is rather difficult, with the geology of Turkana County being predominantly basement metamorphic rocks and igneous rocks, all of which naturally forms poor aquifers. The existence of volcanic rocks' source is taunted to be from a number of central rift volcanoes (Sultan, 1970). Gwynne (1969) has given an account of the occurrence of recent sedimentation in river channels which are associated with groundwater potential.

Equally, fracture and fault zones offer the best areas for groundwater movement, recharge and storage. Equally some areas are covered by sedimentary rocks both consolidated and unconsolidated including clastic sediments, limestone and other carbonate rocks.

There are five identified aquifer reserves and are linked to the main tertiary sedimentary basins in graben structure. The project borehole in Katilu ward is within a local fresh water aquifer as shown in the figure below. The aquifer recharge rates are in the range of 1-2% of the annual precipitation.

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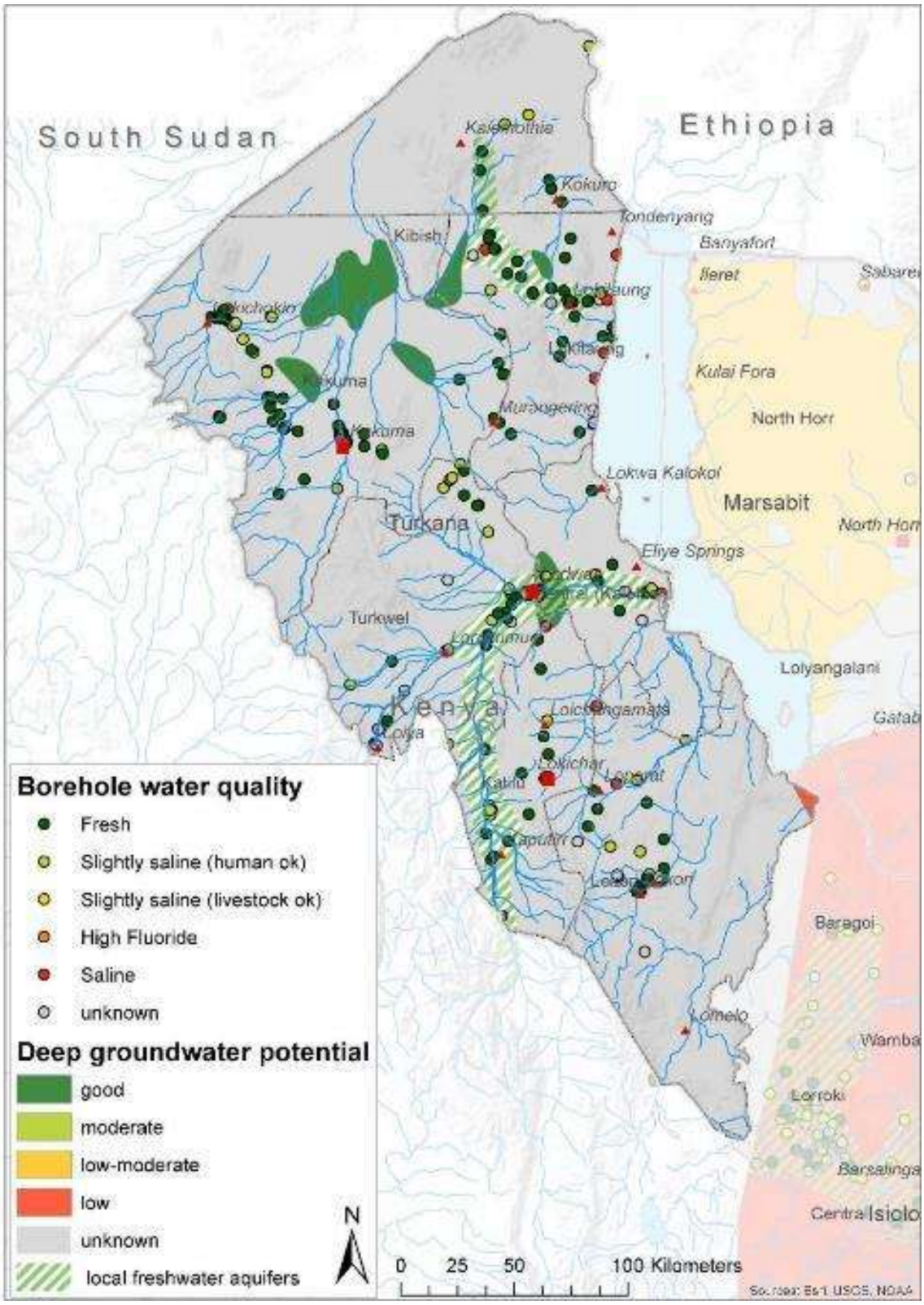


Figure 17 Deep ground water potential in Turkana County

In anticipation of the aquifer assessment studies in some parts of the ASAL counties one may conclude that the sustainability of rural water supply is not at risk in terms of overexploitation of groundwater resources. Population density is low and water demands even including water for livestock is low compared to the renewable groundwater resources. In the Economics of Water study of Somalia (World bank) it was demonstrated that in the border areas, which are

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hydrogeologic ally, demographically and climatologically comparable to the rural areas of the ASAL counties, groundwater abstraction is lower than 10 % of renewable groundwater resources. This is below the critical 20 and 40 % scarcity and severe water scarcity levels, respectively (UNWATER), which are generally used as criteria for sustainable groundwater development in the absence of detailed information. Critical situations arise only where urban water supply and large-scale irrigation projects abstract groundwater.

The notion above supports the premise that groundwater recharge from Managed Aquifer Recharge (MAR) facilities in the GW4R is not expected to compensate the abstractions from the village wells. In addition, groundwater recharge from the MAR facilities, mostly sand dams, water pans and infiltration ponds, will benefit the shallow aquifer and wells, which are generally not connect to the deeper aquifer tapped by the village wells. The MAR facilities are meant to provide additional water supply, particularly where the boreholes do not provide water in sufficient quantity or quality.

4.2.5 Topography

The major physical features in the county are low lying open plains, mountain ranges, hills, rivers, forests, swamps and plateaus. Lake Turkana is at an elevation of 369m above sea level (1181ft). Turkwel, Kerio, Tarach, Kalapata, Malimalite are the major rivers in the county. The main mountain ranges in the county are Songot, Loima, Mogilla, Loriu, Kailongkol and Silale.

The topography of Turkana South Sub-County is low-lying plains and scattered hill ranges at an altitude of 750masl. Kangakimak proposed tank site is at about 650masl and the gradient slopes gently towards Turkwel River at about 632masl on a westerly direction as shown in the figure below.

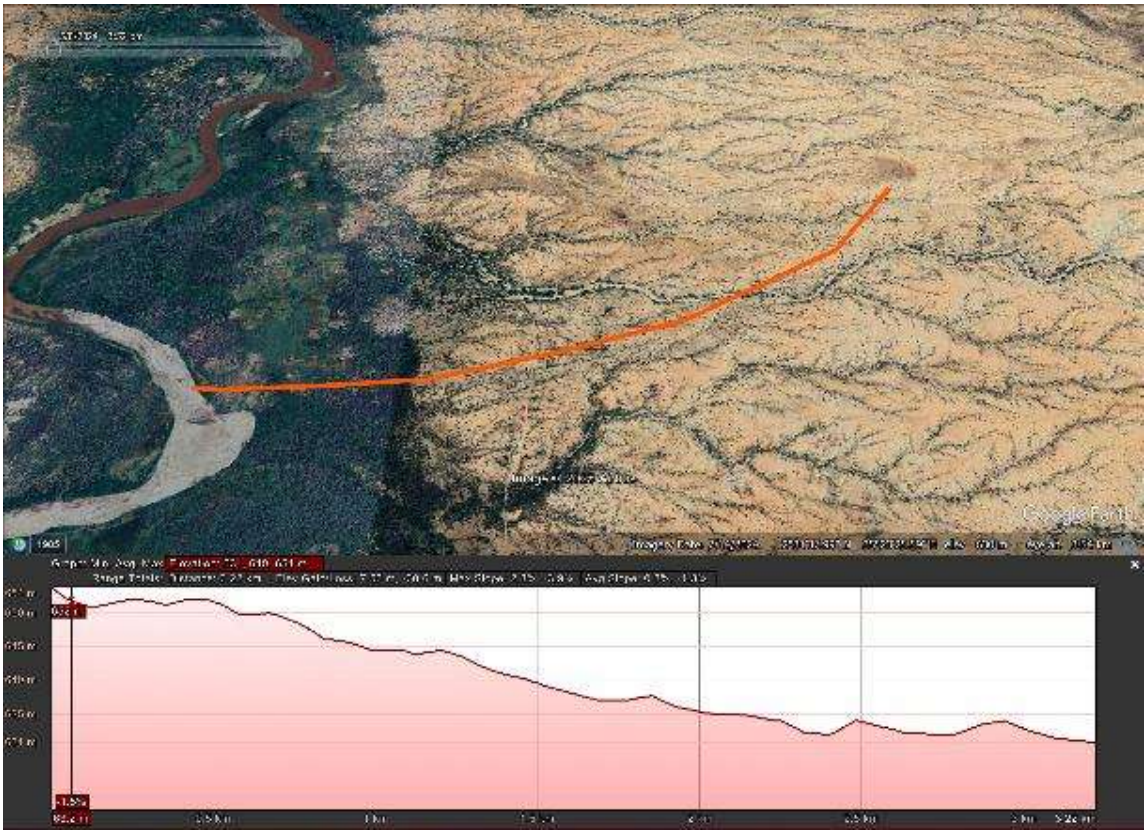


Figure 18 Kangakimak Elevation profile

Source: Google earth.

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4.2.6 Hydrology & Drainage

The hydrology of Turkana South is characterized by the Turkana Basin, which is a hydrographic and sedimentary system that includes Lake Turkana, the Omo River, and the Turkwel and Kerio Rivers. The basin is hydrologically closed and the water availability in the area fluctuates due to rainfall. The project area is largely drained by the Turkwel River into Lake Turkana.

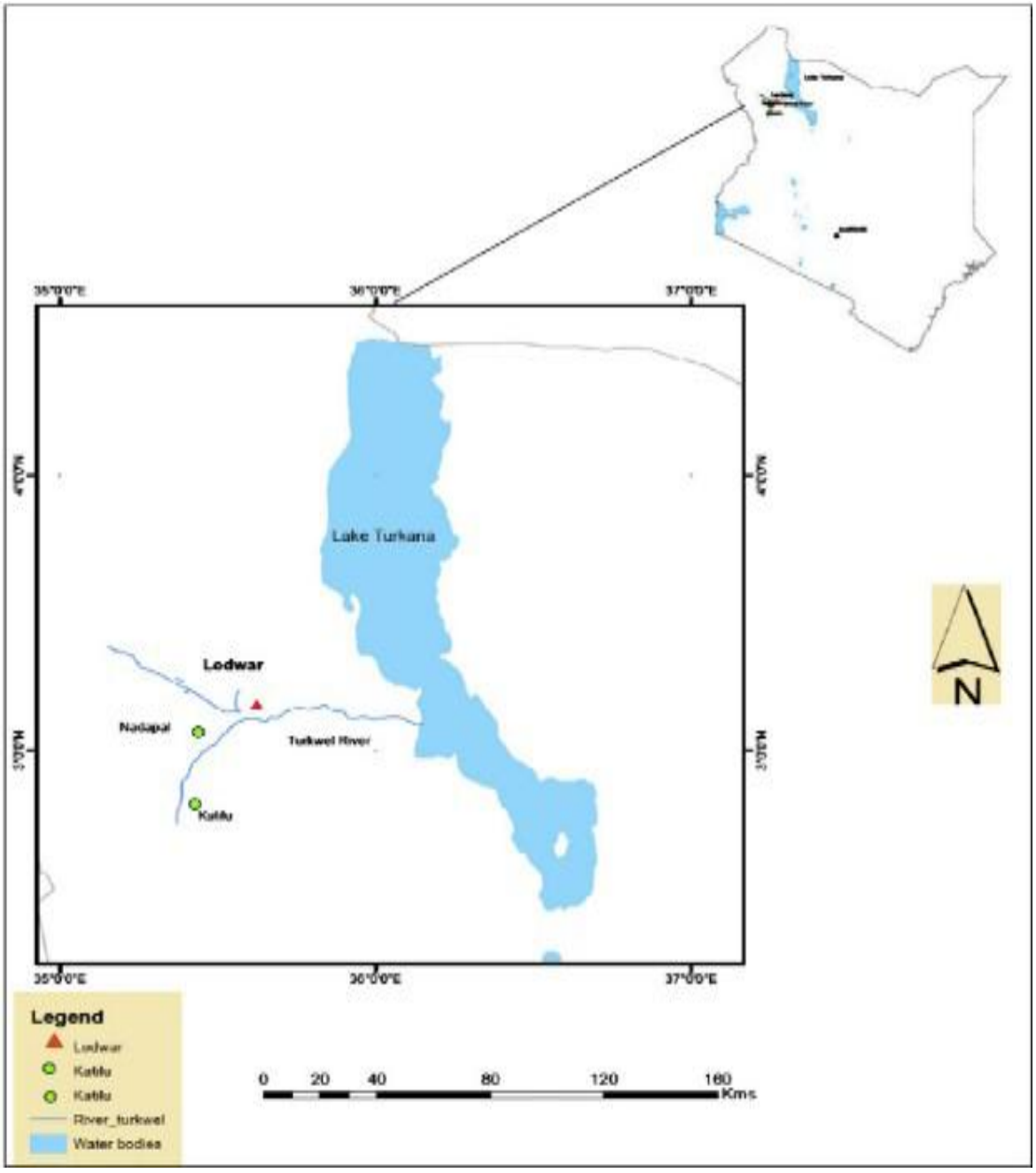


Figure 19 The drainage basin of Lake Turkana

Source: Vetel et al., 2004)

According to the household survey conducted, as illustrated in the figure below, 48% of the population source their water mainly from the Turkwel River, with a majority 51% from boreholes within the PA. Majority of the population 85% access the water from the boreholes managed by the community committee.

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4.3 Socio-economic Environment

4.3.1 Sampling for Household Survey

The sample size for Kangakimak WSS was at least 30 households. The rationale for the sample size was that the survey considered the small number of households and the expected relative homogeneity within the project area. Therefore, the survey applied the central limit theorem (CLT). The CLT states that the distribution of sample means approximates a normal distribution as the sample size gets larger, regardless of the population's distribution. Sample sizes equal to or greater than 30 are often considered sufficient for the CLT to hold. According to Chang et al, a sample size of 30 is fairly common across statistics, and it often increases the confidence interval of the population data set enough to warrant assertions against findings. This implies that the results from the survey are valid and a representative of the project beneficiaries. The need for minimal sample sizes is to provide adequate power to distinguish the normal distribution from other distributions, so that failure to find a significant deviation from normality carries with it a reasonable degree of confidence that the data are consistent with that distribution.

Selection of the households for the interviews was done through clustered random sampling, where the clusters were the villages in the project area. In each cluster, random sampling was applied in selection of the respondent. The survey also set a gender-based quota so as to get perspectives of both men and women in the project areas.

4.3.2 Demographic Profile

Turkana South Sub County has a human population of 78,402 males and 75,329 females totalling to 153,736 persons (KNBS 2019). The average household size is 5 while the population density is 22 persons per square kilometre as summarised in Table 20 below.

Table 21 Population distribution in project area

Sub-County	Male	Female	Total	Avg HH Size	Population Density
Turkana South	76,871	61,643	138,514	7.7	22
Kanaodon Location	4502	3677	8,179	3.8	33

4.3.3 Socio Economic Survey (SES) Findings.

The SES had 46% of the respondents being male, majority of the respondents were female; this is attributed to the nature of economic activities in the PA. The males tend to be engaged away from the homesteads either herding or in the crop fields by the Turkwel River. The average age of the respondents was 39 years, majority (97%) of the community members had no formal education, 3% of the population are able to read and write having attained primary and post primary education.

The average total household income per month is KShs 180 and total household expenditure per month is KShs 635, the high expenditure than income levels is supported by transfers either from the social protection programs by the different state and non-state actors or relatives. The PA communities receive remittances (19%). The low incomes at household levels could also be attributed to unquantified incomes and expenditure from own sources.

Majority (51%) of the population pays the community management committee for water access. Domestic water demand is about 41L/day, currently the community access about 12L/day of water from the Kangakimak borehole. Households spend about KShs 126 per month for domestic water and KShs 145/month to access water for livestock.

About 67% of Community members are willing to connect to improved water supply services, the remaining 33% raised concerns on accountability of management committees and level of service. The community consumes the water as is without any form of treatment or purification.

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The water management committee is inclusive and has both women, male, youth and special interest groups representation.

The communities in the project area face challenges in accessing water with 87% of the community reporting long distance and (13%) expressing congestion concerns at the water point.

The project area has no culturally significant site identified by the community. Waterborne diseases (Cholera, Diarrhea, Dysentery, Bilharzias, Typhoid, Amoeba) constitute about 90 percent of the diseases affecting the community and malaria contribute to 10% of the community health concerns. On average the community spend about KShs 200 per year to address water borne diseases.

Proposed project awareness was low at the time of the SES studies. A large majority (84%) of the population are willing to connect to water supply services as shown in figure 17 below.

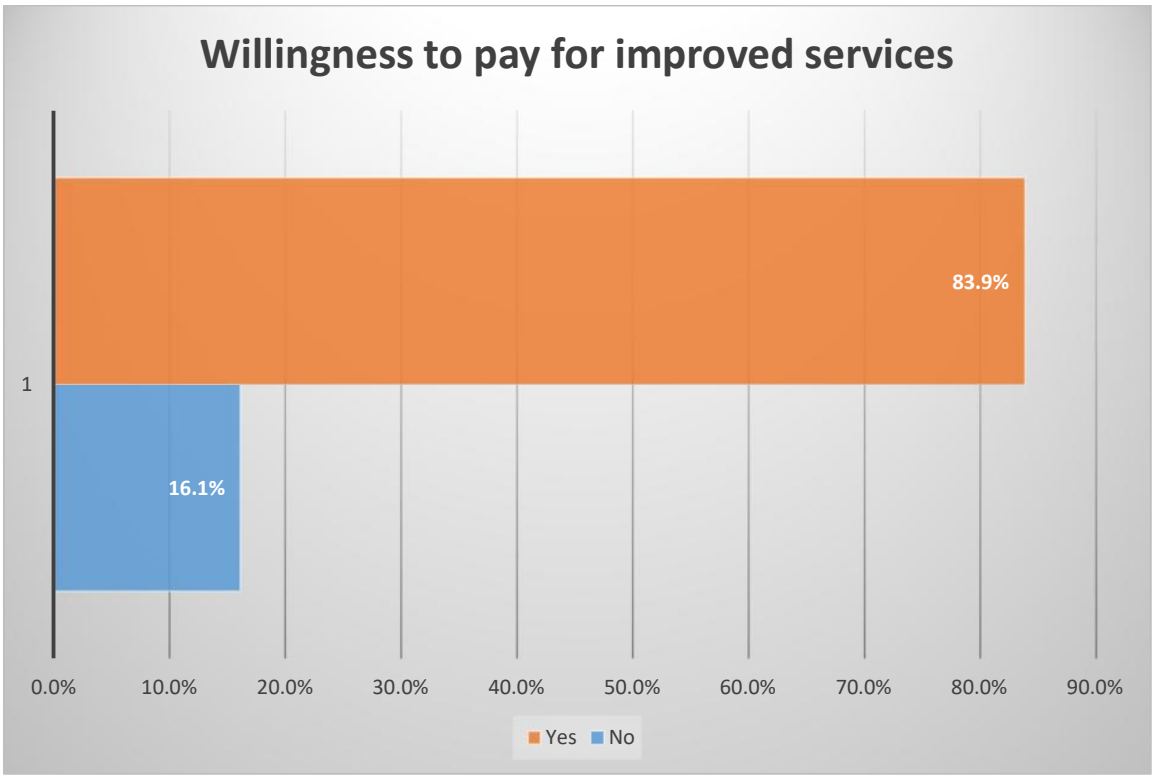


Figure 20 Willingness to connect to water supply service in Kangakimak

SES 2024

The community expectations from the project are access to adequate and reliable water supply services. The community fully support the project and no one expects the project to affect their current operations.

4.3.4 *Culture and religion*

Majority of the community practices Turkana traditional cultural norms, which emphasize livestock rearing and communal resource sharing. Livestock is not only an economic asset but also a symbol of social status and wealth. Social cohesion is maintained through cultural practices such as communal grazing, marriage ceremonies, and conflict resolution. Religious practices in the area are a blend of traditional beliefs and Christianity, with churches playing a significant role in community mobilization and education. Cultural and religious leaders hold significant influence in decision-making processes, making them key stakeholders in the implementation of

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development projects like the water supply scheme. The PA has integrated the traditional norms and values with Christian way of living.

The project area has presence of the Ngikebotok and Ichakun minority groups living within the settlement. The community share the same water and community resources with the minority members. The communities reported a full integration of the minority groups into the ethnic majority. The integration includes intermarriages between the minority and majority groups, sharing of community resources (land, water and pastures) and participation in community decision making.

4.3.5 Crop and livestock production

The residents in Turkana County practice both pastoralism (90%) and crop farming (5%) as the main source of livelihood as shown in Figure 19 below. Turkana South main source of livelihood is pastoralism, which involves raising livestock for food and income. In the PA, the main occupation is crop production 68% through irrigation from the Turkwel River, pastoralism 29% and casual labour 3% as shown in Figure 19 and 20 below.



Figure 21 Turkana County Land Use Map

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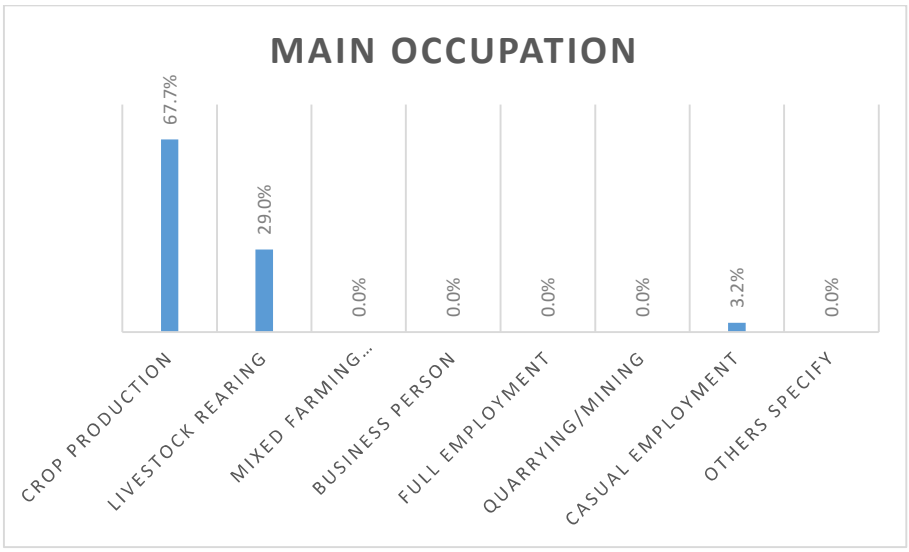


Figure 22 Primary Occupation of Household heads in the Kingakimak

Source: SES 2024

Table 22 Distribution of Livestock Population in Turkana County

Type of Livestock	Cattle	Sheep	Goats	Camels	Donkeys
No Livestock	2,500,000	6,700,000	6,900,000	900,000	600,000

Source: TCG 2020

From the socio-economic survey, the main source of livelihood is largely agriculture based (livestock 42% and crop 36%) as shown in the figure below. Therefore, the proposed project, that incorporates construction of domestic access points and livestock troughs will improve the livelihoods of the PA communities.

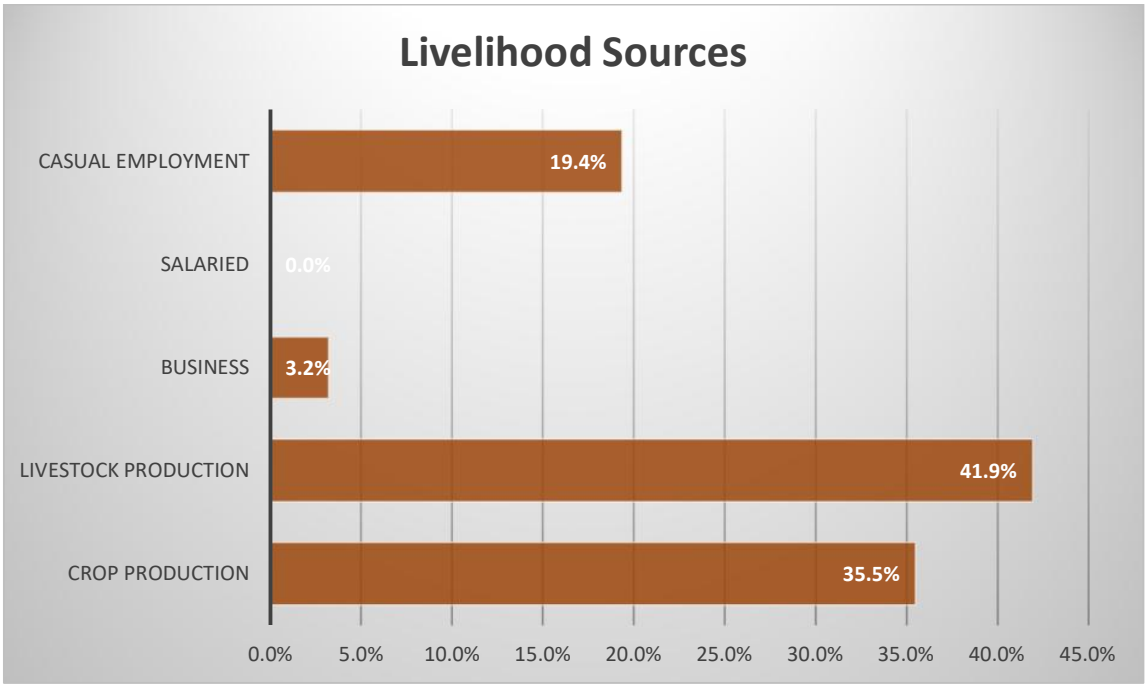


Figure 23 Sources of livelihood in the Kangakimak

Source: SES, 2024

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4.3.6 Access to employment opportunities

Turkana County has a total of 484,916 working-age population, which is about 52.31% of the county population. Most of the working-age population is youthful (18-34 years) at 55.75%. Most of the population in Turkana sub-counties are persons in the working age categories. Turkana South has the highest per centage of working-age persons at 55.85% as observed in Table 22 below.

Table 23 Sub County distribution of working age population by age category

Sub county	**Total Population**	**Working Age Population Categories**				**Working age population (15-64) as a per centage of the total sub-county population**
		15-17	18-24	25-34	35-64	
Turkana South	153,731	13,602 (17.13)	21,824 (27.49)	20,698 (26.07)	23,275 (29.31)	79,399 (51.65)

There is little disparity in employment by gender as per centage of the male employed is 36.33 per cent while female is at 34.34 per cent. The unemployment rate is high at 29.02 per cent with unemployment being slightly higher for the youth (18-34 years) at 17.11 per cent and those between 35-64 years at 8.36 per cent.

Employment opportunities that the project will bring about will help boost the economic status of the households as it is evident from the survey that income from employment is insignificant.

4.3.7 Turkana County Economy

Turkana County contributes on average 1.0 per cent of the National Gross Value added with an average GVA of KSh. 76,1311 million. The GVA per capita for Turkana County is KSh. 82,130 with average population growth of 2.6 per cent and overall poverty levels at 77.7 per cent. Turkana County has shown a steady growth in GVA with an average growth rate of 4.88 per cent from 2013-2022 which is higher than the national average growth of 4.37 per cent. The highest growth rate was in 2015 and lowest in 2021 as shown in figure 21 below.

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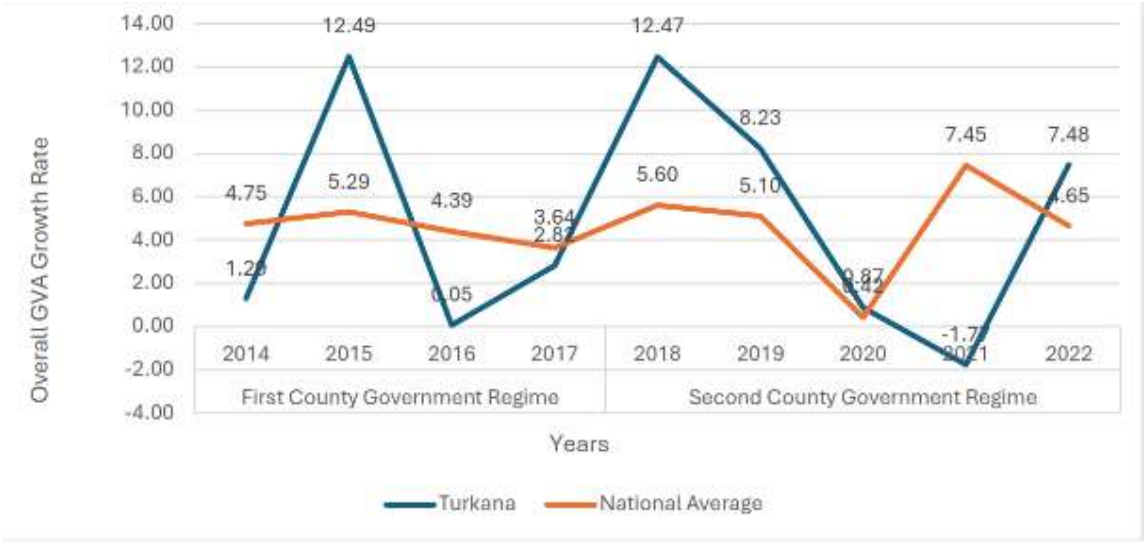


Figure 24 Turkana County GVA Growth Rate

4.3.8 Poverty Gender and Inequality

According to the Kenya National Bureau of Statistics, Turkana is the poorest county in Kenya. In 2016, 79.4% of the population lived below the poverty line, compared to a national average of 31.6%.2% (KDHS, 2018 & SID, 2013). In 2015, 35% were reported in the poorest wealth quantile and 35.8% in the second poorest, according to a FinAccess household survey (FSD, 2015).

Poverty which is defined as a state or condition in which a person or community lacks basic necessities for a minimum standard of living reveals that absolute/overall poverty incidence is highest in Turkana County (79.4 per cent) (KNBS and UN women 2019).

The Gender Equality Index is computed based on three critical aspects of human development namely reproductive health, empowerment and economic participation illustrates gender disparities across the ten counties. A Recent Study by KNBS and UN women (2019) shows Turkana County registered amongst the lowest index at 37 per cent. This shows loss in potential human development due to inequality between female and male achievements.

This requires efforts to reduce the disparities to enable to sustainable economic growth – similar to the projects proposal to significantly benefit women. Some of the anticipated benefits for women includes reduced time spent fetching water to allow them to focus on other economically beneficial activities.

4.3.9 Infrastructure

Roads and Transportation:

The project area is connected via dirt road from the Lokichar town all through. The earth road connecting the site is not well maintained and poses a challenge. The roads have poor drainage and are not maintained regularly making it difficult to access, especially during the rainy season when many roads become impassable. The community in the project area are majorly dependent on bodaboda as the main means of transport.

Water Supply:

Kangakimak settlements as the rest of Turkana County has water scarcity challenges, with irregular rainfall and limited natural water sources. Turkwel River, the main drainage channel in the area is a perennial river about 1km from the proposed Kangakimak borehole.

Electricity:

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Kangakimak settlement has no access to electricity. This has limited economic opportunities and access to modern amenities.

Education and Health Facilities:

Turkana South has fewer educational and health institutions compared to other parts of Kenya, resulting in poor literacy rates and limited access to healthcare services. The project area has Kanaodon primary school, it is proposed to be connected to the water supply services.

Mobile network:

There are two major mobile telephone operators in the county: Safaricom, which has the largest network coverage and Airtel. While network coverage is growing, there is still significant areas of the PA without access to mobile signal which is hampering communication and development. The mobile network coverage at the settlements is reliable.

4.4 Archaeological, Historical, and cultural significance

Archeological and historical sites are protected resources. They are important and increasingly rare tools for learning about the past. They may also have religious significance. Pipeline construction can damage sites by digging, crushing by heavy equipment, uprooting trees, exposing sites to erosion or the elements, or by making the sites more accessible to vandals. Impacts can occur wherever soils will be disturbed, or where heavy equipment is used.

The proposed project is not expected to cause any damage to historical, archeological and cultural sites since the area earmarked has no cultural or historical significance (SES 2024).

4.5 Cross-cutting issues

4.5.1 HIV/AIDS

HIV/AIDS is a major development crisis that affects all sectors. The water construction sector is not spared. It continues to be among the leading global public health issues, having claimed almost 33 million lives so far (WHO, 2020). However, with increasing access to effective HIV prevention, diagnosis, treatment and care, including for opportunistic infections, HIV infection has become a manageable chronic health condition, enabling people living with HIV to lead long and healthy lives. There were an estimated 38.0 million people globally living with HIV at the end of 2019 (WHO, 2020).

Turkana county prevalence rates stand at 3.6%. with a suppression rate of approximately 87% below UNAIDS target of 95%. Catholic diocese of Lodwar handles 40% of total HIV/AIDS work load from the population of people living with HIV/AIDS in Turkana County with approximated to be 8000 (Caritas).

From (SES 2024) HIV/Aids prevalence in the project area is considered as high by the community members at about 65% as shown in Figure 22 below. About 71% of affected persons being male and 29% female with the affected age group being the youthful group of 18-35 years. The community consider that Early sexual activities among the teenagers and youths as the driving factor.

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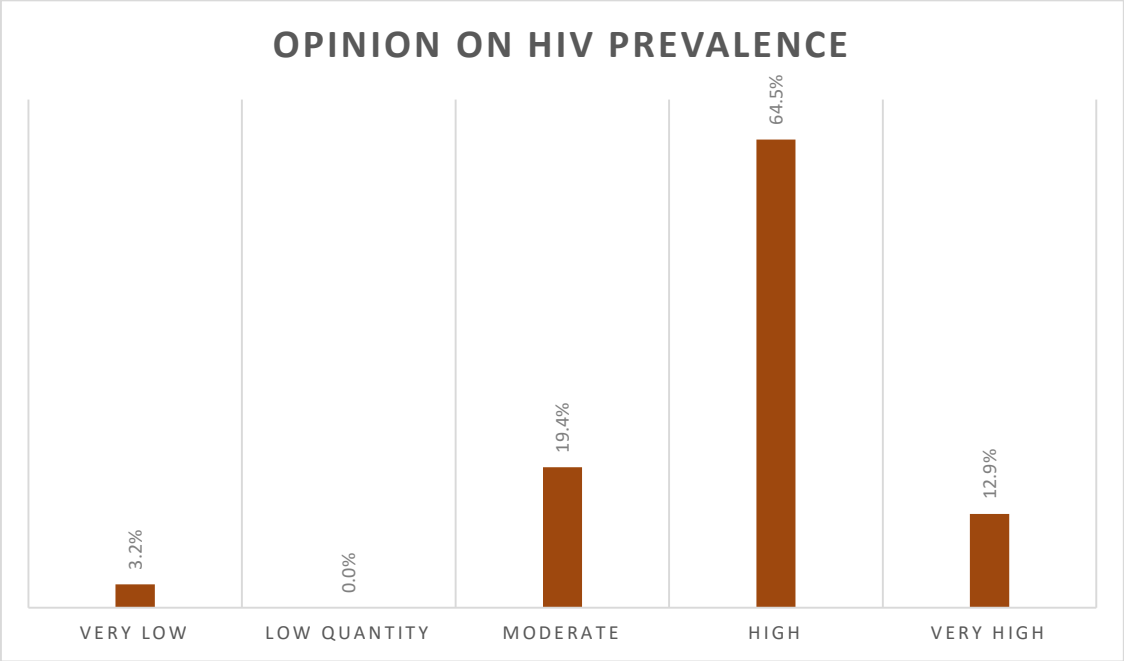


Figure 25 HIV/Aids Prevalence

4.5.2 Gender

Turkana has a customary land tenure system in which access is mainly inherited, with no formal documentation. The community traditionally demarcates land using indicators such as family graves, large old trees (e.g., mango trees), and watering wells. Women have no land ownership rights, though daughters of chiefs or women from rich families are allocated land. However, at times their brothers can take this land away once the parents are dead.

Communities in Turkana have traditional land management systems. Councils of elders ensure each community member has access to land. They sort out land-related disputes at the community level but women, youth, and other vulnerable groups (those with disabilities, HIV, etc.) are seldom involved in discussions on land-related matters.

Access to community land for investment, or any other business, must be done through negotiations with the elders, in consultation with the chief and relevant government officials. Women are not allowed to participate in the decision-making forums. Resource-based conflicts are mainly over grazing areas, water points, boundaries, urban expansion, fencing of livestock passage routes, conservancies, and refugee camps. The community has limited knowledge and awareness about the Constitution of Kenya; however, they have legal frameworks on community land governance. Chiefs disseminate information to the community during barazas (local meetings).

In Turkana South Household Headship was 5,531 female and 11,742 male as at (KNBS 2009). Total county secondary school enrolment by sex in Turkana South is at 57% boys and 43% girls (KNBS 2017). In Turkana County male experience absolute poverty at 77% and food poverty at 64% (Kenya Integrated Household Survey 2015/16).

4.5.3 Gender Based Violence

Violence occurring in the family and within the general community is a gender concern. The common violence includes wife battering, sexual abuse to girl child, rape, sexual harassment and intimidation at work.

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Between 2020-2023 Turkana recorded 1,657 GBV cases according to Kenya Health Information System (KHIS). According to the Kenya Demographic and Health Survey (KDHS 2023), 42% of women aged 15-49 in Turkana have experienced physical violence since the age of 15, compared to the national average of 34%. Additionally, 11% of women in this age group reported experiencing sexual violence.

At Kangakimak, nil GBV cases were reported. The community are fully aware of the management actions of medical support for the affected person and immediate reporting to the police.

4.5.4 Security

Turkana South is an area with historical security challenges brought about by the cattle rustling that is largely motivated by both cultural and economic factors, the community considered the PA as moderately secure to secure by 87% of the PA population. Majority of the community (97%) believe that the project will not impact on the current security situation of the PA, the 3% who foresee security concerns from water access conflicts especially from the settlements not served by the project.

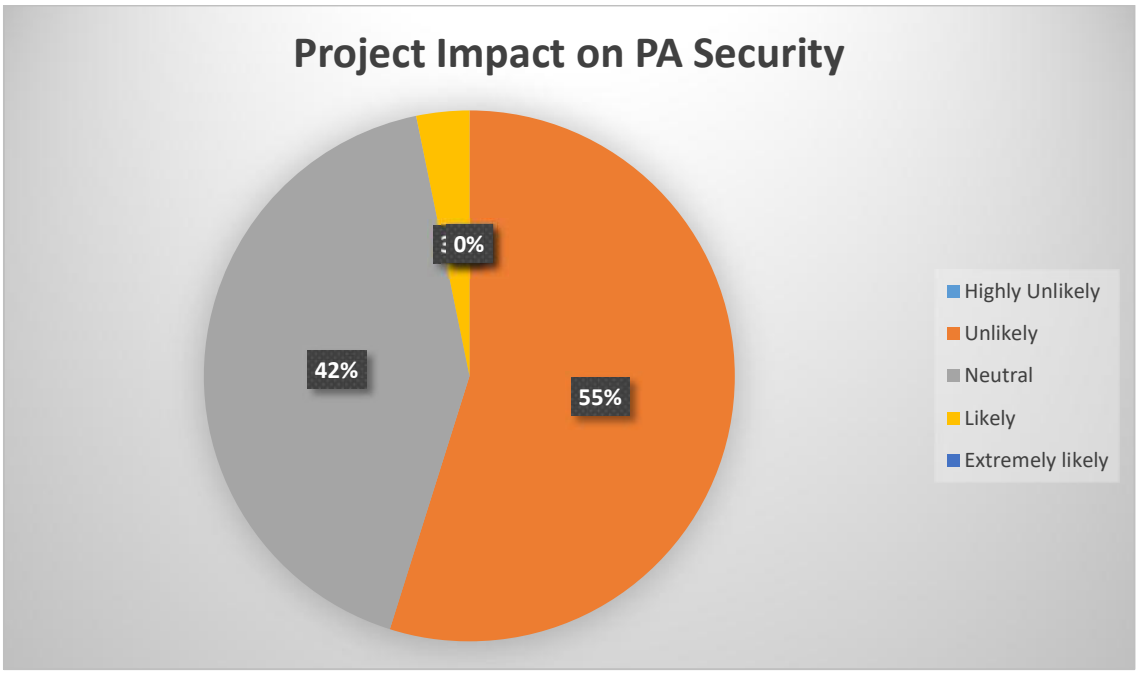


Figure 26 Project Impact on PA Security

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Chapter 5 Public Consultation, Participation and Stakeholder Engagement

5.1 Stakeholder Consultations

Stakeholder consultation was useful for gathering social and environmental data, understanding likely impacts, determining community and individual preferences, selecting project alternatives and designing viable and sustainable mitigation and compensation plans.

Stakeholder consultation in the ESIA process is important during the project design, implementation and operations phases. The aim is to disseminate project information to interested and affected parties (stakeholders), solicit their views and consult on sensitive issues.

Inadequate public consultation can result in significant information gaps, which could mislead environmental planners undertaking an environmental assessment. Lack of attention to communication and consultation processes can generate individual, community, or regional opposition to a project. This can ultimately be a cause of substantial delays, increased costs, and unsatisfactory compromise solutions, which could have been avoided through earlier consultations. Participation is therefore a process through which different stakeholders influence and share their views regarding development initiatives and the decisions and resources that affect them.

5.2 Consultation Method and Approach used in ESIA

Stakeholder mapping and analysis was undertaken in order to determine the particular stakeholders in the project area of influence (individuals, groups, communities, institutions/ organizations, agencies etc.) that will be affected directly or indirectly, either positively or negatively by the proposed project; or those who can contribute to, or hinder its success, and those with interests, have mandate over various issues related to the project. Overall, the critical guiding participation principles used are outlined below.

Table 24 Principles of Participation in the ESIA process

Principle	How observed
Adaptive, communicative, meaningful and pro-active consultation	• Project information was shared in local dialect (Turkana), Kiswahili and English languages. Translation was provided by a local person / someone appointed by the community or the chief. Some questions were however asked in Kiswahili, local language or English. • Information provided was extensive, detailed and providing as much information as possible but mainly revolving around dissemination of fundamental project background, objectives, scope, description of the proposed project, administrative footprint, potential positive and negative impacts and health & safety aspects. • Effort was put towards simplification of technical processes and concepts.
Accessibility	• The location for consultation were convenient to the stakeholders – in their offices or places where they live in the community.

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Principle	How observed
	• Meeting venue was accessible to all those who wanted to attend; the meeting was held within the target settlement; the venue is regularly used for community meetings e.g. chief's barazas. • There were no restrictions for attendance.
Inclusivity	• All the stakeholders – men, women, youth, leaders, vulnerable peoples, households etc. were notified of the meetings and involved in the meetings. • Notices for meetings were posted well in advance; announcements were made in community gatherings. • Community mobilizers and social media groups were used to reach more people.
Right to questions and responses	• In line with Article 33 of the Constitution, which states that public participation should respect the freedom of expression of the participants, the stakeholders were allowed to ask questions, share their views, make recommendations, seek clarifications, make comments about all aspects of the project. • All the questions, requests for clarifications, or additional information were responded to. • Time was dedicated to a question-response session in all the engagements.

Stakeholder engagement/participation was achieved through a variety of information and consultation methods. These were contextualized to the type of stakeholder and/or complexity of the information to be shared or collected. The consultation methods used were: community meetings, administration of a household questionnaire, key informant interviews, observation and secondary data.

Table 25: Consultation Methods

Stakeholder Type	Details of Stakeholders	Consultation Method
Community members in the project area individuals / groups institutions that may or not be direct beneficiaries but who consider or perceive their interests in the project and the process of its	All community members: men, women, youth, vulnerable, PWDs, community leaders, business people, religious leaders, traditional council of elders, village managers. • National Government officials e.g. Chiefs, Assistant Chiefs, Village etc	• Environmental Impact Assessment questionnaire. • Community meetings. Barraza - notices of meetings were delivered to respective chiefs, Assistant Chiefs, village elders, Nyumba kumi elders, places of worship, markets, institutions.

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implementation in some way.	• County Government Officers including Village Administrators, and sub county water officers.	Announcements were made in public gatherings including places of worship, chiefs baraza, funerals, water collection points. • Face to face meetings. • One- on- One/ face to face meetings • Key Informant Interviews
Government Agencies	• NEMA • Education Department • CECM Water Services • Children Office • Water Resources Authority • Water, Sanitation and Health Coordinator WASHCORD	• Key informant interviews • Face to face discussions • Questionnaire

Table 26: Key Stakeholders Consulted

Stakeholder	**Relevance to the project components**
TURWASCO/TURUWASCO	• Mandated to ensure access to clean and safe water in adequate quantities and to reasonable standards of sanitation. • Involved directly in construction, operation and maintenance phases of the project.
National Government (Chiefs)	• Key coordinator of government and public projects. • Safety of project staff and infrastructure. • Coordination and mobilization of the community and other stakeholders relevant to the project.
National Environment Management Authority (NEMA)	• Mandated to supervise and coordinate over all environmental matters and act as the principal instrument of government in implementing environmental policies. • Review ESIA reports, granting EIA Licence and ESMP monitoring.
County Government	• Community Mobilization.

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	• Water function falls within their mandate, implementer of County Projects.
Water Resources Authority	• Regulation of the management and use of water resources
Community members	• Project beneficiaries and owners.

Stakeholders log is attached as Appendix III of the report.

At the community level, members of the public and the local leadership of the host communities were the main stakeholders. Led by area chiefs and their assistants, the ESIA team was able to conduct a public meeting (baraza). The chief was engaged in the organization of the public meeting through mobilization of the communities, informing them of the meeting dates, venues and time. This was done through notices/posters on strategic places at the chiefs' office noticeboards as well as using local announcers to inform those who may not have read the noticeboards. 1 No public meeting was held as well as a focus group discussion. Minutes of meeting and attendance list are attached as Appendix IV of the report

5.3 Procedure for meetings

As required by EMCA cap 387 and EIA/EA Regulations 2003, and in line with the project IP & VMG framework and SEP, all the meetings were arranged in advance with the target audience. This was aimed at giving them adequate time to prepare for the meetings. As is best practice requirement, all the public meetings commenced with the ESIA team making a disclosure of the proposed project and all its associated activities. This was followed by comments, concerns and views from the local community members. To enhance proper communication and understanding of the proposed project, the ESIA team recruited local translators/interpreters through the office of the Chief to help with the translation to local languages (Turkana).

5.4 Outcome of the Public Consultation Process

5.4.1 Key informant Interviews

Key informant interviews were conducted with government agencies in Turkana between 10th and 11th December 2024. Their comments were sought through engaging them in discussions about the proposed project and the compliance required during implementation. This kind of engagement gave the respondents the opportunity to give insights and details about the issue at hand. (**Appendix III** for attendance log and Appendix V for sample questionnaire respectively).

Purposive sampling was conducted based on the role expected to play in the project and the expert knowledge possessed in the water, sanitation, environment, socio-economic, gender, SEAH, cultural, security, community development among other aspects.

Table 27 Key Stakeholders Consulted

No	Name	Designation	Organization	Interests, Concerns, Suggestions	Issue Redress in the Project Planning
	Joseph Nga'ng'a	WASH Coordinator	Catholic Diocese of Lodwar.	The respondent is aware of the proposed project, supports it and appreciates the consultation and engagement process. He envisions a project which will support in reduction of costs in relation to maintenance, an issue he considers has been challenging. He attributes this positive impact to the use of solar powered components which are durable as opposed to the current equipment such as hand pumps, most of which require regular maintenance. He supports the proposed project and suggests that having stakeholder engagement from the beginning of the project planning stage to completion stage will help reduce or avoid the negative impacts which may be caused during the implementation process.	The project as designed is solarized to reduce O & costs. Development of SEP, IP and VMG framework will also ensure smooth stakeholder management.
	Samson Rotich	Sub Basin Area Coordinator	Water Resource Authority	The respondent is acquainted with details of the proposed project and greatly supports it. Anticipates numerous positive impacts to the livelihoods of beneficiary	Borehole test pumping water quality tests and ESIA report has been undertaken towards borehole regularization.

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No	Name	Designation	Organization	Interests, Concerns, Suggestions	Issue Redress in the Project Planning
				communities, these include but are not limited to reduced impact of climate change through improving recharge by constructing spread basins which improve the quality and quantity of water. He recommends continuous cooperation with the project so that issues such as regularization in terms of licences and data collection yield quality data and sustainability.	
	Ezekiel Ichor	Director-ECDE	County Government of Turkana	The respondent affirms to have heard about the project. Anticipates numerous positive impacts in the education sector, ranging from increased enrolment in schools and reduction in cases of absenteeism to improved skill development which greatly impact performance. He suggests that moving forward water sources for schools should be separated from communities' since allowing communities to access water from schools sometimes led to conflicts and at times vandalism of school water projects.	The project has connected water supply service to Kangakimak primary school alongside providing separate community access points (water kiosks) within the settlements.

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No	Name	Designation	Organization	Interests, Concerns, Suggestions	Issue Redress in the Project Planning
	James Obewa	Children's Officer	County Government of Turkana	The respondent is aware of the proposed project. He reports to greatly support it and expects to witness an increase in child safeguarding since they will no longer have to travel long distances to collect water thereby exposing themselves to the risk of being abused or miss attending school, giving them a chance of improved livelihoods and a sense of wellbeing. He recommends the project adheres to stipulated policies and laws on child protection to ensure smooth implementation of the project till completion.	The project has adopted both national and WB guidelines on issues relating to children safeguarding.
	Eliud Ebenyo	County Coordinator	County Government of Turkana	The respondent is aware of the proposed project. He envisions a significant decrease in cases of early marriages, which he associates with the practice of young girls being lured into marriage while on their way to collect water. He further expects the project to minimize challenges faced by girls and women who	As designed, the project will have the domestic water access points within the settlements. The water kiosks and toilet blocks are PWDs friendly.

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No	Name	Designation	Organization	Interests, Concerns, Suggestions	Issue Redress in the Project Planning
				are often tasked with the responsibility of walking long distance to collect water. He recommends inclusivity in the designs to ensure the water points are user friendly to PWDs and other vulnerable groups in the community.	
	Alfred Emanman	Director Preventive and Promotive Health	County Government of Turkana	Respondent is aware of the proposed project and supports it. He anticipates a general improvement in the health and wellbeing of community members, especially children below 5 years of age who are at the risk of acquiring rampant water borne disease prevalent in underserved areas. Recommends continuous engagement to help monitor project impact on health.	The project will maintain regular water quality monitoring to ensure that communities access safe water.
	Amos Abong	Labour Officer	County Government of Turkana	Respondent has information about the project. Supports its implementation since it is bound to create employment. Recommends collaboration between the project and labour office to streamline labour management.	The project will be implemented inline with the national and World Bank requirements on labour and working conditions.

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No	Name	Designation	Organization	Interests, Concerns, Suggestions	Issue Redress in the Project Planning
				In addition, the officer recommends adherence to labour laws for smooth operations in the project.	

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5.4.2 Initial Community Meetings.

During the project screening phase, a community meeting was held on April 5, 2024 (minutes attached as Appendix X. The meeting had community members and regular water users. In this meeting, the community actively participated in conceptualizing the project design and expressed their full support for the project, including the voluntary ceding of community land for its development.

Further, the community requested for separate water access points for human and livestock, borehole area protection to prevent destruction by flood water, as well as fencing off of borehole area and securing of solar facility. All these have been considered in the project design by provision of separate domestic and livestock access points, solarization of the scheme, fencing of the project infrastructure and protection works.

The community, through their duly selected representatives, signed a land consent form. Consequently, the process of transferring the land from the community to the project—through the issuance of a title deed—is currently underway. Minutes of meeting, the land consent form and attendance lists is provided in Appendix X.

5.4.3 ESIA Public *baraza* discussions with the community

The mobilization was done through the chief's office which included issuing public notices Also, the chief used other means such as calls and word of mouth at random. Details of Minutes of Meetings and attendance list is placed at **Appendix- IV**. The meeting was held on 11th December 2024 at Kangakimak. The meeting was attended by 58 male 23 female community members.

Table 28 Baraza Discussions

No	Issues/comments raised	Responses	Incorporation to Design
1	The community appreciated the project designs; differentiated access for domestic and livestock, storage tanks and conveyance of water to the settlements		
	Concern over the neighbouring villages access to water and potential pressure it may bring.	The project will now focus at Kangakimak settlement at this phase and water sector stakeholders will consider extensions and new projects for neighbouring villages and communities.	The design has sited the water kiosks suitably (central and periphery), long and adequate livestock troughs, storage tanks and hybrid energy systems to enable adequate production of water. Refer to Chapter 2.
2.	Pipeline villages and communities to the main reservoirs	Those along the pipelines to the main reservoirs and along the distribution lines will be served.	The siting of water kiosk ensured service to the pipeline communities.
	Project CSR activities	CSR will be dependent on the implementing entity (contractor). The project will develop a CSR policy to guide the willing contractors to implement initiatives in the	HoAGWP will develop a CSR policy to guide the contractor.

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No	Issues/comments raised	Responses	Incorporation to Design
		community that are based on community needs.	
	Siting of water kiosks and access points	The projects water access points will be sited based on the optimal accessibility points for the users.	The siting of the water kiosks took into consideration the travel time, targeting less than 10 minutes by all residents.
3	Adherence to laws, regulations and procedures	The consultant assured the community that all the project stakeholders are very particular in adherence of all the laws, regulations and procedures to ensure that the project is complaint and sustainable.	Project aligned to national and financier's requirements as provided for in Chapter 3
4	Involve community members in selecting sites for construction of additional animals watering troughs and water kiosks to avoid conflict over ownership of land where the utility is located.	Engagement with the community will be done to ensure that piping is done with no interference to people's property.	Water kiosks and livestock trough's locations discussed during the ESIA public meetings.

5.5 Group Discussions with the community

This summarizes key findings of the group discussion held on 11th December, 2024 at Kangakimak. The group discussion comprised of 10 members of the community that were selected using the following criteria and gender balance: -

Table 29 Group Discussion Membership selection criteria

Group Represented	No.
Male	1
Female	1
Youth	1
PLWD	1
Religious	2
PBO	1

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Administration	1
Minority ethnic group	1
Education	1
Total	**10**

The Group Discussion attendance list is attached as Appendix VI.

5.5.1 Methodology

The ESIA team conducted Group Discussion to gather project impacts in-depth and prioritize mitigation measures from community. 10 participants (5M,5F) gathered in the same forum to address questions designed to assess the status of water supply in the area.

In Turkana County generally, roles and extent of engagement in decision making vary. The result of a survey conducted by the ESIA team observed inclusivity (participation of different interest groups) in the water management committees. Majority of the community members believe the committees are inclusive 70%.

To ensure women had an opportunity to contribute in the group discussions, the participants were subsequently divided into separate groups of men and women.



Figure 27: Kangakimak Group Discussion

5.5.2 Key findings

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The main findings from data generated by the focus group discussions are summarized below. The consultation brought about valuable information also in terms of current water supply situation in the area.

- ✓ The communities are aware and understand the proposed HoAGWRP objectives and scope from previous consultative engagements by the PIU and SPUS at project selection and environmental screening phases;
- ✓ Women and youth are represented in current community water committee, ensuring that their concerns and needs are taken into account in water management decisions.
- ✓ The water supplied is perceived as good in quality (subsequent water quality tests have confirmed) but low in quantity;
- ✓ No WSP operates in the area, currently the water supply is managed by a community committee in the area;
- ✓ Average time taken to collect water per household per day is up to 3 hours;
- ✓ Major use of water is for domestic and livestock watering;
- ✓ Main livelihood in the area is crop production along Turkwel River under irrigation and livestock;
- ✓ It is the responsibility of women and girls to decide where to source and collect water;
- ✓ Households do not treat drinking water;
- ✓ Major waterborne/related diseases in the area include diarrhea, typhoid, resulting from drinking contaminated water and scabies resulting from poor personal hygiene due to lack of access to clean water;
- ✓ Guaranteed with supply of quality water, households are willing to pay about KShs. 100 per month;
- ✓ There are very few pit latrines used by locals for excreta disposal.
- ✓ Community priority is to increase water kiosks;
- ✓ The communities expressed satisfaction of the security levels at the water draw off points. There was a consensus that separation of watering points and its proximity to settlement will enhance security and eliminate SGBV risks.
- ✓ Major expectation for the project is ability to increase water quantity; reduced congestion at water points by providing several water kiosks; reduced distance covered and time taken to get water.
- ✓ Grievance Resolution and Conflict Management, the community acknowledged presence of the GRC in the community.

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Figure 28: Public baraza at Kangakimak Baraza Park

5.6 ESIA Disclosure

The community was involved in conceptualizing the water schemes during initial consultations, which informed the preliminary designs and ESIA studies. The ESIA disclosure presented findings, addressed concerns from earlier consultations, shared the final (revised) designs after cost appraisal, outlined land requirements, and explained the O&M plan in line with legal, regulatory, and World Bank standards. The revised scope was disclosed on June 27, 2025, with the community

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appreciating the adjustments. Stakeholders were mobilized through chiefs, ward administrators, schools, mosques, and churches to ensure broad participation. At the centrally located meeting, community members—encouraged to speak in their language—raised concerns about gender equality, timelines, environmental impacts, health risks (including HIV/AIDS and SEAH), and local employment. The project committed to equal job opportunities, reforestation, prevention plans for social risks, and employment for locals. Key milestones identified included obtaining the WRA permit and ESIA license, land transfer, contract award, construction, and commissioning, with detailed minutes attached in Appendix XII. Below is a summary of project ESIA Disclosure.

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Name of the Scheme: Kangakimak WSS Project
Sub-County: Turkana South
County: Turkana
Date: 27th June 2025
Venue: Kangakimak Village
Time: 08:30 AM

Table 30 Summary of ESIA Disclosure Meeting

#	Name of Participant	Question/Comment	Response	Reference to the CPR
1.	Mercy Asinyen	Insisted that the project to give women equal job opportunities and protection	Both men and women will be given equal opportunities. Discrimination will not be tolerated.	Section 3.5.12 - The National Gender and Equality Act, 2011;
2.	Sarah Ekutan	Is it possible to increase the number of Kiosks as in her opinion, they are few compared to the number of villages they serve.	The water supply scheme has already been designed and is ready for implementation. Increase in Kiosks might be considered during future expansions.	Section 2.2 - Proposed Project Kangakimak Water Supply Scheme)
3.	Esther Ekaru	There have been many visits to the community but the project has not begun. When is it starting?	The bidding process has already commenced. It is anticipated that the construction will be begin in October.	-
4.	Simon Lokwameri	Removing of vegetation or trees is not environmentally sound. The contractor should find another way so as to protect the environment.	Availability of water increases successful tree planting on degraded land.	Section 7.5.6 - Impact on Flora (Natural Vegetation)
5.	Peter Apaya	Most contractor workers mingle with the locals including women and children thereby exacerbating the issue of HIV/AIDS and unwanted pregnancies.	There are SEAH prevention plans that will be developed and implemented, continuous sensitization and regular monitoring will be ensured.	Section 7.5.15 - Sexual Exploitation Abuse and Harassment (SEAH); Section 7.5.16 - Risk of

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				Spreading of HIV/AIDS;
4.	James Ekidor	How long will the project take?	It is estimated that the construction will take approximately 1 year to complete.	-
5.	Imuse Ikite	Will the communities be allowed to work/participate in the project.	One of the benefits of the project to the community is availability of employment opportunities.	Section 7.4 - Positive Impacts of the Proposed Project.



Figure 29: Public forum during ESIA disclosure

Chapter 6 Project Alternatives

This chapter seeks to identify project alternatives that can help achieve the desired objectives of the Project while at the same time causing minimal damage to the environment and the natural resource base. Other considerations include project sustainability in terms of management capabilities and technology used. The purpose of including alternative in the ESIA is to identify and evaluate alternative actions that accomplish similar goals and promote sustainability development.

Alternatives may include both design and location options. Allowing new alternatives and objectives to evolve in relation to environmental conditions and public preferences may be a solution to most of the environmental and socio-economic problems associated with the implementation of new projects.

An important alternative to be analysed always is the "no project". This is a very important analysis because it helps the proponents measure the impacts from the project against those which would have taken place without the project.

6.1 Project Location

The borehole is located in Kanaodon location, Kangakimak settlement and it is currently functional. Water quality assessment and test pumping analysis have been undertaken confirming the borehole yields and whose water is fit for human and animal consumption.

6.2 Alternative Pipeline Routes

The proposed pipelines routes for conveyance and distribution will be a long road reserves and existing community paths within the Kangakimak settlement which are to earth conditions. Alternative siting will involve rerouting the water pipeline network to other sites other than along road networks. This will be very costly for the proponent as it will require them to search and negotiate for land. It also does not make any economic sense not to take advantage of the land available along road networks clearly demarcated for such projects.

6.3 Alternative Sources of Water

Alternative water source is from the rainwater harvesting which is not reliable due to inadequate rainfall in the area. Residents have no storage facilities, and most houses are manyattas. Turkwel River water is not fit for domestic use and far away from the settlements. These options are not viable.

6.4 Alternative Pipeline Material

Materials commonly used to construct water pipes include polyvinyl chloride (uPVC), cast iron, copper, steel and in older systems concrete or fired clay. Joining individual water pipe lengths to make up extended runs is possible with flange, nipple, compression or soldered joints. The project will use High-density polyethylene (HDPE) is a thermoplastic polymer produced from the monomer ethylene with a high strength-to-density ratio, HDPE is used in the production of corrosion-resistant piping.

6.5 'No Project' Alternative

The no-action alternative is often defined by the baseline information and is crucial in the assessment of impact because other alternatives are weighed with reference to it. This alternative would mean that the project does not proceed. Without the project, the environmental situation will neither improve, nor can we say that it will necessarily deteriorate. Development of the project on the other hand will improve water provision to the communities living in Kangakimak

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settlement in Turkana East Sub-County. The no-project option will however lead to the following (general) major negative and long-term impacts:

i. The targeted populations (for water provision) will continue to use the existing water supply sources which is far from access and inadequate with poor management on its operation;
ii. Stagnating growth in Kangakimak settlement and Turkana County in general;
iii. Daily ferrying of water from other sources will be cumbersome and this will lead to great losses and inefficiencies;
iv. Exposure of communities to SGBV risks;
v. Poor health conditions in the communities; and
vi. There will be loss of productivity and reduced ability to create wealth.

The *No Project alternative* is therefore not a viable alternative as the proposed water supply project will relieve the people of water problem. If this is applied then the shortage of water in the area will persist.

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Chapter 7 Potential Environmental & Social Impacts and Mitigation Measures

This chapter describes possible impacts during construction, operation and decommissioning phases as well as corresponding mitigation measures to minimize the negative impacts of the proposed project. The identified impacts/risks are further analyzed and evaluated based on the nature of impacts in terms of their occurrence, extent, duration, probability and intensity apart from the stakeholders and/or values affected.

7.1 Methodology for Impact Assessment

Environmental assessment was carried out to identify potential impacts of the project on the biophysical and social environment. The assessment was carried out in three main steps, as follows:

- Prediction of potential impacts; and
- Identification/ proposing mitigation measures for minimizing the effects of the significant impacts.

After exclusion of the negligible impacts, the remaining aspects were assessed based on the following criteria:

i. Magnitude of the impact;

ii. Duration: period of time that impact lasts;

iii. Mitigation measures; its availability whether integrated in the project design or implemented as management measures; and

iv. Residual impacts.

Where negative environmental impacts are expected, majority of them will be experienced during the construction phase. To help offset the potential negative impacts, mitigation measures are suggested and the residual impact evaluated.

7.2 Identification of Project Impacts

The identification of project impacts was by subjecting the project activities to a process of screening. This was an iterative process that comes to an end only when the effects of all the identified impacts generated by the project, including residual impacts have been assessed and assigned a mitigation strategy. The process involved the following steps:

i. Impact Prediction and evaluation;

ii. Mitigation and Enhancement; and

iii. Residual Impact Evaluation.

7.3 Categorization of Impacts

The key issues identified during the assessment were evaluated using various components that individually or in combination with others give rise to impacts that require mitigation measures and monitoring. The significance of the potential impacts has been considered before and after mitigation measures have been applied. The following criteria was used to evaluate the significance of project impacts to the physical environment and the communities.

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Table 31: Categorization of Impacts

No	Impact	Criteria	Classification
1	Impact Nature	An assessment of the type of effect the activity is likely to have on the surrounding project's environment	***Positive*** *– Affecting the environment positively*
			Negative *– Affecting the environment negatively*
			Neutral *– No effect on the environment*
2	Impact Type	Evaluation of how the impact will affect the project's environment	***Direct*** *– Impacts will be generated directly from project activities*
			*I**ndirect –** Impact generated from secondary sources*
3	Impact Severity	This defines the degree to which the project affects the environment	***Insignificant****– Potential impacts are minor. The natural environment is not affected by the project*
			Low *– There is minimal effect on the natural environment. The social, cultural and natural, cultural and social functions and processes can be reversed to their original state if mitigation measures are applied*
			Medium *– Environment is Impacted but can still function. Negative impacts can only be partially reversed*
			High *– Environmental, Cultural and social functions and processes are impacted and cannot be fully reversed*
			Very High *- Environmental, Cultural and social functions and processes are permanently Impacted and cannot be reversed*
4	Impact Duration	The period of time that the impact lasts on the environment	***Short Term*** *– The potential impacts only last for a short time - the period of construction or less.*
			Medium – Term *– The potential impacts last for approximately 10 years or half the lifetime of the project*
			Long – Term *–potential impacts can last for complete life cycle of the project*
			Permanent But Mitigated - *Impact will remain after operational life of project but appropriate mitigation measures have been used to reduce the impacts*
			Permanent But Not Mitigated - *Impact will remain after an operational life of the project. No mitigation measures will reduce impact after implementation*

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No	Impact	Criteria	Classification
5	Impact Extent	Defines the spatial or geographical extent that may be affected by the project or associated facilities	***Project Site*** *– Within the project boundary*
			Local *– Impacts extend beyond the project site*
			Regional *– Impacts extend beyond the administrative area*
			National *– Impacts are considered nationally*
			Transboundary *– impacts are considered beyond the nation's boundary*
6	Likelihood of Occurrence	Defines the chances that the impact will take place	***Unlikely*** *– No chance that impact will occur*
			Likely *– There is a good chance that the impact will occur*
			Certain *– The impact will occur whether mitigation measures are implemented or not*
7	Impact Significance	The significance will be rated by combining the consequence of the impact and the probability of occurrence	***Negligible – No Action required***
			Low *– The impacts are within the acceptable range*
			Medium-Low *- Impacts are within the acceptable range but should be mitigated to lower significance levels wherever possible*
			Medium-High *- Impacts are significant and require attention*
			High *- Impacts are of great importance, mitigation is crucial*
			Very High *– Impacts are very significant. Potential impacts such as loss of a significant portion of a valued species or loss of effective ecosystem function*

7.4 Positive Impacts of the Proposed Project

The implementation of the proposed project is anticipated to have overall positive impacts particularly on health and sanitation as well as the economic status of the residents within the area of interest. Some of the positive impacts are:-

7.4.1 Improved Livelihoods

During construction of the proposed Project, there will be employment opportunities for both skilled and unskilled workers. Workers including casual labourers, plumbers and engineers are expected to work on the project during the construction period. The project anticipates to create 20 skilled and 50 non-skilled job opportunities. During operations, reduced time spent to fetch water will translate to increased time of household members engaging in economic activities that will lead to improved incomes. Kangakimak market centre within the project area will experience growth due to the availability of reliable water for domestic, livestock and business uses.

Impact	Improved Household Incomes
Impact Nature	Positive

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Impact Type	Direct
Impact Severity	High
Impact Duration	Long Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	High

7.4.2 Increased Access to Clean Water and Improved Sanitation

Improved access to clean water by the local population shall impact on personal and food hygiene and decline in cases of water-borne diseases. Complementary community sensitization on use of latrines will compliment hygiene situations in the PA.

Impact	**Increased Access to Clean Water and Improved Sanitation**
Impact Nature	Positive
Impact Type	Direct
Impact Severity	High
Impact Duration	Long Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	High

7.4.3 Increased WSP Revenues and Project Sustainability

Improved project's operational efficiency will lead to improved revenues for the WSP (TURWASCO) and consequently enhance the WSP capacity to operate and maintain the system. As designed, the system optimization of the water production and supply systems will improve the Kangakimak WSS service reliability.

Impact	**Increased WSP Revenues and Project Sustainability**
Impact Nature	Positive
Impact Type	Direct
Impact Severity	High
Impact Duration	Long Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	High

7.4.4 Drought Resilience

The project area is within ASAL; therefore, surface water isn't reliable and often, communities experience extreme droughts. Kangakimak borehole will tap into groundwater, which is more reliable source of water than surface water.

Impact	**Drought Resilience**
Impact Nature	Positive
Impact Type	Direct
Impact Severity	High
Impact Duration	Long Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	High

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7.5 Negative Impacts During Construction

7.5.1 Land Take

Physical and economic displacement, if unmitigated, may give rise to:-

i. severe economic, social, and environmental risks.
ii. Impoverishment through loss of livelihoods.
iii. Loss of cultural identity, traditional authority.

Impact	**Soil erosion**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Low
Impact Duration	Short Term
Impact Extent	Project Site
Likelihood of Occurrence	Low
Impact Significance	Low

The estimated land requirement for the water supply infrastructure, excluding pipelines, is 8,540 m2 (2.11 acres) for the construction of the administration and guard house buildings, generator room, pump house, water storage tank, sanitation facilities, solar panels support structure (PV Plant, and access roads. The land on which the infrastructure is proposed is communally owned, and unencumbered. However, a formal land transfer process is required, to transfer the earmarked land to public purpose under the trust of the Turkana County Government.

The land acquisition process for access to unregistered community land (as anchored in Community Land Act, 2016):-

i. Due Diligence (Section 8, CLA): Carry out background checks to determine the land's status, including its boundaries, existing use, customary tenure arrangements, and whether the community has initiated registration under the Act.
ii. Government Engagement (Sections 6, 7 & 8, CLA): Engage both the National Land Commission (NLC) and County Government since, under Section 6, county governments hold unregistered community land in trust on behalf of communities. Structured consultations should involve political leadership and relevant administrative officers at the local level.
iii. Community Consultations & FPIC (Sections 8, 15 & 21, CLA): Engage community structures—traditional leaders, elders, women representatives, youth, CBOs, and FBOs—in open and inclusive consultations. The Act emphasizes community participation and free, prior, and informed consent (FPIC) before any transaction or allocation.
iv. Benefit Sharing (Sections 36 & 37, CLA): Define clear, equitable, and transparent benefit-sharing arrangements for any investment or partnership. The CLA requires that benefits derived from community land accrue to the entire community, not just individuals or elites.
v. Community Consent (Section 8(4), CLA): Obtain written consent from the community through a prescribed community resolution/consent form. This aligns with the Act's requirement that decisions relating to community land use and allocation must be by a majority of registered adult members of the community.

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vi. Approval & Documentation (Sections 15, 30 & 37, CLA): Any agreement (investment, MoU, or partnership) must be approved in a community assembly or through the community land management committee (once registered). Approval should be by a majority of community members, with decisions recorded in minutes, filed with the county government, and, where relevant, registered with the NLC.

Mitigation Measures

The following are the proposed measures to ensure risks of land take are adequately mitigated:

- The Project will align water pipelines along public roads and spaces to avoid any physical and/or economic displacement as much as possible, or infringement on the land rights holders
- Community consultations will be held on siting of the proposed livestock troughs and water kiosks.
- Where additional land for the project is required, the following processes and activities will be undertaken:
  - ~ Clarify the legal status of land rights holders;
  - ~ Engage with local authorities and traditional institutions to ensure customary rights are documented and recognized in project planning;
  - ~ Adopt FPIC from both the community and individuals with land claims;
  - ~ Engage both community leaders and individual land users and address expectations and grievances proactively;
  - ~ Develop and formalize access and use agreements between WSTF and the land rights holders (both communal and individual);
  - ~ Provide community-level benefits for communal compensation, and land-for-land, cash compensation at replacement cost, or livelihood support for those with use rights or structures;
  - ~ Establish a GRM that includes customary and formal pathways, with trusted community representatives and accessible procedures

7.5.2 Soil Erosion

The activities involved in the construction phase of the project will have a medium low - impact on soil. This is due to the change of soil structure due to vegetation clearance, and excavation during pipeline layout which will leave considerable areas of soil exposed to the elements, which may result in soil erosion. Soil erosion and land degradation will likely occur with the machinery and human presence on the project site as vehicles move in carrying equipment and machinery for purposes of rehabilitation, equipping and operation of the Kangakimak Water Supply Scheme. This heavy presence will result in soil compaction and/or loss of the soil structure resulting in degradation.

After utilizing the excavated sections, earth material for backfilling any surplus should be properly managed to minimize impact on the surrounding environment. Soil erosion will be a concern particularly at the borehole site which is on a gentle slope, the contractor shall require to take additional measures to prevent soil erosion.

Impact	**Soil erosion**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Project Site

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Likelihood of Occurrence	Low
Impact Significance	Medium Low

Mitigation Measures:

- Expose short sections of 200M, excavate, lay and backfill before opening new section.
- Excavation along or across seasonal streams to be avoided in rainy days;
- Soil excavated for pipeline should be utilized for backfilling and the remaining soil being spread evenly and compacted;
- Top soil removed during the development of contractor's camp sites and offices are appropriately stockpiled for restoration of exposed surfaces.
- Clear only the construction width;
- Reduce unnecessary traffic moving about in in the project sites and clearly delineate site access routes;
- Re-vegetate cleared areas as early as possible using native plant species;
- Avoid as far as possible the traversing of bare soil by vehicles to reduce soil compaction;

7.5.3 Waste disposal

The construction activities: site preparation, clearance, excavation works, servicing and repair of machinery & vehicles, equipping of borehole site, installation of watering points and kiosks will generate solid and liquid waste. At the end of construction, the demobilisation will also generate significant waste from demolishing laydown areas, other construction wastes and removal of drilling machinery. The wastes range from general to hazardous categories. This impact is short term. However, the disposal mechanism of the wastes can have long term consequences. Solid waste like packing materials, pipes, cables, sand, aggregate material, and steel generated during construction will be carefully handled and removed from the sites periodically to avoid any contamination. Also, the system helps in avoiding accidents through contamination, spills and fire.

The above wastes include the following:

Domestic waste – Waste food, food wrappings, cans, bottles and other spoilt containers. Sanitation wastewater.

Construction wastes – Packaging waste, waste oil from machinery and vehicles, scrap metals, construction debris, disused parts.

Hazardous Chemical wastes- depleted batteries, old solar panels, fuel, oil & lubricants.

Receptors

The improper handling of domestic solid waste that includes papers and food wrappings may lead to them littering the site compound and being blown away to neighbouring areas. The other domestic solid wastes may litter the site compound and make it unhealthy for workers. Waste from construction activities if not well handled may pose health and safety risk to workers and other persons visiting the site.

The sanitation facilities at the site must be made to work properly. Sanitation waste can also overflow and cause health risks to workers and the community.

Impact	**Waste Disposal**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Low

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Impact Duration	Short Term
Impact Extent	Project Site
Likelihood of Occurrence	Medium
Impact Significance	Medium Low

Mitigation measures

- Obtain NEMA licenses for contractors' facilities (camps, sub camps and material yards).
- Develop and implement a waste management plan operationalizing the proposed mitigation measures.
- Waste generated at the site should be segregated by the contractor and disposed of in recommended manner. Wherever possible recycling should be carried out.
- Providing waste collection bins at designated points on site for purposes of waste segregation;
- Training and awareness creation on safe waste disposal in construction sites and camps for all workers;
- All solid waste should be collected at a central location at each site, held temporarily until removal by a licensed waste handler to an appropriately permitted disposal site.
- Disposal of hazardous wastes, a chain of custody document should be kept with the environmental register as proof of final disposal.
- Reducing material residual wastes through accurate estimation of size and quantity;
- Recycle and re-use of construction materials.
- Use of durable long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time.
- Spent or waste oil from vehicles and equipment should be collected and temporarily stored in drums or containers at secured locations on site.
- Ensure the construction camps have adequate toilets for the number of workers on site.

7.5.4 Air Pollution

a) Gaseous Emissions

Emissions associated with combustion of fuel from the borehole redevelopment equipment and vehicles. Similar to other combustion processes, emissions from vehicles include CO, NOx, SO_2, and volatile organic compounds (VOCs). Emissions from the construction vehicles should comply with both national and international standards.

Mitigation measures

- Regardless of the size or type of vehicle, operators should implement the manufacturer recommended engine maintenance plans.
- Regular vehicle maintenance.
- Use of low sulphur and lead fuel and lubricants.
- Machines must not be left idling for unnecessary periods of time; this will save fuel and reduce emissions.

b) Particulate Matter/ dust

The most common pollutant involved in fugitive emissions is dust or Particulate Matter (PM). This will be released during excavations, movement of vehicles as well as materials delivery. Also, open storage of solid and dry materials such as sand, cement, gravel, will generate dust. The project sites are accessed by gravel and earth roads, the pipeline route will be along the road reserves which may generate dust.

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Impact	Air pollution Impacts from Construction Activities
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Medium
Impact Significance	Medium

Mitigation measures

- Use of dust control methods, such as soil covers, or increased moisture content for open materials storage piles.
- Develop a traffic management plan with a guide on operating speeds in the wider project area.
- Install and properly maintain exhaust emission control devices, such as diesel particulate filters (DPF) and selective catalytic reduction (SCR) systems, on diesel-powered machinery to minimize emissions of particulate matter and nitrogen oxides.
- All raw materials must be sourced as close as possible to the construction site thus reducing the emissions from vehicular traffic.
- Exposed soils should be compacted for prevention of dust.

7.5.5 Impacts on Fauna

During construction of the project, there will be localised disturbance of fauna especially during, excavations for pipeline and construction of watering points and construction of the water kiosks. The pipeline routes may affect vegetation along the road sections.

Impact	Impact on Fauna
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Low
Impact Duration	Long Term
Impact Extent	Project site
Likelihood of Occurrence	Low
Impact Significance	Low

Mitigation Measures

The mitigation measures to minimise the potential impacts on fauna include:

- No killing of any wildlife escaping/fleeing to other areas during vegetation clearing process.
- Limit vegetation clearance to the construction width.
- Re-vegetate cleared areas as early as possible using native plant species.
- Restrict construction works within the approved extent of the site and avoid unnecessary disturbance of vegetation and soil.

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7.5.6 Impact on Flora (Natural Vegetation)

The vegetation at boreholes site and along the pipeline route is dominated by sparsely distributed indigenous tree species. No threatened species was observed in the area. During project implementation, there will be clearing of vegetation for the pipelines which will have a construction width of 3m and pipeline laying depth of over 900mm. This may lead to removal or disturbance of vegetation.

Impact	**Impact on Flora**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Low
Impact Duration	Long Term
Impact Extent	Project site
Likelihood of Occurrence	Low
Impact Significance	Low

Mitigation Measures

- Clearly demarcate construction zones to restrict vegetation clearance to only those areas essential for the pipeline installation.
- Implement selective clearing to avoid the unnecessary removal of significant or mature vegetation.
- Replant native vegetation in disturbed areas immediately after construction.

7.5.7 Noise

Vehicles and heavy machinery movement to and from site will result in increased noise, cause disturbance to the community and occupational hazard to the project workers.

Site preparation for the water kiosks and watering points during construction phases may have negative impact to the ambient noise and vibration in the project area especially the manyattas about 100M away from the borehole site. The cumulative impact of the construction activities occurring simultaneously may increase the noise levels in the area significantly.

Impact	**Noise and vibration from Construction Activities**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Low
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Low
Impact Significance	Low

Mitigation Measures

- Construction hours should be limited to the hours of 8:00 a.m. and 6:00 p.m.
- Construction activities should be undertaken through the use of small mechanical devices and manual labour, as much as practically possible.
- Ensure that construction activities for the project are staggered to decrease the levels of noise and vibration in the area.
- Where possible silenced machinery and instruments should be employed to reduce the impact of noise on the existing residents and workers.

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- Construction traffic speed control measures should be enforced on unpaved roads.
- Engines of vehicles/trucks and earthmoving equipment should be switched off when not in use.

7.5.8 Pollution

The impacts will be related to the rehabilitation of the borehole components. If the impacts occur, they would be caused by:

- oil spills resulting from fueling or maintenance activities of construction machines or poorly maintained construction machines,
- sediment runoff from borehole site works or route clearing,
- disturbance of vegetation.

The magnitude of this impact is likely to be low considering the water bodies are far from site.

Impact	**Impacts on soil and Surface water from Construction Activities**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Long Term
Impact Extent	Local
Potential for Irreplaceable loss of resource	Medium
Impact Significance	Medium High

Mitigation Measures

- Set up measures for spill prevention and control measures to prevent seeping of contaminants into the natural environment i.e., designated concrete impervious areas for repairs, refueling and oiling.
- Products such as lubricants and oils should also be well labelled and stored appropriately at their designated storage areas with bund walls.
- Prepare and display on site spill response procedures and train all the workers on response management.
- Inspect all machinery and vehicles onsite to ensure no hydraulic fluid or fuel leaks.
- Maintain spill response kits at the hazardous materials storage areas.
- Ensure that no sanitary or waste water is discharged to the environment and ensure compliance with the legislation on waste water treatment before discharge.

7.5.9 Community Disruption

The entire project pipelines will be along road reserves with two minor road crossings. The project area roads will be affected by either the pipeline crossings or encroachment of the Right of Way by the construction equipment and materials.

Access to the homes will be affected because the project will be aligned along the road which is used by the residents to access their homes. The excavation works to depths of 900mm for the laying of pipeline will interfere temporarily with accesses hence, inconveniencing the users.

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Impact	Disturbance of Traffic or blockage of access
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Low
Impact Significance	Medium Low

Mitigation measures

- Implement the stakeholder engagement plan to ensure timely project information sharing with the community and stakeholders.
- Continuous community engagement and prior information disclosure.
- Prioritize backfilling at road crossings, home and businesses accesses.
- Hoard and provide safety signs on road crossings.
- Provide diversions or temporary passages where roads are closed due to works.
- Expedite construction works so as to reduce the times where roads are blocked.
- Alternatives access ways should be communicated to the community.
- Provide temporary accesses to business and homes on excavated sections.

7.5.10 Labour Conflicts and Forced Labour

During construction, labor unrests can lead to disruption of business operations, bringing critical projects to a halt and resulting in delayed schedules and reputational damages. Labor management procedures refer to the Rules and Policies which govern and organize employment. The Labor Management Procedures are intended to support the project to achieve the following;

1. Increased production.
2. Reduced turnover.
3. Enable managers and supervisors to forecast workforce requirements.
4. Track productivity.
5. Provide essential training and coaching for employees not meeting their goals.
6. Ensure operations are running smoothly.
7. Provide for recruitment of workers separate between skilled and non-skilled workers
8. Implement the workers grievances procedures as provided in the project Grievance Mechanism
9. Recruit and maintain women in the workforce

Impact	Labour conflicts and labour influx
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation Measures

- Implement labour management procedures.

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- Developing criteria (skills and qualifications) for all positions due for recruitment.
- Documenting relevant worker information including terms of employment.
- Ensure equal opportunity and fair treatment during recruitment.
- Protection of workers legal right to form unions or other workers organizations of their own choosing and to bargain collectively with their employers.
- No employment of underage persons (under 18 years).
- Implement the workers grievance mechanism for all direct workers and contracted workers.
- Compliance to labour relations practices as provided for by Kenya legislations and International Labour Organisation;
- Advertising at the local villages and markets for any position that needs to be filled; and
- Disclosure of labour forecasts and labour returns to the community members periodically.
- Sub-contractor requirement to submit a past forced labour performance declaration, and a declaration of ongoing Bidder commitment to prevent, monitor and report on any forced labour.
- Include in contracts with subcontractors/ suppliers/ manufacturers of materials (pipes, fittings, solar panels and equipment) obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by the Subcontractor/ supplier/ manufacturer.
- The Contractor, including its Subcontractors/ suppliers/ manufacturers, shall not employ or engage forced labour. Forced labour consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements

7.5.11 Labour Influx

The influx of migrant workers may increase incidences of communicable diseases, conflict, insecurity, theft, SGBV and increased pressure on social amenities. Non-local people hired directly by the project or main contractors may lead to direct labour influx. Non-local people who come to the area seeking association with the project workforce, including workers' families, speculative job seekers, or those involved in related businesses. This movements may lead to increased demand and competition for water, electricity, housing, and other local services, such as social and health services such as increased spread of communicable diseases, and increased drug and alcohol use, violence, rates of illicit behaviour and crime.

Impact	**Occupational health and safety risks**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation Measures.

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- Implement the project labour influx management plan.
- Prioritize local labour force.
- Regular community engagements.
- Regular community and project workers training, awareness and sensitization on HIV/AIDS.
- Clear and culturally sensitive GM and SEAH/GBV procedures at the project site.
- Contractors provide adequate welfare amenities for their staff including accommodation and supplies.
- Provision of opportunities for workers to regularly return to their families through long weekends on paydays.
- Ensuring that children and minors are not employed directly or indirectly on the project.
- Water conservation and recycling of water.
- Use of wood for fuel prohibited.
- All project workers to be trained on SEAH and sign the Code of Ethical Conduct (CoC).

7.5.12 Occupational Health and Safety Risks

Use of machinery during construction which include backhoe excavator, water bowser, tipper truck, double cab pick-up, poker vibrator, concrete mixer, dewatering pump, pressure testing kit, and plate compactor presents safety hazards to the workers and the community. The sources of impact on the health and safety of project workers will arise from the following construction activities:

- Site clearing activities.
- Excavation works up to depths of 900mm and ground levelling.
- Working at trenches and excavated areas.
- Use of heavy machinery.
- Construction noise.

Arising from the above-mentioned activities that will take place during construction, the workers and other personnel at the project will be exposed to impacts as follows:

- Injuries associated with operation of machinery.
- Injuries arising from loading, unloading and lifting heavy materials.
- Health impacts arising from being exposed to fugitive dust and exhaust emissions.
- Potential injury from falls into the 900mm deep excavation.
- Impacts from exposure to excessive noise.
- Injury from slips and fall.
- Overexertion injuries/illnesses.
- Injury from project vehicle accidents.

Impact	**Occupational health and safety risks**
Impact Nature	Negative

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Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation Measures:

- Develop a health and safety management plan.
- Ensure compliance to OSHA 2007.
- Undertake safety risk assessments before commencement of works.
- Environment, health, safety and security induction of all project personnel.
- Matching personnel, tasks and competencies.
- Workers to be provided with appropriate/risk-based PPEs.
- Appropriate safety signs provided suitably.
- First aid kits should be provided and trained first aiders should always be on site.
- Provide appropriate fire suppression equipment's on site.
- Proper scheduling of activities to avoid workers being overworked.
- Machines/equipment for the intended purpose.
- Zero tolerance to alcohol and drugs at work places.
- Regular training of project workers on OHS aspects.
- Documentation and reporting of occupational accidents, diseases and incidents.
- Develop and implement an emergency prevention, preparedness and response plan.
- Provide conveniently accessible, clean, orderly, adequate and suitable welfare facilities within the site.

According to World bank standards on Labour and Working Conditions and Community Health, Safety, and Security, the mitigation measures and actions proposed are summarized in table below.

Issue	**Mitigation measure/Action to be implemented**
Working Conditions and Management of Worker Relationship	Develop a policy for working conditions and management of worker relationships. Aspect to be addressed include human resources policies and procedures, working conditions and terms of employment, workers' organisations, measures to ensure non-discrimination and equal opportunities, procedures for retrenchment grievance mechanisms.
Protecting the workforce	Provide undertaking that no child labour or forced labour practices (including trafficking) will be allowed in strict accordance with national legislation and the WB requirements
Occupational health and safety.	Ensure that the legal and WB requirements for occupational health and safety are integrated into a practical health and safety policy and procedure, that must be communicated to all staff.

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Issue	Mitigation measure/Action to be implemented
Workers engaged by third parties.	Develop a policy with associated contractual obligations to ensure that institutions that employ third party workers are compliant with WB requirements. This focus must include measures to ensure that contractors are reputable and legitimate, have realistic performance management and monitoring procedures and the associated ESMS in place. It must be ensured that contracted workers have access to a functional grievance mechanism, either one provided by the contractor, or that of the project.
Supply Chain Management	Implement policy and contractual requirements to address the risk of child and forced labour practices, effective occupational health and safety measures within the primary supply chain organisations.

7.5.13 Community Safety and Security

Refers to the potential negative effects a project might have on the safety and security of the local community, including impacts on fire safety, traffic safety, crime rates, social cohesion, access to emergency services, and overall sense of well-being, often arising from changes in population dynamics, increased traffic, or disruptions to existing social structures caused by the project development.

The Table below provides a summary of the key requirements of the ESF pertaining to community health and safety.

Issue	Mitigation measure/Action to be implemented
Community Health, and Safety	Contractor to develop a community health and safety plan. The plan must evaluate the impacts and associated risks on the affected communities during the project lifecycle and must establish preventative and control mechanisms in line with good international industry practice. Aspects to consider include infrastructure and equipment design and safety, hazardous materials management and safety, ecosystem services, and exposure of communities to a variety of diseases. Emergency preparedness and response is also a requirement for consideration. Sensitizing communities on the construction safety and health risks and providing protection including watering the roads, placing signs on dangers around the construction and barricading/limiting access to construction sites.
Security personnel	An approach for the provision of project security must be developed. This approach will assess the risk posed by security measures to those inside and outside of the project site. This approach must be guided by good international practice and the principles of proportionality. The training, of security personnel will include safety measures, working with communities, and knowledge of and adherence to the law. Whether to use private or government security sources must be assessed and the respective risks and advantages determined before selecting an approach. The activities of security personnel should be monitored and all abuses or unlawful behaviours be investigated. The Security management plan (SMP) and sector SOPs will form the mechanism for community interaction regarding the security processes.

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Impact	Community safety and security
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation Measures

- Regular stakeholder engagements to facilitate open dialogue with community leaders and residents to address concerns and incorporate feedback into project implementation including traffic management plan.
- Operationalize the grievance mechanism.
- Implement site specific construction management plans which in the event of inadequacy, could potentially pose health and safety risks and/or nuisance to surrounding communities. Such include noise, air quality, waste, and traffic management plans;
- Community awareness campaigns through training communities about project safety protocols, emergency procedures, and reporting mechanisms.
- Restrict unauthorized entry to project sites by community members as much as possible by installation of perimeter fences/hoarding around construction sites;
- Provide adequate security lighting in all project installations and sites.
- Undertake HIV/Aids awareness, training and sensitization programs.
- Accord the local people the first priority in employment.
- Employ at least two trained and qualified guards to man and guard each campsite during the day and at night.
- Install adequate CCTV cameras at the main entrance and within the campsite to monitor and secure the premises.

7.5.14 Impacts on Heritage, Monuments and other Cultural Resources

No heritage and monuments were identified within the project area during the ESIA study. However, during construction, if any treasure, archaeological artefacts are found, a chance finds procedure will be triggered.

Impact	Heritage, Monuments and other cultural resources
Impact Nature	Neutral
Impact Type	No Physical Cultural Resources present at the site hence no impact
Impact Severity	Insignificant
Impact Duration	None
Impact Extent	Project Site
Likelihood of Occurrence	Low
Impact Significance	Low

Mitigation Measures

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- ✓ Implement stakeholder engagement plan to identify, document, assess potential project impacts, and determine appropriate mitigation measures;
- ✓ Avoid disturbance to cultural heritage sites by staking out the construction areas prior to works, screening with community elders;
- ✓ Train/make aware the construction contractor of how to deal with these sites, and ensure that there is supervision from contractors' side for the management of all such sites.
- ✓ Restore all sites to their original shape post construction.

Adopt the chance find procedures provided in Appendix XI

7.5.15 Sexual Exploitation Abuse and Harassment (SEAH)

This impact refers to sexual exploitation and abuse committed by Project staff against communities and represents a risk at all stages of the Project, especially when employees and community members are not clear about prohibitions against SEAH in the Project. The project will experience the influx of people who will be seeking employment during the construction phase, therefore, SEAH will be a critical aspect to be monitored.

Impact	**SEAH**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation:

- The project has developed a stand-alone SEAH Prevention and Response Plan that will guide the PCU, PIUs and contractors on how to plan for and management the SEAH risks. The SEAH action plan follows guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).
- The SEAH Action plan ensures that:
  - It clearly defines the SEAH prevention and response measures for contractors in the bid documents.
  - There is clearly explanation and definition of the requirements of the CoC to bidders before submission of the bids.
  - The project's social assessment includes assessment of the underlying SEAH risks and social situations, using the assessment tool to provide guidance on safety and ethical considerations related to SEAH data collection.
  - Mapping out SEAH prevention and response actors in project communities and those in neighboring areas and share information on the referral pathway with workers and community members.
  - Induction of all project contractors and workers on SEAH.
  - Inclusion of clear provisions in the workers' CoC on SEAH.
  - Sensitization of the communities on SEAH.

- Use of an oversight of an independent Third-Party Monitor (TPM) organization/Independent Verification Agent (IVA) (CSOs, international or local NGOs, academic partners, private sector firms) with experienced GBV staff for monitoring the implementation of the SEAH Prevention and Response Action Plan and ensuring all parties are meeting their responsibilities.
- Sensitization of the PCU/PIUs on the importance of addressing SEAH on the project, and the mechanisms or implementation.
- Ensuring that there is a functional GM sensitive to SEAH and that the workers and community members have access to it

7.5.16 Risk of Spreading of HIV/AIDS

The arrival of construction workers in the project area may introduce and spread communicable diseases such as HIV/AIDS and other sexually transmitted infections (STIs). Workers may also be exposed to diseases for which they have low immunity, increasing the risk of transmission between them and local residents. This could contribute to a greater public health burden within the community.

Impact	**HIV/Aids**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation Measures

- In collaboration with a local health service provider, or the Ministry of Health in Turkana county, provide awareness, training and sensitization for both the project workers and community members on HIV/AIDS and STI prevention.
- Health education workshops to provide information on disease prevention, safe practices, and access to healthcare services.
- Provision of protective measures including condoms at the construction site to promote safe sexual practices.
- Develop and implement a comprehensive health and safety management plan that includes strategies for preventing the spread of communicable diseases.
- Liaison with the local health facility to monitor HIV/Aids situation in the PA.

7.5.17 Violation of Children Rights

Violence against Children (VAC) is defined as physical, sexual, emotional and/or psychological harm, neglect or negligent treatment of minor children (i.e. under the age of 18), including exposure to such harm, that results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power. This includes using children for profit, labour, sexual gratification, or some other personal or financial advantage. This also includes other activities such as using computers, mobile phones, video and digital cameras or any other medium to exploit or harass children or to access child pornography.

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The Children Act of Kenya prohibits contractors from "employing children in a manner that is economically exploitative, hazardous, and detrimental to the child's education, harmful to the child's health or physical, mental, spiritual, moral, or social development. 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. It is also important to be vigilant towards potential sexual exploitation of children, especially young girls. The contractor should adopt a 'Child Protection Code of Conduct'; that all staff of the contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour. That notwithstanding, the contractor should take responsibility if any of the suppliers and subcontractors contravene this law. The project has developed a labor influx management plan (LIMP) to mitigate on these risks.

The contractor will undertake the below listed mitigation measures.

Impact	**Violation of Children Rights and Forced Labour**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation:

- Develop and implement the labor influx management plan and labor management procedures;
- Develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project.
- Training and signing of CoC by the project team;
- 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 18 years shall not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.
- No engagement of minors in the project directly or indirectly.
- Conduct child protection training for workers, contractors, and local leaders.
- Display clear signage at the site warning against child labour and abuse
- Erect fencing or barriers to prevent children from accessing the site and other ancillary sites e.g. quarries, borrow pits.
- Include a strict prohibition on child Labor in all contractor agreements and CoCs for each worker
- Client and consultant to conduct regular labour inspections to ensure compliance.
- Sensitize parents, teachers, and local leaders on the risks of child abuse around construction sites

7.5.18 Exclusion of vulnerable groups from consultations and inclusion in designs

Exclusion of PwD, vulnerable groups meeting the criteria in ESS 7, women, children and elderly from consultations and inclusion of their views in accessible facility design.

Impact	Exclusion of vulnerable groups from consultations and inclusion in designs
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	High
Impact Significance	Medium High

Mitigation Measures.

- Adopt the Indigenous Peoples/Vulnerable and Marginalized Groups (IP/VMG) Plan
- Schedule meetings at convenient times and locations to accommodate women, persons with disabilities, and other vulnerable groups.
- Focused engagements with the vulnerable groups. This will include dedicated consultations with the PwDs to understand their needs.
- Apply universal design in infrastructure to ensure accessibility for persons with disabilities to the water points.
- Ensure that consultations are culturally appropriate, accessible, including the use of sign language interpreters, braille, and vernacular languages.
- Implement the designed gender-sensitive and culturally appropriate measures.

7.6 Potential Impacts and Mitigation Measures During Operation Phase

7.6.1 Water Losses

Water system leaks can reduce the pressure of the water system compromising its integrity and ability to protect water quality (by allowing contaminated water to leak into the system) and increasing the demands on the ground water aquifer. Leaks in the distribution system can result from improper installation or maintenance, inadequate corrosion protection, stress from traffic and vibrations and overloading among other factors leading to degradation due to formation of gullies and loss of revenues due to unauthorised access by both animals and humans.

Impact	Water losses
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Low
Impact Significance	Medium Low

Mitigation Measures

- Regular maintenance of the water infrastructure ;
- Sectional meters and pressure management systems;

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- Regular pipeline surveillance;
- Burst reporting and response mechanism
- Prompt repair of detected leaks, and using high-quality pipes with appropriate materials.

7.6.2 Groundwater Depletion

Over-Extraction: One of the primary concerns with borehole water supply is the over-extraction of groundwater. Excessive pumping can lead to a decline in the water table, making it harder to access water over time. This can result in the drying up of nearby wells, and negatively affect the availability of water for future generations.

Aquifer Depletion: Continuous extraction without adequate recharge can lead to aquifer depletion, reducing the natural water storage capacity of the ground. In severe cases, this can lead to subsidence (sinking of the ground surface), which can damage infrastructure.

In anticipation of the aquifer assessment studies in some parts of the Arid and Semi-Arid Lands (ASAL) counties one may conclude that the sustainability of rural water supply is not at risk in terms of overexploitation of groundwater resources. Population density is low and water demands even including water for livestock is low compared to the renewable groundwater resources. In the Economics of Water study of Somalia (World bank) it was demonstrated that in the border areas, which are hydrogeologic ally, demographically and climatologically comparable to the rural areas of the ASAL counties, groundwater abstraction is lower than 10 % of renewable groundwater resources. This is below the critical 20 and 40 % scarcity and severe water scarcity levels, respectively (UNWATER), which are generally used as criteria for sustainable groundwater development in the absence of detailed information. Critical situations arise only where urban water supply and large-scale irrigation projects abstract groundwater.

The notion above supports the premise that groundwater recharge from MAR facilities in the GW4R is not expected to compensate the abstractions from the village wells. In addition, groundwater recharge from the MAR facilities, mostly sand dams, water pans and infiltration ponds, will benefit the shallow aquifer and wells, which are generally not connect to the deeper aquifer tapped by the village wells. The MAR facilities are meant to provide additional water supply, particularly where the boreholes do not provide water in sufficient quantity or quality.

We conclude that E&S monitoring does not need to focus on balancing groundwater abstraction and recharge. Signs like decline of water levels, rising salinities, pump malfunctions will most likely not be the result of overexploitation. Drought years, screen clogging, wear and tear of pumps and silting MAR facilities like infiltration basins, recharge wells, or riverbank filtration are most likely to be the first causes. Therefore, monitoring of wells and MAR facilities is crucial but first of all from the viewpoint of O&M.

Impact	**Ground water depletion**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Low
Impact Significance	Medium Low

Mitigation measures

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- The proponent should ensure it complies with the conditions of the water abstraction permit issued by WRA;
- Monitor aquifer water levels;
- Promote efficiency in water use among the beneficiary communities; and
- Conduct regular borehole discharge and water quality analysis.

7.6.3 Increase in Wastewater

Wastewater is anticipated to be generated, since as a rule of thumb about 75% of water supplied is discharged in the environment as waste water.

Impact	**Increase in waste water**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Medium
Impact Significance	Medium High

Mitigation Measures

- Create awareness on reusing waste water for kitchen gardening or tree planting;
- Awareness creation on sanitation and safe domestic liquid waste disposal;

7.6.4 Outbreak of livestock diseases

The coming together and mixing of livestock from different households will increase the chance for the spread and outbreak of livestock pest and diseases. Possible outcome of this if not well managed will be poor animal health, reduced livestock productivity and even livestock loss.

Impact	**Outbreak of livestock diseases**
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Medium
Impact Significance	Medium High

Mitigation measures

- Liaise with the County Livestock Production Department to develop and implement a livestock disease management plan to ensure disease incidences are promptly responded to and addressed;
- In liaison with Livestock Department to sensitize the community on disease spread, monitoring and control

7.6.5 Security and conflicts

This is the project potential to exacerbate existing conflicts or create new ones within a community. The triggers include land ownership disputes, water access conflicts, and disruption of traditional livelihoods.

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Impact	Security and conflicts
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Medium
Impact Significance	Medium High

Mitigation Measures

- Adopt and operationalize the project security management plan;
- Regular stakeholder engagements to facilitate open dialogue with community leaders and residents to address concerns and incorporate feedback into project operations.
- Develop and operationalize grievance redress mechanism.
- Community awareness campaigns through training communities about project safety protocols, emergency procedures, and reporting mechanisms.
- Promoting equitable access to water resources and services.
- Establishing systems to identify potential conflict triggers and respond proactively.
- Promoting responsible reporting and raising awareness of conflict issues.

7.6.6 Vandalism

Vandalism in construction sites is the intentional damage or destruction of property. It can include graffiti, broken glass, and damage to equipment and installations.

Impact	Vandalism
Impact Nature	Negative
Impact Type	Direct
Impact Severity	Medium
Impact Duration	Short Term
Impact Extent	Local
Likelihood of Occurrence	Medium
Impact Significance	Medium High

Mitigation Measures

- Sturdy fences and gates to limit access to vulnerable areas;
- Using motion-activated lights to illuminate areas at night;
- Proper lighting in public spaces to deter activity in darkness;
- Ensure consistent follow-up with reporting and addressing vandalism to maintain deterrence;
- Educational programs in schools to teach responsible behavior;
- Locking gates and doors to restricted areas; and

- Public awareness campaigns about the harms of vandalism.

7.7 Potential Impacts during Decommissioning Phase

The potential impacts of the project during decommissioning phase are summarized in the table below.

No	Impacts	Description
1.	Concerns over Occupational Safety and Health	Hazards that the project may pose to workers and residents during the decommissioning phase are similar to those discussed in the construction phase above.
2.	Vehicular and Human Traffic Impacts	Movement of heavy machinery and equipment during the decommissioning is expected. These machineries will be used for ferrying workers and materials from the active site while equipment will be used for dismantling of the water project components.
3.	Impacts from Solid and Liquid Wastes	Decommissioning activities will generate both solid and liquid wastes such as: HDPE pipes, steel casings, planks of wood, sealants and other domestic wastes.
4.	Noise and Vibration Impacts	The decommissioning activities will be similar in nature as those during the construction phase. The impacts will be as a result of moving machines, communication of workers and outgoing vehicles transporting project materials and workers to and out of the project sites.
5.	Emissions and air pollution	Decommissioning phase activities of the proposed project will give generation to dust and exhaust fumes from vehicles and machinery. Dust emissions will emanate from pit excavation activities and movement of machinery in the project area. This directly affects the air quality of the project area.
6.	Increase in Social Vices	Just as in the construction phase, population of the project area is expected to increase due to an influx of workers during the decommissioning phase. This will directly affect the normal social set up of communities living in the project area thereby possible decay of morality, increase in school drop-outs due to available unskilled labour, possible child labour, petty thieves and increased HIV/AIDS incidence and communicable diseases.

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Chapter 8 Environmental & Social Management and Monitoring Plan

8.1 Introduction

The purpose of developing an Environmental and Social Management Plan (ESMP) for the proposed project is to initiate a mechanism for implementing mitigation measures for the potential negative environmental impacts and monitor the efficiency of these mitigation measures based on relevant environmental indicators.This Environmental and Social Management Plan (ESMP) seeks to manage, mitigate and keep to a minimum the negative environmental and social impact associated with the design, construction and operation of the ground water infrastructure, WRUAs and catchment plans under the HoAGW4R and at the same time enhance the positive and beneficial impacts.

The ESMP aims at ensuring that the HoGW4R project is implemented the within the principles of the World Bank's Environmental and Social Framework and the applicable Kenyan ESHS regulations.

8.2 Overview of Proposed Site Activities

Below is an overview of the project activities for the proposed rehabilitation, equipping, and expansion of operations of the rural groundwater source of the Kangakimak Water Supply Scheme Project:

8.2.1 Pre-construction Phase

This phase involves preparatory activities to ensure the smooth execution of the project:

Feasibility Studies and Site Surveys: Conducting of eligibility criteria and screening of boreholes, hydrological, geological, and geotechnical studies to assess borehole conditions and water quality.

Environmental and Social Impact Assessment (ESIA): Undertaking and preparation of an Environmental and Social Impact Assessment Study Report to identify potential environmental and social risks, including engagements and consultations with all key stakeholders and community members.

Permits and Approvals: Obtain necessary licenses, permits and clearances, including water abstraction permits, NEMA license, DOSHS Workplace registration, land use approvals, and construction authorizations.

Design and Planning: Prepare technical designs for borehole rehabilitation, equipping, and expansion.

Community Engagement: Engage the local community to ensure awareness, participation, and support for the project as well as incorporating of their views and concerns in the designs and at all stages of the project phases.

8.2.2 Construction Phase

This phase involves the physical implementation of the project:

Site preparation: Clear and level the area around the borehole for construction activities.

Rehabilitation of the borehole: Perform necessary repairs of the borehole to improve water yield.

Equipping the borehole: Install pumps, pipes, power systems (e.g., solar or grid-based), and control systems for water abstraction.

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Expansion of operations: Build or upgrade infrastructure such as storage tanks, raising of main and distribution pipelines, and water distribution systems or repair of existing infrastructure such as masonry tanks.

Health, Safety, and Environmental (HSE) management: Implement measures to manage construction-related risks, including dust, noise, waste, and worker safety.

Monitoring and quality control: Conduct regular inspections to ensure compliance with design standards and environmental regulations.

8.2.3 Operation Phase

This phase focuses on managing of the rehabilitated and expanded borehole:

Water abstraction and distribution: Operate the borehole to supply water for domestic, agricultural, or industrial use as planned.

Maintenance of infrastructure: Perform regular maintenance of pumps, pipes, and storage facilities to ensure optimal performance.

Monitoring and reporting: Continuously monitoring of water levels, quality, and usage to ensure sustainable operation and compliance with environmental standards.

Community involvement: Collaborate with local communities and WRUAs for equitable access and sustainable management of the rural groundwater supply system.

Training and capacity building: Train operators and community members on the proper use and maintenance of the borehole system.

8.2.4 Decommissioning Phase

This phase involves safely closing or transitioning the borehole system at the end of its lifecycle:

Infrastructure dismantling: Removal of equipment such as pumps, pipes, and storage tanks if necessary.

Site restoration: Restore the borehole site to its natural state or as agreed with stakeholders to prevent long-term environmental impacts.

Waste management: Dispose of or recycle decommissioned materials in an environmentally responsible manner.

Community consultation: Engage the local community to plan for alternative water sources or solutions if required.

Documentation and reporting: Prepare a final report documenting the decommissioning process and lessons learned.

8.3 Objectives of the ESMP

The objectives of this ESMP are to:

- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels and identify measures that could optimize beneficial impacts.
- To provide guidance on how to manage EHS risks in the construction and operation phases of the Project in compliance with EHS policies, standards and legal regulations and to ensure that Project commitments are fulfilled,
- To establish clear roles and responsibilities of the PCU, PIU, Sub PIU (County-level Project Implementation Unit), consultants and contractors in the Environmental, Social, Health and Safety organization during construction and other project phases (See Section 8.4).

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- To establish site specific plans and procedures to implement ESMF tools at the sub project sites, the tools include ESCP, SEP and GRM, LMP, SEAH/GBV action plan and SMP;
- Detail specific actions deemed necessary to assist in mitigating the environmental, social, health and safety impacts of the project.
- To establish a method of monitoring and auditing environmental and social management practices during construction phase; and
- Propose mechanisms for monitoring compliance with the ESMP and reporting thereon.

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Table 32 Kangakimak ESMP

E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Preconstruction Phase				
Land acquisition Loss of pasture land Fencing of land restrict free movement of animals and people. Grievances related to land take/transfer The proposed Pipelines, solar farm, storage tank, water kiosks and livestock troughs for Kangakimak Water Supply Scheme will require approximately 2.11 acres. The land is expected to be transferred from community to public ownership.	• The project alignment must avoid private land as the project component include outright land acquisition • Align water pipelines along public roads and spaces to avoid any physical and/or economic displacement as much as possible, or infringement on the land rights holders	Approved project design that is not affecting private land owners	Engineering consultant E&S Specialists	WSTF MoWSI
	• Complete the process of land transfer from community to public before the operation of the project	Valid allotment letters/title deeds for the scheme	TURWASCO/TURUWASCO County Government of Turkana	WSTF National Land Commission
	• Hold community consultations to discuss the final design of the scheme, the associated impacts and project implementation timelines before construction	Minutes of disclosure meeting, Agenda and attendance register	TURWASCO/TURUWASCO County Government of Turkana	WSTF NEMA
	• Follow the land take procedures outlined in the project ESMF	Compliance report	Consultant	WSTF MoWSI National Land Commission
Construction Phase				
Potential soil Erosion Site Excavation, Earthworks for Construction Works:	• Develop and implement soil erosion control measures	Number of soil erosion control measures in the program of works, amount of resources set for soil erosion control	Contractor Supervision Consultant	NEMA
	• Minimize and restrict vegetation removal to the project footprint.	Project design that considers areas with	Supervision Consultant	

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Clearing vegetation for borehole infrastructure, water kiosks, pipelines, and livestock water troughs, Excavation of trenches for foundations and trenches, Storage of excavated spoilt soil and construction materials, Uncontrolled surface run-off from construction site Spillage of water during borehole testing,		minimal vegetation, Amount of vegetated area spared by the project		
	• Expedite back-filling and compaction of excavated soil.	Number trenches that are backfilled and compacted	Contractor	
	• Use existing access tracks to minimize the need for new tracks.	Number of enforcement measures to ensure use of the existing routes during site access	Contractor	
Soil and subsurface water pollution Spills of the fuel and hazardous chemicals stored at the site, fugitive spillage of fuel and used oil from equipment, poor management of construction and sanitation waste	• Develop and implement soil pollution prevention measures to include storage of chemicals, procedure for fuelling at the site and	Availability of soil pollution measures in the program of works	Contractor/ Supervision Consultant	WSTF NEMA
	• Ensure the waste oil, fuel, lubricants and other chemicals stores have an impervious surface	Number or availability of fuel and chemical stores with impervious surface	Contractor/ Supervision Consultant	WSTF
	• training workers on handling of the hazardous materials/wastes; provide appropriate tools/equipment for transfer of the hazardous materials	Training records and plans, attendance lists, number of workers trained	Contractor/ Supervision Consultant	NEMA
	• Regular maintenance of machinery to control leaks.	Program of equipment maintenance	Contractor/ Supervision Consultant	WSTF
	• Engage NEMA registered waste handler	Valid waste handler license and filled waste tracking sheets	Contractor/ Supervision Consultant	NEMA

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
	• Maintain spill response kits at the site.	Availability of a complete spill kit at the site	Contractor/ Supervision Consultant	WSTF
	• Use of drip trays when carrying out minor servicing of equipment and fueling at the site	Availability of operational drip trays at the equipment servicing area	Contractor/ Supervision Consultant	NEMA
Air pollution through generation of excess dust **Nuisance to neighbors** **Impaired visibility;** Construction activities including Clearing vegetation, grading, and excavation works, use of cement, movement of vehicles and equipment. Wind blowing on bare surfaces and potential dust storms **Demolition works**: Removal of old, worn-out infrastructure or equipment	• Sprinkle water on dusty surfaces to suppress dust at the site and when working near dust sensitive receptors	Evidence of watered working areas where applicable	Contractor/	WSTF NEMA
	• Equip workers who are directly in the location where dust is dispersed with dust masks.	Number of workers with appropriate dust masks	Contractor	
	• Training the workers on air quality hazards	Air Quality Training included in the EHS staff induction Training records	Contractor Supervision Consultant	
Exhaust emissions from vehicles, including particulate matter (PM), carbon monoxide (CO), and nitrogen oxides (NOx), can contribute to air quality deterioration and pose health risks	• Scheduled maintenance of the machinery to reduce emissions including carbon monoxide, oxides of nitrogen.	Evidence of site-specific equipment planned maintenance schedule	Contractor/ Supervision Consultant	WSTF NEMA

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Noise and vibrations Material transportation: Movement of trucks and loaders. Excavation and construction: Digging and concrete works. Use of powered equipment. Borehole testing: Noise from pump flow tests.	• All Construction near noise sensitive receptors like schools, hospitals and residential houses should implement measure to minimise production of extra noise.	Noise control measures included in the program of works	Contractor/ Supervision Consultant	NEMA County Department of Environment
	• All equipment should be maintained in good mechanical order and fitted with the appropriate silencers, mufflers, or acoustic covers where applicable. Lubricating and regular repair of equipment and machinery.	Relevant planned maintenance scheduled of the equipment available at the site Noise rating of the equipment	Contractor/ Supervision Consultant	
	• Pneumatic drills and other noisy appliances should not be used after normal working hours.	Evidence of no night working policy at the site	Contractor/ Supervision Consultant	
	• Workers exposed to occupational noise should be given noise protection equipment such as earmuffs and be taught how to use them and supervised to ensure such safety procedures are being adhered to.	Number of workers working in noisy environment with appropriate PPE for noise	Contractor/ Supervision Consultant	
	• The public should be informed that short periods of noise may be inevitable but prior warning of when noisy activities are to take place and the days and times noise of when they could be expected should be widely publicized before the activity takes place.	Noise warning signs where applicable, evidence of noise agenda in the community consultation meeting	Contractor Supervision Consultant	
Loss and disturbance of the vegetation Introduction of alien invasive species Site clearing, Excavation works, and pipeline laying disrupt habitats.	• Mature trees and vegetation outside project site will not be cleared.	Evidence of Measures implemented to avoid clearing mature trees and vegetation outside project site	Contractor/ Supervision Consultant	Kenya Forest Service/ NEMA/ County Department of Environment
	• No use of herbicides/ pesticides for vegetation clearing	Evidence of proper methods applied to clear vegetation		
	• Re-vegetation of disturbed areas with native plant species.	No of tree seedling planted		

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Movement of vehicles on the vegetated areas	• Control of invasive alien plant species through monitoring and physical/manual removal of invasive species as they appear as well as routine cleaning of newly deployed machines to the sites	Availability and implementation of measures to identify and control alien species		
Disruption of existing minimal fauna in the project area through excavation, vegetation clearing, and pipeline laying activities	• Avoid clearing mature trees that are important habitats for birds and other small animals	Evidence of Measures implemented to avoid clearing mature trees and vegetation outside project site	Contractor/ Supervision Consultant	Kenya Forest Service/ Kenya Wildlife Service
	• Create awareness among project staff (esp. plant operators) and local community on animal welfare and against animal harassment.	No of workers sensitized on protection of animals	Contractor	Kenya Wildlife Service
	• Protection of the encountered wild animals	Availability, Awareness and implementation of measures to protect stray animals	Contractor	Kenya Wildlife Service
Traffic incidents and accidents Increased vehicles: More construction and supply vehicles on local roads. Narrow roads: Existing roads unable to accommodate increased traffic. Construction activities: Blockage or diversion of roads during works.	• Engage the road authority where the project will undertake road crossing and use of road reserve. • Excavation of trenches should be carried in consultation with the concerned road authorities.	Evidence of consultation with relevant road departments and agencies where applicable	Contractor/ Supervision Consultant	Kenya Highways Authority (KeNHA) Kenya Rural Roads authority (KERRA) County Government of Turkana
	• Erect warning signs of on-going works when pipeline crosses the road.	Availability of appropriate safety signs at the road crossing point	Contractor	County Government of Turkana
	• Adequate care/caution is taken so as not to cause any hindrance to the movement of traffic.	Traffic (vehicle, human and livestock) control measures where applicable	Contractor	County Government of Turkana

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Heavy equipment: Slow-moving machinery disrupting traffic flow.	• Alternatives access ways should be communicated to the community where road cutting is taking place	Number and condition of the provided alternative routes	Contractor	County Government of Turkana
Short-term disruption of community activities Excavations along home accesses, business access and roads.	• Implement the stakeholder engagement plan to ensure timely project information sharing with the community and stakeholders. • Alternatives access ways should be communicated to the community.	Community consultation plan, Number of consultation meetings	Contractor/ Supervision consultant TURWASCO/TURUWASCO	TURWASCO/TURUWASCO
	• Hoarding and installation of safety signs on road crossings.	Number of appropriate road signs installed	Contractor/ Supervision consultant TURWASCO/TURUWASCO	
	• Provide diversions or temporary passages where roads are closed due to works. • Provide temporary accesses to business and homes on excavated sections.	Number and condition of the provided alternative routes	Contractor/ Supervision consultant TURWASCO/TURUWASCO	
Labour conflicts and forced labour Recruitment and pay conflicts, working conditions and forced labour	• Implement site Labor Management Procedures (LMP) for the project based on the project LMP	Availability of the site specific LMPs	Contractor supervision consultant	WSTF
	• Contractors to be trained on the LMP for the project before site mobilization	Training records and attendance list	supervision consultant	WSTF
	• Developing and implementing criteria (skills and qualifications) for all positions due for recruitment.	Availability of recruitment criteria Number of workers engaged through the criteria	Contractor	WSTF
	• All the project workers to undergo induction and to be engaged formally via contract with start date, end date, job description, wage, disciplinary measures among others	Formal contracts the workers Number of workers with contract	Contractor	WSTF
	• Documenting relevant worker information including terms of employment.	Well documented worker information	Contractor	

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
	• Ensure equal opportunity and fair treatment during recruitment.	Formal commitment by the consultant to offer equal opportunities Number of workers recruited through transparent process	Contractor	
	• Protection of workers' legal right to form unions or other workers' organizations of their own choosing and to bargain collectively with their employers.	Human Resource Policy with workers' rights	Contractor	
	• No employment of underage persons (under 18 years).	ID for all the employed persons Evidence of no child engaged	Contractor	
	• Implement the workers grievance mechanism for all direct workers and contracted workers.	Availability of GRM that is relevant to Kangakimak site	Contractor	
	• Compliance to labour relations practices as provided for by Kenya legislations and International Labour Organisation (ILO)	Legal register for the lot	Contractor	
	• Advertising at the local villages and markets for any position that needs to be filled; and	Number of job adverts placed in the chief's office or common public area	Contractor	
	• Sub-contractor requirement to submit a past forced labor performance declaration, and a declaration of ongoing Bidder commitment to prevent, monitor and report on any forced labor.	Evidence of submitted forced labor performance declaration	Contractor	
	• Include in contracts with subcontractors/ suppliers/ manufacturers of materials (pipes, fittings, solar panels and equipment) obligations to prevent Forced Labor among the staff, employees, workers and any other person employed or engaged by the Subcontractor/ supplier/ manufacturer.	Formal commitment to prevent forced labour	Contractor	

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Potential tension/conflicts between local communities and incoming workers over jobs, resources, or land. Influx of workers leading to the spread of infectious diseases Increased competition for local resources: food, water, and other community resources. Social tensions: Unresolved workers grievances Hiring of workers outside the project area Increased demand on infrastructure: Strain on local transport, sanitation, and healthcare facilities. Cultural disruption: Cultural differences between workers and the local community	• Prioritize local labour force.	No of workers from Kangakimak area employed in the project	Contractor/Supervision consultant TURWASCO/TURUWASCO	WSTF
	• Regular community engagements.	No of community engagements	Contractor/ TURWASCO/TURUWASCO	WSTF
	• Regular community and project workers training, awareness and sensitization on HIV/AIDS.	Training Plan Number of the workers trained.	Contractor/ TURWASCO/TURUWASCO	WSTF
	• Implement clear and culturally sensitive GM and SEAH/GBV procedures at the project site.	Clear and culturally sensitive GM and SEAH/GBV procedures at the project site.	Contractor/ TURWASCO/TURUWASCO	WSTF
	• Provide adequate and appropriate welfare conveniences for the staff-including washrooms, rest area and changing room	Number of sanitation conveniences and changing rooms for both genders Appropriate rest area	Contractor/ TURWASCO/TURUWASCO	WSTF
	• Ensuring that children and minors are not employed directly or indirectly on the project.	Policy against child labour, Identification Numbers for all the employees	Contractor/ TURWASCO/TURUWASCO	WSTF
Insecurity Existing Intra and inter community conflict Unresolved project, land and intertribal conflicts	• Prepare and implement a site Security Management Plan (SMP) in accordance with project Security Management Plan and SOPS.	Availability of approved site specific SMP.	Contractor/ TURWASCO/TURUWASCO	WSTF County Government of Turkana
	• The site specific SMP must be cleared by the E&S Team at the CPU before site mobilization • Have sufficient emergency response plan before mobilizing to the field		Contractor/ TURWASCO/TURUWASCO	WSTF
	• Use the county and community as entry points before mobilizing to the field	Evidence of consultation with CC	Contractor/ TURWASCO/TURUWASCO	WSTF

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Occupational Safety and Health (OSH) hazards Physical hazards: slips, trips, falls, and injuries from machinery or tools. Exposure to intermittent and occupational noise, dust, heat and chemicals, exposure to harsh climatic conditions, manual handling hazards, electrical hazards: Risks from installing solar panels and working with electrical systems, fall from height heights, falling objects hazards during steel tank erection Poor sanitary facilities may result in waterborne or communicable diseases. Traffic incidents and accidents at the site	• Develop and implement a site-specific Health and Safety Action Plan based on the project Health and Safety Action Plan	Availability and implementation progress of the HSAP	Contractor/ Supervision consultant	DOSHS
	• Register the construction site with DOSHS	Valid construction workplace certificate from DOSHS	Contractor	
	• Undertake an appropriate Health and safety risk assessment and submit the report to DOSHS Turkana	DOSHS signed copy of RA report	Contractor	
	• Induction of workers on health and safety before commencing works	Number of workers inducted	Contractor	
	• Engage a qualified and competent health and safety officer for the lot	Qualification of the Health and safety officer at the site	Contractor	
	• Ensure there are trained first aider and fire Marshalls	Number of trained first aider and fire marshals	Contractor	
	• Conduct daily toolbox talks	Records of Tool Box Talks	Contractor	
	• Provide appropriate personal protective equipment (PPE) to workers and training on appropriate use. (Reflective jackets, helmets, face masks, ear plugs gloves, safety boots, etc.)	No of workers with appropriate PPEs	Contractor	
	• There should be adequate provision of the requisite sanitation facilities for human waste disposal	Clean and convenient sanitation facilities	Contractor	
	• Recording of all injuries that occur on site in the incident register, corrective actions for their prevention are instigated as Appropriate	Availability of incident register at the site Well filled incidents	Contractor	
	• The contractor should have a WIBA insurance policy to cushion self and workers against loss of income or an accident on site	Workers with WIBA	Contractor	

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
	• Ensure that all site personnel are provided with an adequate supply of safe drinking water, which should be at accessible points at all times.	Number of water points for the workers	Contractor	
	• Provide conveniently accessible, clean, orderly, adequate and suitable washing facilities within the site.	Clean and convenient sanitation facilities	Contractor	
Community Health and Safety Traffic accidents and incidents. Noise Nuisance from Construction activities Dust and air pollution: Excavation and material handling can affect air quality, leading to respiratory issues. Spread of diseases: Interaction between workers and the community may increase the risk of communicable diseases. open trenches, unprotected construction area, and unsecured equipment pose safety risks to nearby residents and livestock Structural hazards: Poorly constructed facilities, such as water kiosks or tanks, may lead to accidents post-construction. Disruption of services: Temporary interruptions in	• Ensure the safety of residents by providing safety signs at strategic places around the access roads.	No of road appropriate safety signs provided	Contractor/ Supervision consultant E & S Specialists TURWASCO/TURUWASCO	
	• All trenches must be barricade using the appropriate safety tape •	Trenches with barricading tape		
	• Cordoning off working sites to protect the public or unauthorized persons	Area cordoned off		
	• Use of signs and warnings on sites with high risks such as the elevated tank site	Number of appropriate safety signs installed at the construction site		
	• Reduce unnecessary speeding to control for accidents from the movement of pedestrians or livestock in the area.	Speed limit at the site and within the project area		
	• The elevated water tank to be installed a safe distance from human activities or property	Evidence of the consideration of community settlement in tank design		
	• The design and construction of the elevated steel tank to consider the changes in wind force in the area.	Approved design and construction methods		

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
water supply or access due to pipeline works.				
Sexual exploitation and harassment (SEA-H) Potential SEAH risk among the workers at the project site Workers may take advantage of power imbalances to exploit local women or vulnerable individuals in the project area Lack of reporting mechanisms: Without proper channels, victims of SEAH or GBV may not report incidents due to fear of retaliation or lack of support.	• Engage competent GBV / social safeguard officer	• Qualification of the GBV / social safeguard officer • Number of incidences (both reported and unreported), their investigation, solution and closure according to the SEAH Response Plan	Consultant Contractor/Supervision Consultant Local Community Leaders TURWASCO/TURUWASCO SEAH Expert MOWSI	MoWSI WSTF
	• Conduct SEA-H sensitization to the workers during induction	No of workers sensitized		MoWSI WSTF
	• Background checks for the workers, subcontractors and suppliers.	Well documented procedures for background checks		MoWSI WSTF
	• Conduct SEA-H sensitization to the community in the project area	No of community sensitization meeting		MoWSI WSTF
	• Ensure all the workers signs the CoC developed for the project and sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;	Number of the signed CoC		MoWSI WSTF
	• Implement the project SEAH action plan with an Accountability and Response Framework as part of the C-ESMP.	Level of the SEAH plan implementation at the site		MoWSI WSTF
	• Response to SEA-H: including survivor-cantered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures	Effective SEAH response plan		MoWSI WSTF

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Infringement of Children rights Engagement of children in construction works Sexual abuse of children in the project area by the project workers Exposing Drug and alcohol to children Workers working with the school	• Domesticate the Labor Management Procedures (LMP) as part of the CESMP;	Level of the LMP implementation at the site	Contractor, Consultant WSTF	County Children's Department
	• Develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project.	Availability and implementation status of Children Protection Strategy for the Lot	Contractor, Consultant WSTF	
	• Training and signing of CoC by the project team • sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behaviour;	Number of workers trained on and signed CoC	Contractor/ Supervision consultant	
	• Children under the age of 18 years shall not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.	No of the workers with national identification card numbers at the site	Contractor/ Supervision consultant	
Infringement on Vulnerable and Marginal Groups (VMGs) rights Exclusion of vulnerable groups from consultations and inclusion in designs Failure to implement the StakeholderEngagement Plan (SEP)	• Schedule meetings at convenient times and locations to accommodate women, persons with disabilities, and other vulnerable groups.	Plan of public consultation that is appropriate for community	Contractor/ Supervision consultant	
	• Adopt the Indigenous Peoples/Vulnerable and Marginalized Groups (IP/VMG) Plan	Approved IP/VMG Plan	Contractor	Consultant.
	• Focused engagements with the vulnerable groups. This will include dedicated consultations with the PWDs to understand their needs.	Number of VMGs identified and number of consultation	Contractor/ Supervision consultant	
	• Apply universal design in infrastructure to ensure accessibility for persons with disabilities to the water points.	Design that is user friendly to PWD	Supervision consultant	
	• Ensure that consultations are culturally appropriate, accessible, including the use of sign language interpreters, braille, and vernacular languages.	Site specific GRM Involvement of site GRC	Supervision consultant	

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Water losses through Water system leaks and loss of pressure Improper installation or maintenance, inadequate corrosion protection, stress from traffic and vibrations and overloading	• Develop and implement a predictive scheme maintenance plan including sectional meters and pressure management systems, Regular pipeline surveillance and Burst reporting and response mechanism • Prompt repair of detected leaks, and using high-quality pipes with appropriate materials. •	Availability of predictive scheme maintenance plan	TURWASCO/TURUWASCO Contractor/ Supervision consultant	
Depletion of groundwater resources due to over abstraction Over abstraction of ground water resources due to Excessive pumping Failure to comply with WRA	• Ensure there is water abstraction permit all the time	valid water abstraction permit	TURWASCO/TURUWASCO	WRA
	• Install the WRA approved telemetric meter and ensure monitoring of the yield.	Presence and/or number of working and calibrated telemetric meters	TURWASCO/TURUWASCO	WRA
	• Ensure quarterly payment of water use fee to WRA	Evidence of payment	TURWASCO/TURUWASCO	WRA
	• Promote efficiency in water use among the beneficiary communities through consultation	Number of sensitization meetings	TURWASCO/TURUWASCO	County Government of Turkana
	• Conduct regular borehole discharge and water quality analysis.	Water quality analysis reports	TURWASCO/TURUWASCO	
Contamination of water supply Exposure of water to pathogens at the storage facilities and from external sources Contamination of water sources by the livestock waste	• The animal trough should be located at least 100m away from the boreholes. •	Approved design and construction with the animal trough located	Contractor TURWASCO/TURUWASCO	
	• Fencing and protection of the borehole from livestock and wild animals. • All the water tank areas should be fenced and have controlled entry	Well fenced and protected borehole area	Contractor TURWASCO/TURUWASCO	
	• The borehole area should be manned and should have controlled access	Availability of the security personnel at the borehole area	Contractor TURWASCO/TURUWASCO	
	• Community health and safety awareness meetings	No of meeting	Contractor	

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
			TURWASCO/TURUWASCO	
Outbreak and spreading of livestock diseases Presence of large herds of livestock at the watering area Animal movement: livestock moving between regions, spreading diseases and pests. **Lack of vaccination:** Insufficient vaccination programs leaving animals vulnerable.	• Regular disease surveillance by the veterinary department and community	No of disease surveillances undertaken	County Department of Livestock TURWASCO/TURUWASCO	
	• Sensitization of the community on disease spread, monitoring and control	No of meetings	County Department of Livestock TURWASCO/TURUWASCO	
	• Livestock disease management plan be put in place by the veterinary department to ensure disease incidences are promptly responded to and addressed	Livestock Disease management plan in place	TURWASCO/TURUWASCO	
Vandalism of the water supply equipment Damages and recovery of valuable materials from the project infrastructure.	• Sturdy fences and gates to limit access to vulnerable areas;	Well maintained fence	TURWASCO/TURUWASCO	
	• Proper lighting in public spaces to deter activity in darkness;	No of installed security lights where necessary	TURWASCO/TURUWASCO	
	• Ensure consistent follow-up with reporting and addressing vandalism to maintain deterrence;	Evidence of insecurity response measures at the scheme	TURWASCO/TURUWASCO	
	• Educational programs in schools to teach responsible behavior;	Number of the educational programs implemented	TURWASCO/TURUWASCO	
	• Public awareness campaigns about the harms of vandalism and supporting community policing.	Number of public awareness meetings	TURWASCO/TURUWASCO	
Water-related conflict Resource scarcity especially during the dry periods: Limited availability leading to tensions between users.	• Regular stakeholder engagements to facilitate open dialogue with community leaders and residents to address concerns and incorporate feedback into project design. • Community awareness campaigns through training communities about project safety	Number of public awareness meetings	TURWASCO/TURUWASCO	WSTF County Government of Turkana

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E & S impacts and their Sources	Proposed Mitigation Measure	Monitoring and Measurement	Responsible Entity	Supervising Agency
Environmental changes: Climate change or natural disasters exacerbating resource shortages.	protocols, emergency procedures, and reporting mechanisms;			
	• Put in place a sub-project community water sharing plan	Establishment of water allocation rules, Defined usage rights and restrictions, Level of community participation, Implement monitoring and evaluation, ability to resolve conflicts	WRUA TURWASCO/TURUWASCO	County Government of Turkana
	• Develop and operationalize grievance redress mechanism;	Availability of site specific GRM, Grievances recorded, addressed and closed	TURWASCO/TURUWASCO	WSTF County Government of Turkana
	• Promoting equitable access to water resources and services;	Evidence of involvement of the communities in	TURWASCO/TURUWASCO	WSTF County Government of Turkana
	• Establishing systems to identify potential conflict triggers and respond proactively;	Effective GRM and SMP available at the site	TURWASCO/TURUWASCO	WSTF County Government of Turkana
	• Promoting responsible reporting and raising awareness of conflict issue; and	Number of public awareness meetings	TURWASCO/TURUWASCO	WSTF County Government of Turkana
	• Adopting the inter-community conflict resolution mechanisms; and			WSTF County Government of Turkana

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Table 33: Kangakimak Environmental and social monitoring plan

Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
Preconstruction				
	Approved project design with that is not affecting private land owners	Before construction	Document review	Engineering consultant WSTF
	Valid allotment letters/title deeds for the scheme	Before commissioning/ handing over the scheme to TURWASCO		County Government of Turkana
	Minutes of disclosure meeting, Agenda and attendance register	Before commissioning/ handing over the scheme to TURWASCO		County Government of Turkana
	Compliance report	Before construction		WSTF
Construction				
Soil Erosion Control Monitoring	Number of soil erosion control measures in the program of works, amount of resources set for soil erosion control	Weekly Based on Activities	Site assessment	E&S Team Contractor E&S consultant E&S Sub PIU E&S PIU
	Project design that considers areas with minimal vegetation, Amount of vegetated area spared by the project	Before construction Weekly Based on Activities	Document review Site assessment	
	Number trenches that are backfilled and compacted	Weekly Based on Activities	Site assessment	
	Number of enforcement measures to ensure use of the existing routes during site access	Weekly Based on Activities	Site assessment	
Soil pollution prervention	Availability of soil pollution measures in the program of works	Weekly Based on Activities	Site assessment	E&S Team Contractor E&S consultant E&S Sub PIU E&S PIU
	Number or availability of fuel and chemical stores with impervious surface	Monthly Based on Activities	Site assessment	
	Training records and plans, attendance lists, number of workers trained	Monthly Based on Activities	Document review Site Assessment	
	Program of equipment maintenance	Weekly Based on Activities	Document review at the site	
	Valid waste handler license and filled waste tracking sheets	During and after dispatch of waste	Site assessment	

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	Availability of a complete spill kit at the site	Based on Activities	Site assessment	
	Availability of operational drip trays at the equipment servicing area	Weekly Based on Activities	Site assessment	
Air pollution prevention	Evidence of watered working areas where applicable	Daily On need basis	Site assessment	E&S Team Contractor
	Number of workers with appropriate dust masks	Daily	Site assessment	E&S Team Contractor
	Air Quality Training included in the EHS staff induction, training records	Monthly	Document review at the site	E&S Team Contractor
	Evidence of site specific equipment planned maintenance schedule	Monthly	Document review at the site	E&S consultant E&S Sub PIU
Noise pollution prevention	Noise control measures included in the program of works	Before construction Monthly	Document review at the site	E&S Team Contractor
	Relevant planned maintenance scheduled of the equipment available at the site, noise rating of the equipment	Monthly	Document review at the site	E&S Team Contractor
	Evidence of no night working policy at the site	Monthly	Document review at the site	E&S Sub PIU E&S PIU
	Number of workers working in noisy environment with appropriate PPE for noise	Monthly	Site assessment Document review	E&S Team Contractor
	Noise warning signs where applicable, evidence of noise agenda in the community consultation meeting			E&S Sub PIU E&S PIU and PCU
Minimal impacts on Flora and Fauna	Evidence of Measures implemented to avoid clearing mature trees and vegetation outside project site	Monthly	Site assessment Document review	E&S Team Contractor
	Evidence of proper methods applied to clear vegetation	Daily during construction	Site assessment Document review	E&S Team consultant E&S Sub PIU E&S PIU and PCU
	Number of tree seedling planted	Monthly	Site assessment Document review	
	Availability and implementation of measures to identify and control alien species	Monthly	Site assessment Document review	
	Evidence of Measures implemented to avoid clearing mature trees and vegetation outside project site	Monthly	Site assessment Document review	

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	No of workers sensitized on protection of animals	Monthly	Site assessment Document review	
	Availability, Awareness and implementation of measures to protect stray animals	Monthly	Site assessment Document review	
Measure to reduce Traffic Impacts	Evidence of consultation with relevant road departments and agencies where applicable	Before construction works	Site assessment	E&S Sub PIU E&S PIU and PCU
	Availability of appropriate safety signs at the road crossing point	Daily during construction along the roads	Site assessment	E&S Team Contractor E&S Team consultant Contractor
	Traffic (vehicle, human and livestock) control measures where applicable	Daily during construction along the roads	Site assessment	
	Number and condition of the provided alternative routes	Weekly	Site assessment	
	Community consultation plan, number of consultation meetings	Before construction	Document review at the site	E&S Team Contractor E&S Team consultant Contractor
	Number of appropriate road signs installed	Daily	Site assessment	
	Number and condition of the provided alternative routes	Weekly	Site assessment	
Prevention of forced labour and labour related conflicts	Availability of the site specific LMPs at the construction site	Before site mobilization Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Training records and attendance list	Monthly	Document review at the site	
	Availability of recruitment criteria, number of workers engaged through the criteria	Monthly On need basis	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Formal contracts for the workers Number of workers with contract	During site mobilization Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Well documented worker information	Throughout the construction	Document review at the site	

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	Formal commitment by the consultant to offer equal opportunities Number of workers recruited at the scheme through transparent process	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Human Resource Policy with workers' rights	Throughout the construction	Document review at the site	HR Contractor
	ID for all the employed persons, evidence of no child engaged	Throughout the construction	Document review at the site	HR contractor
	Availability of GRM that is relevant to project site	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Legal register for the lot allocated to the contractor	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Number of job adverts placed in the chiefs office or common public area at the project area	Throughout the construction	Site assessment	E&S Cotra
	Evidence of submitted forced labor performance declaration	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Formal commitment to prevent forced labour	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
Prevention of social tensions	No of workers from from the project area area employed in the project	Throughout the construction	Document review at the site	HR contractor
	No of members of community employed	Throughout the construction	Document review at the site	HR contractor
Prevention of SEAH GBV	SEA-H Training Plan, No of the workers trained.	Monthly	Document review at the site	GBV Expert Sub PIU GBV Expert PCU
	Clear and culturally sensitive GM and SEAH/GBV procedures at the project site.	Throughout the construction	Document review at the site	
	Number of sanitation conveniences and changing rooms for both genders, appropriate rest area	Throughout the construction	Document review at the site	E&S Contractor
	Policy against child labour, Identification Numbers for all the employees	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
Maintaining site security	Availability of approved site specific SMP.	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	Evidence of consultation with CC	Throughout the construction	Document review at the site	E&S Contractor
Workers Occupational Safety and Health (OSH) hazards	Availability and implementation progress of the HSOP	Throughout the construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	Valid construction workplace certificate from DOSHS	Before Construction	Document review at the site	E&S Sub PIU E&S PIU and PCU
	DOSHS signed copy of RA report	Before Construction	Document review at the site	
	Number of workers inducted	Throughout the construction	Document review at the site	Contractor
	Qualification of the Health and safety officer at the site	Throughout the construction	Document review at the site	Contractor
	Number of trained first aider and fire marshals	Throughout the construction	Document review at the site	E&S Contractor
	Records of daily Tool Box Talks	Throughout the construction	Document review at the site	E&S Contractor
	No of workers with appropriate PPEs	Throughout the construction	Document review at the site	E&S Team Contractor
	Clean and convenient sanitation facilities	Throughout the construction	Document review at the site	E&S Team Contractor
	Availability of incident register at the site Well filled incidents	Throughout the construction	Document review at the site	E&S Team Contractor
	Workers with WIBA	Throughout the construction	Document review at the site	HR Contractor
	Number of water points for the workers at project site	Throughout the construction	Document review at the site	E&S Team Contractor
Community Health and Safety	Clean and convenient sanitation facilities	Throughout the construction	Document review at the site	E&S Team Contractor
	No of road appropriate safety signs provided	Throughout the construction	Document review at the site	E&S Team Contractor

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	Trenches with barricading tape	Throughout the construction	Document review at the site	E&S Team Contractor
	Area cordoned off	Throughout the construction	Document review at the site	E&S Team Contractor
	Number of appropriate safety signs installed at the construction site	Throughout the construction	Document review at the site	E&S Team Contractor
	Speed limit at the site and within the project area	Throughout the construction	Document review at the site	E&S Team Contractor
	Evidence of the consideration of community settlement in tank design	Before construction	Document review at the site	Supervision consultant
	Approved design and construction methods	Before construction	Document review at the site	Supervision consultant
Protection of Children rights	Qualification of the GBV / social safeguard officer Number of incidences (both reported and unreported), their investigation, solution and closure according to the SEAH Response Plan	Before construction	Document review at the site	E&S contractor E&S Consultant E&S Sub PIU, PIU and PCU
	No of workers sensitized	Throughout the construction	Document review at the site	
	Well documented procedures for background checks	Throughout the construction	Document review at the site	
	No of community sensitization meeting	Throughout the construction	Document review at the site	
	Number of the signed CoC	Throughout the construction	Document review at the site	
	Level of the SEAH plan implementation at the site	Throughout the construction	Document review at the site	
	Effective SEAH response plan	Throughout the construction	Document review at the site	
	Level of the LMP implementation at the site	Throughout the construction	Document review at the site	E&S contractor E&S Consultant

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	Availability and implementation status of Children Protection Strategy for the Lot	Throughout the construction	Document review at the site	E&S Sub PIU, PIU and PCU
	Number of workers trained on and signed CoC	Throughout the construction	Document review at the site	
	No of the workers with national identification card numbers at the site	Throughout the construction	Document review at the site	
Protection of VMGs rights	Plan of public consultation that is appropriate for community	Throughout the construction	Document review at the site	E&S contractor E&S Consultant E&S Sub PIU, PIU and PCU
	Number of VMGs identified and number of consultations	Throughout the construction	Document review at the site	
	Design that is user friendly to PWD	Throughout the construction	Document review at the site	
	Site specific GRM Involvement of site GRC	Throughout the construction	Document review at the site	
Operation				
Prevention of water contamination	Availability of predictive scheme maintenance plan			County Government of Turkana
Underground water resource conservation	valid water abstraction permit	Quarterly	Document review	County Government of Turkana
	Presence and/or number of working and calibrated telemetric meters	Quarterly	Site assessment	
	Evidence of payment	Quarterly	Site assessment	
	Number of sensitization meetings	Quarterly	Site assessment	
	Water quality analysis reports	Quarterly	Site assessment	
Ensuring the water is fit for human consumption	Regular Water quality reports that are meeting the standards for portable water	Quarterly	Site assessment	County Government of Turkana
	Approved design and construction with the animal trough located	Quarterly	Site assessment	

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Activity	Monitoring and Measurement/Indicator	Frequency of Monitoring	Means of verification	Responsible
	Well fenced and protected borehole area	Quarterly	Site assessment	
	Availability of the security personnel at the borehole area	Quarterly	Site assessment	
	No of meeting held with the community	Quarterly	Documents review	
Prevention of Livestock diseases	No of disease surveillances undertaken	Quarterly	Documents review	County Government of Turkana
	No of meetings	Quarterly	Documents review	
	Livestock Disease management plan in place	Quarterly	Documents review	
Prevention of Vandalism	Well maintained fence	Quarterly	Documents review	County Government of Turkana
	No of installed security lights where necessary	Quarterly	Documents review	
	Evidence of insecurity response measures at the scheme	Quarterly	Documents review	
	Number of the educational programs implemented	Quarterly	Documents review	
	Number of public awareness meetings	Quarterly	Documents review	
Prevention of water related conflicts	Number of public awareness meetings	Quarterly	Documents review	County Government of Turkana
	Availability of site specific GRM, Grievances recorded, addressed and closed	Quarterly	Documents review	
	Evidence of involvement of the communities in	Quarterly	Documents review	
	Effective GRM and SMP available at the site	Quarterly	Documents review	
	Number of public awareness meetings	Quarterly	Documents review	
	Number of public awareness meetings	Quarterly	Documents review	

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8.4 Institutional Arrangements, Capacity Development and Training

8.4.1 E&S Organization

To support timely and effective implementation of environmental and social project components and mitigation measures, the ESMP draws on the ESIA's assessment of the existence, institutional arrangement / roles, and capability of environmental and social units on site or at the PCU at Ministry and at County levels. The ESMP should articulate the roles of such units, and where need be proposing the training of staff, to allow implementation of ESIA recommendations. Specifically, the ESMP should provide a specific description of institutional arrangements responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).

8.4.2 Roles and Responsibilities

Implementing/supervising Agency	**Title of the responsible staff**	**Responsibilities in the ESMP**
PCU	Environmental Specialist	- Monitor and report on compliance with the ESMF and ESMP. - Ensure that subproject investments are screened, and safeguard instruments are prepared, cleared, and disclosed. - Review subproject environmental performance and prepare quarterly monitoring reports. - Ensure that environmental mitigation measures are incorporated into works contracts. - Approval of the CESMP
	Social Specialist	- Monitor social risks and ensure compliance with social safeguards. - Facilitate community engagement and consultations as per the ESMP. - Track and report on social impacts and mitigation measures.
	GBV Focal Point	- Monitor and manage GBV-related issues in the project. - Ensure that GBV/SEAH prevention and response measures are integrated into the ESMP. - Report and follow up on GBV/SEAH incidents, ensuring corrective actions are taken.
PIU	Environmental Specialist	- Oversee and monitor environmental compliance at the subproject level.

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Implementing/supervising Agency	Title of the responsible staff	Responsibilities in the ESMP
		- Ensure that environmental mitigation measures are effectively implemented by contractors. - Provide guidance to contractors on environmental safeguards and practices. - Monitor and report on the implementation of the ESMP.
	Social Specialist	- Ensure compliance with social safeguards at the subproject level. - Monitor and report on the implementation of social mitigation measures. - Facilitate community consultations and social impact assessments. - Support the preparation and monitoring of RAPs (if applicable).
Sub PIU	Environmental Specialist	- Monitor the implementation of ESMPs at the subproject level. - Ensure compliance with national and World Bank environmental policies. - Ensure contractors' adherence to the EHS management plan and ESMP. - Report on environmental impacts and mitigation efforts to the PIU.
	Social Specialist	- Oversee the implementation of social safeguards at the subproject level. - Conduct community engagement activities and ensure stakeholder involvement. - Monitor social impacts and track the effectiveness of mitigation strategies. - Report on social issues, including land acquisition, resettlement, and community concerns.
	GBV Focal Point	- Ensure that GBV/SEAH prevention and response measures are followed at the subproject level. - Track and report any GBV/SEAH incidents, ensuring prompt response and mitigation.

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Implementing/supervising Agency	Title of the responsible staff	Responsibilities in the ESMP
		- Conduct training and awareness programs on GBV issues for project stakeholders.
Engineering and ESIA consultant	Team Leader	- Oversee the preparation and review of ESIA and ESMP documents. - Provide technical guidance on environmental and social risks, and mitigation strategies. - Ensure that the ESMP is effectively integrated into subproject planning and execution. - Lead the preparation of monitoring and evaluation reports for the ESMP.
	EHSS Specialist	- Support the implementation of environmental, health, safety, and social safeguards. - Ensure compliance with environmental regulations and mitigation measures during construction. - Monitor environmental and social performance during the operational phase. - Provide recommendations for improvement in environmental and social management. Incident Reporting
	Social Specialist	- Ensure that social safeguards are incorporated into the ESMP. - Monitor social impacts and mitigation measures during project implementation. - Facilitate community consultations, grievance redress, and public participation in project activities.
Contractor	Project Manager	- Ensure the implementation of the ESMP and safeguard measures at the project site. - Coordinate with the PIU and consultants for regular reporting and compliance. - Oversee contractor compliance with the environmental and social clauses in the contract. - Ensure timely submission of monthly progress reports, including ESMP implementation status.

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Implementing/supervising Agency	Title of the responsible staff	Responsibilities in the ESMP
	EHS Manager	- Oversee the environmental, health, and safety management systems on site - Ensure that the project complies with all environmental, health, and safety regulations and standards. - Implement EHS risk management strategies and monitor their effectiveness. - Report on EHS compliance and any incidents or accidents.
	Project sociologist	- Manage and implement community engagement activities. - Monitor social risks and ensure the implementation of social mitigation measures. - Support grievance redress mechanisms and address any social issues arising during the project. - Report on social impacts and ensure that the community's concerns are addressed effectively.

8.5 E & S Management Plans

Effective implementation of the Environmental and Social Management Plan (ESMP) is crucial for ensuring that potential environmental and social risks and impacts identified during the ESIA study, are mitigated and managed throughout the project lifecycle. This section outlines specific Environmental and Social (E&S) Management Plans that provide a structured approach to manage identified risks and impacts systematically and sustainably. Each plan specifies clear objectives, responsibilities, timelines, and monitoring mechanisms to address all aspects of environmental and social performance. These E&S plans align with international standards, including World Bank's Performance Standards and other relevant regulatory requirement. The overarching goal is to promote positive environmental and social outcomes while minimizing adverse effects, ensuring compliance, and fostering transparency and accountability.

These E&S Management Plans include:

iii.1 Construction Occupational Safety & Health Measures;
iii.2 Security & Community Safety Management -Measures;
iii.3 Pollution Prevention measures;
iii.4 Traffic Management;
iii.5 Waste Management;
iii.6 Emergency Preparedness and Response;
iii.7 Employment and Training;

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iii.8 Stakeholders Engagement;
iii.9 Labour Influx Management Strategy;
iii.10 Grievance Redress Mechanism;
iii.11 SEA and GBV action measures;
iii.12 Chance Find Procedures; and
iii.13 Child protection strategy.

8.6 Costs of ESMP Implementation

The ESMP for Kangakimak is not costed since the tender documents for the project will require the contractor to incorporate environmental and social obligations into their rates, as such certain ESHS obligations will be implemented at no additional costs to the contract sum. However, all the water schemes including Kangakimak will be allocated approximately Ksh 400,000.00 to ensure implementation of the SEAH prevention Action Plan, Stakeholders Engagement Plan, Grievance Redress Mechanism and Sensitization of HIV/AIDS during construction.

8.7 Emergency Contacts

Before the commencement of the proposed project, it is essential to have an emergency contact list that encompasses key stakeholders, authorities and institutions to ensure quick response and coordination. Below is a list of key contacts to have:

Security Agencies

- Turkana County Commissioner & Turkana South Sub-County Commissioner
- Area OCS
- Katilu Police Station
- Area Chief and Asst Area Chief
- Village Elders (Mzee wa mitaa)

Emergency Services

- Turkana County Referral Hospital Ambulance Hotline
- Turkana County Government. Fire Department
- Katilu Health Dispensary and the settlements health centres

Govt Institutions

- TURWASCO
- Snr Hydrologist WRA
- DOSHSs Office Hotline
- NEMA Hotline

Contractor

- Health and Safety Officer
- First Aid Marshalls for each section
- Fire Fighters for each section
- WIBA Insurance Number (to notify immediately in case of incidence)

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Chapter 9 Projects Climate Change Mitigation and Adaptation

9.1 Background

Climate change creates several challenges for the water and sanitation sector, because infrastructure systems are highly vulnerable to weather and climate variations. Climate impacts due to the occurrence of extreme weather events include impacts on infrastructure lifetime and capacity. Although water supply systems and their infrastructure are designed to withstand typical weather patterns, the impacts of current climate change and those arising in the short, medium, and long term can influence the infrastructure itself, the efficiency of the network, operations, and the ability of the infrastructure to withstand extreme events outside the "typical" range. This indicates that infrastructures not only need to be reliable when submitted to standard load, but also be able to minimize the magnitude and duration of failures under exceptional conditions such as increased rainfall intensity, changes in precipitation patterns, and more extreme weather events.

The majority of the impacts to water supply systems are caused by heavy downpours and subsequent erosion and flooding. The main hazards noted along the project area are related to:

1. Water quality;
2. Water quantity;
3. High operations and maintenance costs;
4. Flooding;
5. Washouts; and
6. Erosion.

To mitigate and adapt to the climate impacts, a number of strategies are proposed:

9.1.1 System Efficiencies

Development of a highly efficient water supply system that will reduce non-revenue water (NRW), i.e. leakage, metering errors and water theft, metering of water consumption to ensure balance between access and compensation, and installation of sectional meters to support system monitoring and regulation and promote leak detections and timely repairs.

9.1.2 Pipe Type

The project will use HDPE (High Density Polyethylene) pipes which are produced in 100M lengths, this will reduce the jointing between pipes and the potential risks of water ingress due to saturated soils due to heavy rainfalls.

9.1.3 Depth of water pipelines

All conveyance and distribution pipelines will be laid at a minimum depth of 1000mm, backfilled with the excavated soils to ordinary ground level and compacted to consolidate the soils.

9.1.4 Catchment protection

The proponent in conjunction with Kenya Forest Services to promote catchment revegetation; borehole site, storage areas and other suitable sites to ensure that the infrastructure risks of overtopping and flooding are mitigated.

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9.1.5 Slope protection measures

In pipeline sections with high grades to be protected with gabions, erosion control blankets and turf reinforcement mats, which can also be used for ditch protection, surface roughening, slope drains, gabion structures. Slopes will be protected to ensure that the risks of failures are minimized so as to protect the pipelines.

9.1.6 Clean Energy

The project during construction and operation adopt clean energy mechanisms for its energy requirements especially for office and residential energy demand. This will include solar energy, skylights and energy conservation training and sensitization.

9.1.7 Training and Awareness

Climate change training will focus on teaching project workers and communities about the science, causes, impacts, and solutions related to climate change. It aims to help individuals understand the complex nature of climate change, and to empower them to take action to mitigate and adapt to its effects both at work place and at their private spaces. Training will focus on raising the understanding of workers and communities on how to tackle the consequences of global warming, encourages them to change their behaviours and helps them to adapt to what is already a global emergency by reducing water usage and the consequent household total water demand.

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Chapter 10 Conclusions and Recommendations

10.1 Conclusions

The Project's impact on the physical environment will be manageable, mostly short-term construction-related impacts, which will be mitigated. The report has outlined mitigation measures in the ESMP matrix in chapter 8 to be implemented during the various project phases. Given that the Environmental Assessment undertaken under this Project, and considering the Project's strong economic justification, the Project satisfactorily meets environmental protection requirements provided that the mitigation, monitoring, and reporting plans are carried out.

10.2 Recommendations

The following are also recommended with respect to the proposed Project.

1. The contractor to implement the CESMP, strategies and implementation plans before and during works.
2. The project proponent WSTF to ensure full implementation of the ESMP and ESMoP proposals during implementation stage while Turkana County Government through TURWASCO to do so during operation and decommissioning stages of the project as will be required.
3. Deliberate (affirmative action) measures to be taken by the proposed project to consider connecting vulnerable and marginalized individuals to water within the project area or ensuring provision of water kiosks is near dwelling of such groups and making the commodity affordable.
4. That any unforeseen impacts shall be immediately notified to the environmental assessor to ensure that they are immediately addressed and mitigated.
5. Project Construction works to commence after approval and issuance of the EIA license.

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CIDP 2023-2027 Turkana County

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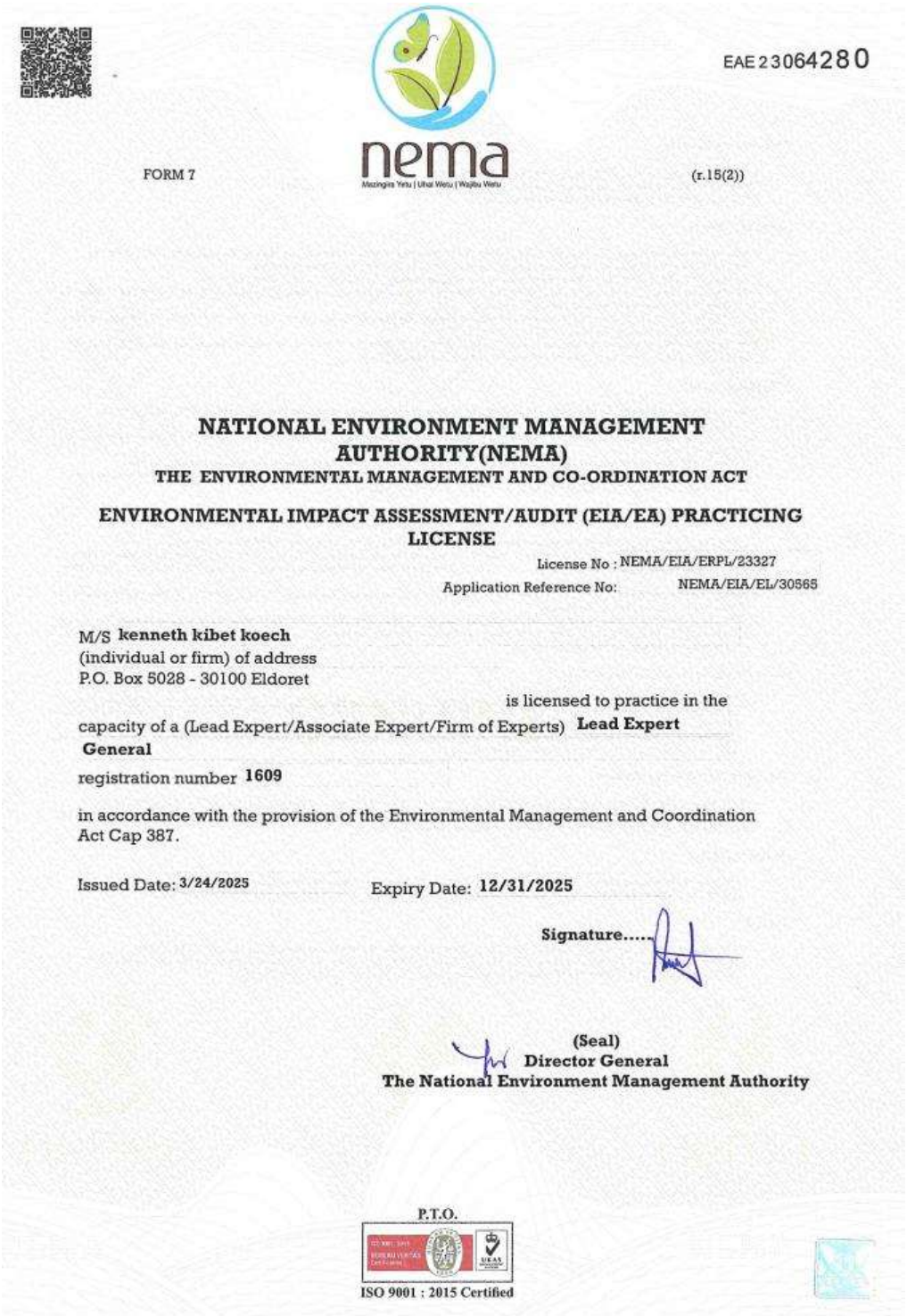
Exploring Kenya Inequality Turkana County KNBS

Turkana County Water Resources Factsheet

County Climate Change Action Plan 2023-2027 Turkana County Government

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10.3 Appendix I: Firm and Lead Expert License



EAE 23064280

FORM 7 (r.15(2))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/23327

Application Reference No: NEMA/EIA/EL/30565

M/S **kenneth kibet koech**
(individual or firm) of address
P.O. Box 5028 - 30100 Eldoret

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
General
registration number **1609**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: 3/24/2025 Expiry Date: **12/31/2025**

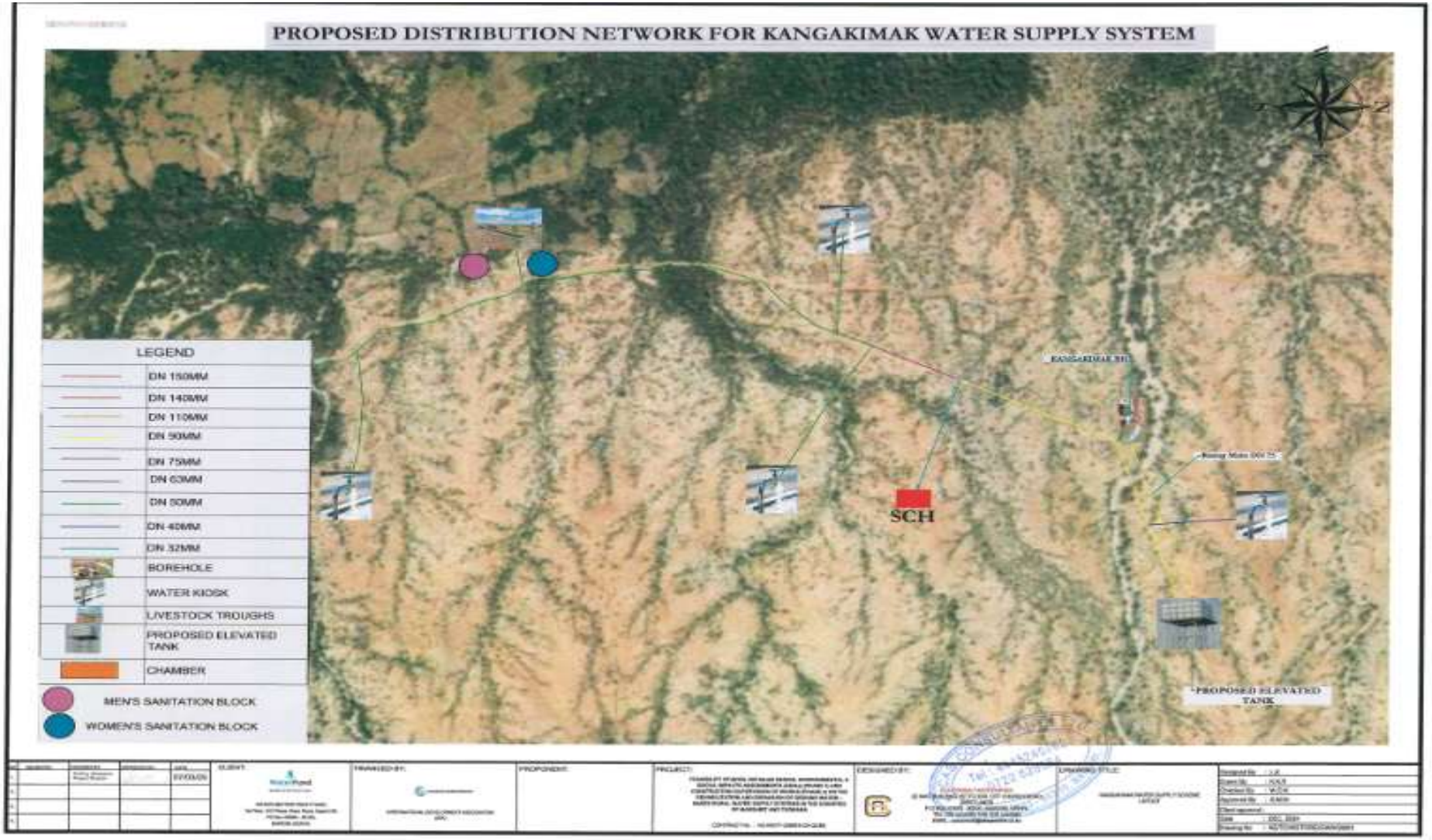
Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified

10.4 Appendix II: Project General Layouts



Appendix III: Key Stakeholders Log

CAS CONSULTANTS LTD
CONSULTING ENGINEERS AND ENVIRONMENTALISTS
1st Floor, LeMac Building, Church Road, Off Waiyaki Way, Westlands.
P.O. Box 20323- 00200, Nairobi, Tel: +254 020 4445265, +254722828554
E-mail: info@casconsultants.co.ke/casconsult@africaonline.co.ke

FEASIBILITY STUDIES, DETAILED DESIGN, ENVIRONMENTAL & SOCIAL IMPACTS ASSESSMENTS (ESIAs) (PHASE 1) AND CONSTRUCTION SUPERVISION OF WORKS (PHASE 2) ON THE REHABILITATION AND EXPANSION OF GROUND WATER -BASED RURAL WATER SUPPLY SYSTEMS IN THE COUNTIES OF MARSABIT AND TURKANA

STAKEHOLDER CONSULTATION LOE – KAJ

No.	Name	Organization	Title/Designation	Email/Mobile No.	Signature
1.	Samson	[redacted]			
2.	ALLAD				
3.	[illegible]				
4.	[illegible]				
5.	AMOS				
6.	DAVID				
7.	EZEKIEL				
8.	JAMES				
9.	MARAL				
10.	[illegible]				
11.	[illegible]				

ANISO 9001:2015 CERTIFIED COMPANY

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ENTRY MEETING TURKANA

STAKEHOLDER CONSULTATION LOG

No.	Name	Signature
1.	Esther	
2.	Lopeler	
3.	ZACH	
4.	Kibet	
5.	Fredrick	
6.	SEIH	
7.	Prudence	
8.	Eng Idenya	
9.	Solomon	
10.	David Kabul	
11.	Sheila	

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E-mail :info@casconsultants.co.ke/casconsult@africaonline.co.ke

STAKEHOLDER CONSULTATION LOG

No.	Name	Signature
1.	[redacted]	
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

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APPENDIX IV: Minutes of Meeting and Attendance lists

PROPOSED REHABILITATION, EQUIPPING, EXPANSION AND OPERATION OF THE KANGAKIMAK WATER SUPPLY SCHEME.

MINUTES OF MEETING

KANGAKIMAK BARAZA

Date: December 11, 2024 **Time:** 10:00 Hrs

Venue: Kangakimak Baraza Park

Participants	
i. The community	See attached attendance log
ii. Consultant	Kibet Koech Sheila Akinyi Winnie Gachohi
iii. Technical team (TCG)	Becky Maide – Principal Environmental Officer, Turkana County Government Emanuel Ekitela – Village Admin - TCG

Agenda

1. Opening Remarks and Introduction;
2. Project Description;
3. Environment and social impacts and mitigation measures;
4. Discussions
5. Group Discussion (GD)
6. Way Forward and Closing Remarks

---

1. Opening Remarks and Introduction

The meeting began with a warm welcome from the area chief and village administrator who officially opened the meeting. The chief emphasized the critical importance of the proposed water supply project to the local community. Participants were encouraged to actively share their views and concerns to ensure that the project adequately addressed the community's needs. The chief further reiterated the community's vital role in ensuring the project's success and sustainability.

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2. Project Dissemination

The Environmental and Social Impact Assessment (ESIA) consultant presented a detailed overview of the water supply scheme. The consultant explained using maps and photos that the project aimed to address critical water access challenges, improve livelihoods, and contribute to economic growth within the community. Key aspects of the project were discussed, including the construction of boreholes, the establishment of separated water access points for domestic and livestock. The objective is to reduce the water access time and enhance water access safety especially for women and children. The project will construct at least 4 water kiosks, one elevated steel tank, one livestock access point and connection to Kangakimak primary school. The community were informed that the water will be managed as provided for by the Water Act 2016 to ensue sustainability. The consultant assured the community that their input would play a central role in shaping the project's implementation.

---

3. Community Engagement

The ESIA consultant facilitated a question-and-answer session to gather feedback from the community. Participants raised several issues and concerns, which were addressed as follows:

No.	Issue Raised	Response Provided
1	Opening Remarks and Introduction	The chief welcomed all the participants and the meeting started with a word of prayer, introduction of the participating members and the meeting objectives
2.	Project description	The consultant informed the community about the project background, the project justification, the proposed project as per the engineered designs with detailed boreholes and distribution systems.
3.	Environment and social impacts and mitigation measures	The consultant highlighted the potential environmental, social, health, safety and security impacts including SEAH risks. The consultant proposed counter measures for the identified impacts.
	Discussions	
1	Lucas Riwole appreciated the project as designed	Information
2	Lokiru Nakere appreciated the project as designed and the differentiated access including the inclusion of the	Information

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	neighbouring village in the project.	
3	James Ewesit proposed inclusion of Kangisaja, Loldit and Kayong villages in the scheme	Included in the project as designed.
4	Tukadi Ayoo appreciated the project as designed, she proposed additional boreholes to be developed to serve more people. She enquired about the communities along the force main pipeline access to water	Additional boreholes maybe considered in subsequent phases of the project if the water demand rises. The communities along the force main will be access water via a return pipe through gravity.
5	William Ebei enquired about service to Kanaodon settlement and the location of the water kiosks	Kanaodon was not part of the batch 1 project scope and could be considered in the subsequent batches. The engineers have sited water kiosks optimally within the community to ensure access by all.
	Focus Group Discussion	
1	GDs	The consultant informed the community members the objectives of the GD and the selection criteria of the GD membership which was agreeable to the community.
	Closing Remarks and Way Forward	
1	Closing remarks	The consultant thanked all the community members for participating in the meeting. The community members appreciated the project as designed and expressed that they don't expect changes to the designs
2	Way forward	The community fully support the project as designed and look forward to the project implementation.

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WATER SECTOR TRUST FUND (WSTF)

FEASIBILITY STUDIES, DETAILED DESIGN, ENVIRONMENTAL & SOCIAL IMPACTS ASSESSMENTS (ESIAs) (PHASE 1) AND CONSTRUCTION SUPERVISION OF WORKS (PHASE 2) ON THE REHABILITATION AND EXPANSION OF GROUND WATER –BASED RURAL WATER SUPPLY SYSTEMS IN THE COUNTIES OF MARSABIT AND TURKANA

County Turkana Location Kanamolon

Venue: Kanamolon Date: 11../12/2024 CAS CONSULTANTS LIMITED

	Name	Sign
1	Rebecca Tokol	
2		
3	EWESIT	
4	Aaron	
5	Namod	
6	Lochor	
7	Lecha	
8	Etoot	
9	Ingetan	
10	James	
11	Lokeno	
12	John	
13	Ekuam	
14	LOKamar	
15	Lomanat	
16	LOSEKem	
17	Fridick	
18	Nariko	
19	Ekidap	
20	Arukudi	
21	Atiir	
22	Aguruth	
23	Atook	
24	Nangiro	
25	Awesit	
26	Asinyen	
27	Iwadr	
28	Asinyen	
29	Atoot	
33	Aule	
34	Nawaar	
35	Emmily	
36	SELINA	
37	Kospir	
38	Nenimung	
39		

Location and Signature

ORIJO SCALE

ASSISTANT CHIEF
KANAMOLON LOCATION
P.O. Box 61 KORIJO
Date 11/12/24

10-15 9th-12th

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WATER SECTOR TRUST FUND (WSTF)

FEASIBILITY STUDIES, DETAILED DESIGN, ENVIRONMENTAL & SOCIAL IMPACTS ASSESSMENTS (ESIAs) (PHASE 1) AND CONSTRUCTION SUPERVISION OF WORKS (PHASE 2) ON THE REHABILITATION AND EXPANSION OF GROUND WATER –BASED RURAL WATER SUPPLY SYSTEMS IN THE COUNTIES OF MARSABIT AND TURKANA

County TURKANA Location Kamaoton

Venue: KANGAK [illegible] GAS CONSULTANTS LIMITED

	Name	Sign
1	Ewoi	
2	Nelos	
3	Likidor	
4	Adukan	
5	Akudel	
6	Akitela	
7	Akiru	
8	Namedek	
9	Nailiono	
10	Ekunoit	
11	Bonface	
12	Ngisanya	
13	David	
14	Samwel	
15	Kelvin Ekol	
16	Peter	
17	Paulo	
18	William	
19	Ekal	
20	Puuo	
21	Ewoi	
22	Ikoo	
23	Ekuam	
24	Ilo	
25	Losike	
26	Aloolo	
27	Ewaar	
28	Tukwa	
29		
33		
34		
35		
36		
37		
38		
39		

[redacted]

[illegible] CILARE

ASSISTANT CHIEF
KANGAKIPI SUB-LOCATION
P.O. BOX 3400, LODWAR
Date 11/12/24

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WATER SECTOR TRUST FUND (WSTF)

FEASIBILITY STUDIES, DETAILED DESIGN, ENVIRONMENTAL & SOCIAL IMPACTS ASSESSMENTS (ESIAs) (PHASE 1) AND CONSTRUCTION SUPERVISION OF WORKS (PHASE 2) ON THE REHABILITATION AND EXPANSION OF GROUND WATER –BASED RURAL WATER SUPPLY SYSTEMS IN THE COUNTIES OF MARSABIT AND TURKANA

County Turkana County Location Kanamorlon

Venue: Kanamorlon ULTANTS LIMITED

	Name	Sign
1	Mercy	
2	Pauline	
3	Beatrice	
4	Jane	
5	Nercas	
6	Akarhalan	
7	Nanuudu	
8	Loote	
9	Ebwaney	
10	Asibita	
11	Lokwolan	
12	KAPOKAR	
13	HANNAH	
14	ALEPER	
15	AMANMAN	
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
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27		
28		
29		
33		
34		
35		
36		
37		
38		
39	Chiefs Name	DANIEL MORIJO SILALE
	Location and Signature	

11/12/24

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APPENDIX V: Sample Key Informant and SES Questionnaire

REPUBLIC OF KENYA

Ministry of Water, Sanitation and Irrigation







CONSULTANCY TO UNDERTAKE AN INVENTORY OF EXISTING RURAL WATER SUPPLY SYSTEMS, O&M INSTITUTIONAL CAPACITY AND COMMUNITY WATER VULNERABILITY AND NEEDS ASSESSMENTS IN FIVE ASAL COUNTIES OF KENYA.

MARSABIT AND TURKANA KEY INFORMANT INTERVIEW GUIDE

INTRODUCTION

The Government of Kenya, in partnership with the World Bank under the Horn of Africa Groundwater Resilience Program, is undertaking efforts to enhance access to groundwater resources in Kenya's arid and semi-arid regions (ASALs). This project aims to rehabilitate and expand boreholes in the counties of Turkana, Marsabit, Mandera, Wajir, and Garissa, where water scarcity and climate shocks have posed long-standing challenges. Through the program, we seek to strengthen resilience to droughts and improve water availability for domestic, agricultural, and pastoral use, benefiting the communities most affected by water shortages.

To ensure that the project meets the needs and expectations of local communities, we are conducting this Key Informant Interviews (KII) as part of the Environmental and Social Impact Assessment (ESIA) for the project. This Guide will gather vital information about the current water situation, community needs, and views on the proposed project from an expert's viewpoint. By participating, you will help us understand the specific challenges, concerns, and potential benefits of the borehole rehabilitation initiative, guiding us to develop an inclusive and sustainable water supply solution.

Your responses will be treated with confidentiality and used solely for the purpose of this assessment. We appreciate your time and honesty in answering these questions, as your insights are essential to the success of this program. Thank you for your cooperation.

GENERAL INFORMATION

Date..11/12/2024.....

Name..Ezekiel Ichor.....

Organization/Institution..County Department of Education

Role/Position ...Director ECDE.....

County/Region of Operation ....Turkana.....

Contact information .....0713977727.....

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QUESTIONS

1. What are the main sources of water in this community?

   i) Seasonal Rivers.
   ii) Aquifers e.g. Nyapun Basin.
   iii) Lake Turkana.
   iv) Shallow wells.

2. What are the key challenges related to water access in this area?

   i) Too much time spent traveling to and fetching water.
   ii) Negative impact on school enrolment and attendance - school going children spend much time away in search for scarce water.
   iii) Natural disasters e.g. drought and floods which destroy and contaminate water sources for communities.

3. Are you aware of the proposed borehole rehabilitation and expansion project?

   Yes☑ No☐

4. What benefits do you think the project could bring to the community?

   (i) Environmental Benefits

   - Climate change mitigation - afforestation.
   - Aesthetic value from vegetation cover e.g. grass.

   (ii) Social Benefits

   - Irrigation fed agriculture/farming resulting in improved nutrition.
   - Increased school enrolment; children especially girls will not have to spend much time queuing for water.
   - Improved performance - adequate time will be allocated for learning & reduced absenteeism to look for water.

5. In your opinion, what are some of the project's negative environmental and social impacts that might be a concern to the local community?

   (i) Negative Environmental Impacts

   - During construction, there could be too much dust emission from increased vehicular movement and drilling equipment.
   - Noise from machinery.

   (ii) Negative Social Impacts

   - Increased pressure on available utility (water).
   - Cultural conflicts resulting from population influx.
   - Risk of SEAH especially to children who support their parents/guardians engaged in the project for example as food vendors

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6. What role do you think the community should play in maintaining the boreholes and ensuring long-term sustainability?

i) Participate actively by paying tariffs regularly for O & M.
ii) Own the project & support it.

7. Are you in support of the proposed project?

Yes☑ No☐

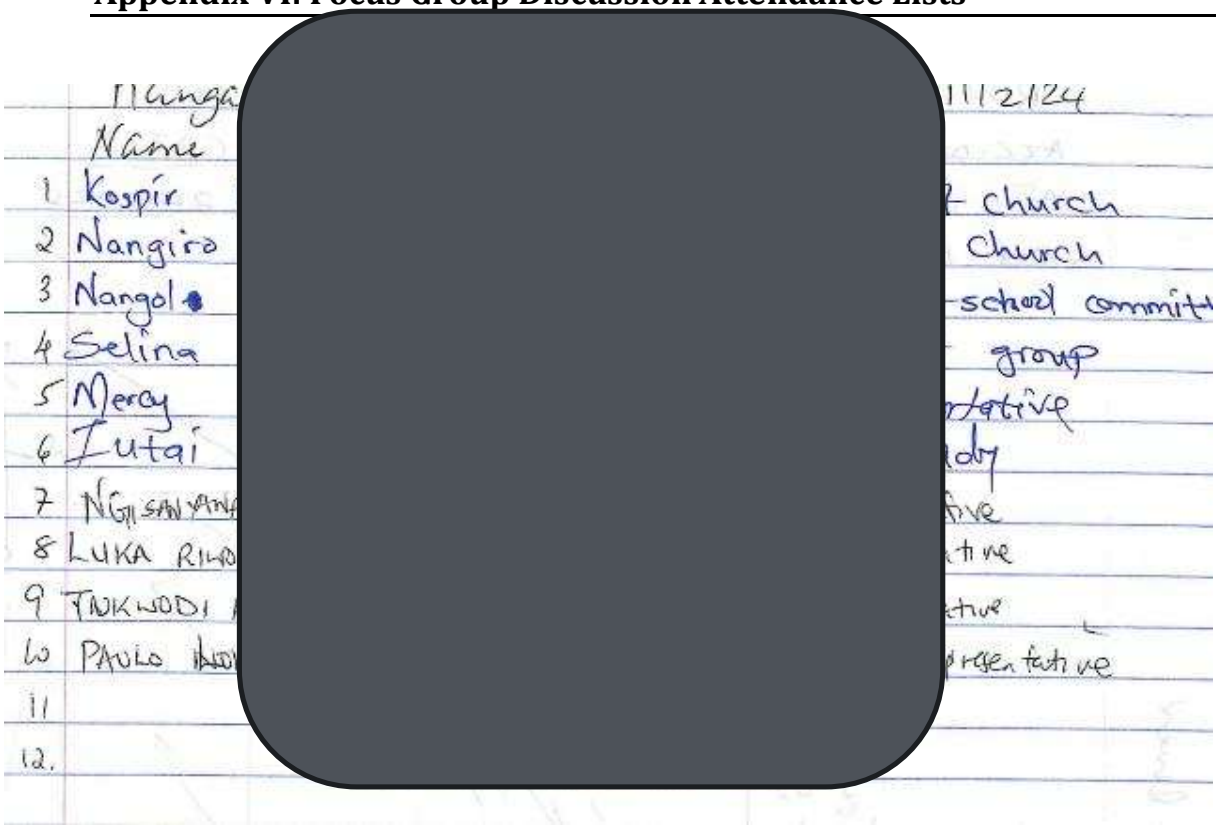
8. Please share any additional comments you may have that could help in effective implementation of the project.

i) Consider connecting schools to water. However, the water should strictly be for school's use, whereas the nearby community be provided with their own connection. This will reduce conflict between school management and the community.
ii) Education department be regularly engaged/updated of Project progress as part of key stakeholders.

THANK YOU SO MUCH FOR YOUR TIME.

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Appendix VI: Focus Group Discussion Attendance Lists



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Appendix IX: Data Collection Tools

The QR code below provides a link to the data collection tools and results.

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INFORMED CONSENT

Hello. Thank you for the opportunity to speak with you. My name is…… and I am working for CAS Consultants, that has been engaged by the Water Sector Trust Fund (Water Fund) to design the rehabilitation, construction, and sustainable management of boreholes through the Horn of Africa Groundwater for Resilience Programme (GW4R). The GW4R is expected to benefit an estimated **1,500,000 people** in Kenya living in the rural communities of the five counties of Turkana, Wajir, Garissa, Marsabit, and Mandera. As part of the project, we are conducting an environmental and social impact assessment study of the projects to the community.

As a key stakeholder in the project, you have been selected to participate in this study. I therefore kindly request you to share your honest views on different issues we will be discussing with you. Participation in this study is totally voluntary. I wish to assure you that if you agree to participate, the information given shall be kept strictly confidential and will only be used for the purpose of this study.

Do you agree to participate? 1. Yes 2. No (If yes, start the interview. If not, terminate the interview and thank the respondent). If you terminate the interview, please replace them with the next household in the village who are beneficiaries of the project.

PART I: GENERAL HOUSEHOLD INFORMATION

Start Time:
Date:

Name of Respondent……Male/Female…….. Tel……..
Name of Interviewer……..Date……
Location: _____
Village ……Sub Location……..
Sub County……Date **……**

1. Name and Age of household head (HH) ……Age ……
2. Gender of Household Head……
3. Highest education level attained by HH
   1) None
   2) Primary
   3) Secondary
   4) Tertiary
   5) University
4. Size of Household **Total**……Male……..Female…….

5. How many household members that fall into these categories live in your household?

Children Under 5	
Disabled Persons	
Elderly (over 64)	

6. Primary occupation of HH
   a) Crop production
   b) Livestock rearing
   c) Mixed farming (Livestock & Crop production)
   d) Business person
   e) Full Employment
   f) Quarrying/mining
   g) Casual Employment
   h) Other (Specify)

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7.	What is your major source of income? (circle the response)	(1) Crop production (2) Livestock production (3) business (4) Salaried employment (5) Casual labour (6) Remittances (7) others *(specify).*
8.	If salaried, what is your profession (circle the response)	1) Teacher 2)Government/ administrative officer 3)Nurse 4) Doctor 5) NGO employee 6)Other *(specify)*
9.	Other than your major source of income, how else do you get incomes?	(1) Crop production (2) Livestock production (3) business (4) Salaried employment (5) Casual labour (6) Remittances (7) others (specify).
10.	What is you total household monthly income? (In Kshs)	
11.	What is your total household expenditure KSh/Month/HH	

12. Other Incomes: Does your household receive other income from the following sources regularly or food aid:

Other sources of income	**Yes**	**No**
Pension		
Remittance		
Food aid: Does your household receive food aid of these categories:		
	1=Yes	**2=No**
301 Beans/ other pulses		
302 Cooking oil		
303 Maize/maize flour		
304 Rice		
305 Unimix (children supplement)		
306 Powdered milk		

13. What are the main challenges in your household? (Tick all that apply)
    a) Food insecurity
    b) Human diseases
    c) Shortage of drinking water
    d) Drought
    e) Floods
    f) Insecurity
    g) Natural resources-based conflicts
    h) Poverty
    i) Unemployment
    j) Livestock diseases
    k) Shortage of water for animals
    l) Human Wildlife conflict
    m) Shortage of water for crop production
    n) Poor roads
    o) Access to healthcare
    p) Access to schools
    q) Others (Specify)

PART II: WATER USE INFORMATION

1. Main Source of water:
    a) Open well
    b) Protected well

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c) Borehole
d) Unprotected Spring
e) Protected Spring
f) Piped water
g) River/Stream
h) Pond or Lake
i) Sand dams
j) Earth dam/Water Pan
k) Laghas
l) Irrigation canals
m) Rainwater collection
n) Water bowsers/tankers
o) Others (Specify)

2. Do you have access to borehole water supplied by WSP? Yes_____, No_____ **If No Go to Q5**
3. Do you pay for the water supplied by WSP?
4. What volume (L/day) of water do you access?
5. Water Expenditures
   a) Savings per Household _____ Kshs/Month/HH
   b) Expenditure per Household_____ Kshs/Month/HH
   c) Water Access Costs _____ Kshs/Month/HH
   d) Livestock water Access Costs Costs _____ Kshs/Month/HH
   e) Domestic water Access Costs _____ Kshs/Month/HH
   f) Irrigation water Access Costs _____ Kshs/Month/HH

6. Domestic Water demand liters/day or Av.
7. Approximately what is the Distance from the Water Source to your house?
   1=Less than 1 km
   2=Between 1 km and 4 km
   3=More than 4 km
   4=Water on premises
8. Approximately what Time do you take to collect Water per Day …….time/day (Mins)
9. Time taken to collect water Per one round Trip ……time (min) /day
10. Time taken at the water point to fill 20 litre jerry can ……time (min) /day
11. How many liters per trip……?
12. Willingness to connect to water service, 1) Yes □、2) No □、
13. Are you satisfied with the water provided by the WSP?
    1) Yes□、2) No □、
14. If no why? 1) poor Quality □、 2) Low quantity □、3) Poor Service □、4 Unreliable/rationed. 5 Expensive 6. Others (specify)
15. Are there any main water sources exposed to any contamination and/ or pollution?
    1=Yes 2=No
16. Please Specify the nature of contamination/pollution?

17. Do you treat your drinking water? (circle ONE appropriate answer)
    a) Yes, using chemicals
    b) Yes, boiling it
    c) Filtration
    d) Traditional root/plant
    e) Solar disinfection
    f) Others (Specify)
    g) No

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18. What challenges have you or any of your household members faced in accessing water? **(prompt by reading to them and tick those that apply)**
    a) Long distances to water points
    b) Poor quality water
    c) Congestion at the water points
    d) Conflicts
    e) Physical and/or verbal harassment or abuse
    f) Missing schools to fetch water or water the animals
    g) Spending the whole day collecting/fetching water
    h) Sexual exploitation and harassment
    i) Others (specify)

19. Are you involved in the management of water resources in the community?

    1=Yes 2=No

20. If yes, What role do you play?
    a) Management Committee Official/member of the water supply scheme
    b) Ordinary member of the water supply scheme
    c) Sub-committee member of the water supply scheme
    d) Employee of water supply scheme
    e) Others (specify)

21. Who makes decisions on water management in your water scheme?
    a) Men only
    b) Women only
    c) Mostly men with few women
    d) Men and youth
    e) Men, women and youth equally
    f) Others (specify)

22. To what extent are people living with disabilities involved in making decisions on water management in your water scheme?
    a) To a great extent
    b) To a small extent
    c) Not at all

23. To what extent are women involved in making decisions on water management in your water scheme?
    a) To a great extent
    b) To a small extent
    c) Not at all

24. To what extent are youth involved in making decisions on water management in your water scheme?
    a) To a great extent
    b) To a small extent
    c) Not at all

PART III: CULTURAL ASSESSMENT & PERCEPTIONS ON THE PROPOSED PROJECT

1. Are there sites of cultural significance within the project area?
    1. Yes, How many……

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Description

……

……

2. No **GO TO PART IV**

PART IV: SEAH AND HEALTH ISSUES

No	***Question***	***Response***
1.	*Which are three most common diseases in the area? [choose three most common diseases in the order of most to least prevalent]*	1. Waterborne diseases (Cholera, Diarrhea, Dysentery, Bilharzias,Typhoid, Amoeba) 2. Malnutrition (kwashiorkor, marasmus,Aenemia deficiencies in iron, iodine, zinc and vitamin A), *3. Malaria* *4. STIs* *5. HIV/AIDs* *6. Respiratory Diseases* *7. Tuberculosis* *8. Lifestyle Diseases (obesity, hypertension, diabetes, heart diseases* *9. Cancer* *10. Others (specify)*
2.	*How much does your family spend on medical expenses in one year?*	*1.*
3.	*In your opinion, how would you rate the cases of HIV/AIDs in this area?*	*2. Very Low* *3. Low* *4. Moderate* *5. High* *6. Very High*
4.	*Which gender is most affected by HIV/AIDs*	*1. Male* *2. Female* *3. Don't know*
5.	*Which age group is most affected by HIV/AIDS*	*1. Teenagers (12-18 years)* *2. Youths (18-35 years)* *3. Middle age – (35 – 50 years)* *4. Older Generation – (above 50 Years)*
6.	*What Factors can you attribute your response to Qn. 4.29 above?*	*1. High moral decadence (Commercial Sex Work highly common)* *2. Drug Abuse – Sharing needles* *3. Early sexual activities among the teenagers and youths* *4. Predatory Sex activities (Sex tourism)* *5. Lack of sensitization among the teenagers and youth* *6. Others (Specify)*
7.	*Where do patients access cares for HIV/ AIDs? Where do they access drugs and the necessary prophylaxis to manage their conditions*	*1. Nearest public health center* *2. Nearest Private health center* *3. Have to travel to a public referral hospital within the Sub-county* *4. Have to travel to a pubic referral health facility out of the sub-county* *5. Have to travel to a public referral health facility within the county*

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No	Question	Response
		6. Have to travel to a public referral health facility out of the county
Security Concerns in the borehole construction areas		
No	**Question**	**Response**
8.	Describe the Security situation within your area	1. Highly Unsecured 2. Moderately unsecured 3. unsecured 4. Moderately Secured 5. Secured 6. Highly secured
9.	Would you say the water supply project will impact the security situation of the area?	1. Highly unlikely 2. Unlikely 3. Neutral 4. Likely 5. Extremely likely
10.	Would specify the locations with reported security incidences	
Gender Based Violence concerns in the project area		
No	**Question**	**Response**
11. 8.1	Have you encountered any cases of gender-based violence in the last six months? (you or any of your family members)	1. Yes 2. No
12. 8.2	If Yes, what was the nature of the GBV?	1. Physical Assault 2. Sexual Assault 3. Emotional Abuse 4. Seeking sexual favour to employment 5. Seeking sexual favours to access water 6. Others Specify
13.	Were the cases reported?	1. Yes 2. No
14.	If the cases were reported, what actions were taken against the perpetrator	1. Apprehended and released 2. Apprehended and Prosecuted 3. Reported and Reprimanded 4. Nothing happened 5. Others Specify
15.	Have you witnessed any incidents of sexual exploitation, abuse and harassment (SEAH) within your community?	1. Yes 2. No
16.	If you have experienced or witnessed SEAH, did you report it?	1. Yes 2. No
17.	Why or why not?	
18.	Do you feel that there is adequate support in the community to support victims of SEAH?	**1.** Yes **2.** No

PART V: PROJECT INFORMATION

1. Are you aware of the proposed water supply project (HoAGW4RP)**?**
   1. Yes
   2. No **GO TO Q3**

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2. If yes, how did you get that information? THROUGH:
    1. Friends/Neighbours
    2. Chief's Baraza
    3. Media
    4. Other.
3. Are you willing to pay for improved water services Yes □ No □
4. If guaranteed with access to adequate quantity and quality water. How much are you willing to pay per month?_____ Kshs/month/HH
5. What are your expectations after completion of the proposed water supply project (HoAGW4RP)
   a) Access to adequate domestic water □
   b) Reliable water supply、 □
   c) Lower rates □、
   d) Adequate quantity of water □
   e) Quality and safe water
   f) Other Specify
6. Priority for the water supply project
   a) Increase water volume/plot [1、 2、 or 3]
   b) Improve quality of water [1、 2、 or 3]
   c) lower water access costs [1、 2、 or 3]
   d) Increase Water Supply for domestic and industrial use [1、 2、 or 3]

   (Code 1 - High priority 2. Prioritize 3. Low priority)

7. Would you like to have the project go on as proposed?
    1. Yes
    2. No

8. If YES, what are the major benefits you would expect from the proposed project?

9. If NO, Why

……
……

10. Will the project affect your current operations?
    1. Yes
    2. No
11. If yes, in what way will the project affect your operations?

12. What are some of the environmental and social impacts you anticipate due to the proposed water supply project (HoAGW4RP)?

……
……

	GPS location	***Latitude*** ***Longitude***
	End time	**HH:MM:SS**

THANK YOU FOR YOUR PARTICIPATION

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Appendix X. Minutes of Meeting and Consent Form

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Minutes for Stakeholder engagement for HoA GW4R project for Kang'akimak BH in Kang'akimak village, Arroo Sub County on 5th April, 2024.

i) Preliminaries.
ii) Project Disclosure.
iii) Community feedback.
iv) Adjournment.

Members present- As per attached in the attendance sheet.

i) Preliminaries;
The meeting was opened with a word of prayer from one of the Community member. Thereafter the team for HoA GW4R project had an opportunity to introduce themselves with also sharing the purpose of the stakeholder engagement.

Min 2) Project Disclosure.
The Coordinator for HoA GW4R Eng. Ruvoo went ahead to explain about this particular project. He informed the Community that this is a world Bank project that goes for 5 years. He informed them that the project has 2 phase. The current phase intends to undertake the rehabilitation works for the already drilled boreholes like steps of improvement of storage facilities i.e introduction of steel tanks to the area. The Coordinator requested the Community to give consent of land for this particular project. He reiterated that World Bank is keen in ensuring that there are no wrangles on matters land acquisition

Min 3) Community feedback.
Paulo Nakere appreciated the efforts the government is putting in ensuring that the community is supported by availing water for both livestock and human Consumption. He said that close household benefits from the current water source. He said also that they request water to be piped to the households. He requests provision of elevated steel tank to support them since that is the most desirable solution. Mr. Paulo also informed the team that they have small farms in their homesteads. He also requests for fencing to tame Vandalism from thugs. Request for chainlink fencing.

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Esther Ekal one of the women informed the team that the current project (water) was initiated by World Vision organization. She also added that the current Tank (plastic) was installed by World Vision.

The elder old man by the name Musa Akeno also confirmed that World vision supported them with the current water supply. He said that the yield of the water is high thus they had intentions to also support the nearby village of Kanaodon. He ~~only~~ mentioned the only challenge they face is piping and lack of proper storage tanks. He requests the project to introduce steel tanks - (two) tanks one for the human population and the other tank to support the livestock. Among the villages to be supplied are Nakpeerbei, Nawoyasegae, Nachemedei, Tukuum, Nakatukok, Katyadukuk, Schools; Nachemedei school; Kaayon 1km apart. They all added Nachola village also be supported since the BH they had broke down. Kanaodon (~~Kaayon~~) close to 2km be supported also.

Mr. Musa also highlighted that the repairs of the current borehole were supported by Turkana County Government.

Alice Asibitar added her voice by saying that, the water upon piped into the households the members should contribute something to cater for repairs. She said they before used to be contributing Ksh. 300 per month, ~~April~~ the kiosks 2sh/200 per month.

Obs:

Mzee Musa emphasized need for the project to support the farmers through water accessibility. He also added that water should be made available for their livestock.

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Project Management Committee (PMC)

NAME	ID NO.	PHONE NO.	Sign.
1. Emily Akai Ekitek	26753618	0799813316	
2. Selina Ewoi Ekidor	30029181	0748480723	
3. Rose Ekimat Ekuwom	42502880	0701919602	
4. Paul Lokiru Naker	30768136		
5. Luka Rinole	25069506	0722247082	

Grievance Management Committee (GMC)

NAME	ID NO.	PHONE NO.	Sign.
1. ~~Paul Lokiru~~			
1. Tukwodi Atoyo	4725143	0727709753	
2. Asibitar Akeno	21421473	0740747150	
3. Nglisenyana Adiaka	29253447	0705456987	

Land Management Committee (LMC)

NAME	ID NO.	PHONE NO.	Sign.
1. John Ekakle Lokadongloi	25124586		
2. Nelson Ng'ilinio Tuiko	42502211	0706842327	
3. Akidar Lonat Lonanat	29253395	0713669762	
4. Ekachakan Nakuria Lotamk	24849664	0713632036	
5. Ng'ikamatak Naro	29254146	0799038014	

Min4) Adjournment:

There being no business under discussion, the meeting was closed with a word of prayer from Emily at 1237hours.

Minuts Prepared by: Emanuel Randa DO - NEMA

Minuts Approved by: Chief - Kanakimak

NAME	PHONE NO.	ID NO.
1. DANIEL M. SILALE	0719753981	21328781

ASSISTANT CHIEF
KANAODON SUB-LOCATION
P.O. BOX 65-30500, LODWAR
Date. 6/04/24 Sign.

Minuts Approved by: Village Administrator TCG.

NAME	PHONE NO.	ID NO.
EMMANUEL LOMURIA	0743809018	35048144

ADMINISTRATOR
TCG VILLAGE UNIT
P.O. BOX 65-30500, LODWAR

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COUNTY GOVERNMENT OF TURKANA
MINISTRY OF WATER SERVICES
~~PAYMENT SCHEDULE~~
ATTENDANCE SHEET

Meeting Name: Site Eligibility Engagement for HoAGW4RP Kenya Programme **Venue:** Kang'akimak Community Hall **Date** 5/4/2024

NO.	NAME	VILLAGE	M/F	PWD	Above 35 YES/NO	PHONE NO	SIGNATURE
1.	LONGOR ESEKON	NADYAREGAE	F	NO	YES		
2.	ASURUT ÉRUMAN	NADYAREGAE	F	YES	NO		
3.	EIDA NAPERIT	KANGAKIMAK	F	NO	NO		
4.	PAULINA ATABO	NADYAREGAE	F	NO	NO		
5.	NANGOL EPUR	KANGAKIMAK	F	NO	YES		
6.	ALIM ETAABA	NADYAREGAE	F	NO	NO		
7.	AULE EKITELA	KANGAKIMAK	F	NO	YES		
8.	MORU EKUNAM	NADYAREGAE	F	NO	YES		
9.	NALAPAT LONGINA	KANGAKIMAK	F	NO	NO		

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COUNTY GOVERNMENT OF TURKANA
MINISTRY OF WATER SERVICES
PAYMENT SCHEDULE
ATTENDANCE SHEET

Meeting Name: [redacted] **gement for HoAGW4RP Kenya Programme Venue:** Kang'akimak **Date:** 5/04/24

NO.	NAME	VILLAGE	M/F	PWD	Above 35 YES/NO	PHONE NO	SIGNATURE
10	CHRISTINE	KANGICHUCHUK	F		YES		
11	DORCAS	KANGICHUCHUK	F		YES		
12	ATIR L	NADYAREGAE	M		YES		
13	EBWANGAN	KANGICHUCHUK	M		YES		
14	NAPEYOK	NAPEROBEI	F	YES	YES		
15	ARUKUDI	KANGICHUCHUK	M		NO		
16	AKIDAP	KANGICHUCHUK	M		NO		
17	EKUTAN	KAAYONG	F		YES		
18	EIYAN	KAAYONG	M				

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COUNTY GOVERNMENT OF TURKANA
MINISTRY OF WATER SERVICES
PAYMENT SCHEDULE
ATTENDANCE SHEET

Meeting Name: Site Eligibility Engagement for HoAGW4RP Kenya Programme **Venue:** Kanglakinak **Date** 5/09/24

NO.	NAME	VILLAGE	M/F	PWD	Above 35 YES/NO	PHONE NO	SIGNATURE
19.	CELLIA	KACHEMEDEI	F	NO	NO		
20.	AMOJONG	KACHEMEDEI	F	NO	YES		
21.	IRINE	KACHEMEDEI	F	NO	NO		
22.	MELVIN	KACHEMEDEI	F	NO	NO		
23.	ICHARAIT	KANGAKINAK	F	YES	YES		
24.	SELINA	KACHEMEDEI	F	NO	NO		
25.	KOSPIA	KACHEMEDEI	F	NO	YES		
26.	AKACHALAN	KANGAKINAK	F	NO	YES		
27.	NGAYELEL	KACHEMEDEI	F	NO	YES		

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COUNTY GOVERNMENT OF TURKANA
MINISTRY OF WATER SERVICES
PAYMENT SCHEDULE
ATTENDANCE SHEET

Meeting Name: Site Eligibility Engagement for HoAGW4RP Kenya Programme **Venue:** Kang'akinak **Date** 5/04/2024

NO.	NAME	[redacted]	VILLAGE	M/F	PWD	Above 35 YES/NO	PHONE NO	SIGNATURE
28.	AMEKWI		NADYAREGAE	F	YES	YES		
29.	AKALALE		NADYAREGAE	F	NO	YES		
30.	ITUDU		KANGISAJA	F	YES	YES		
31.	EMILY		NADYAREGAE	F	NO	YES		
32.	ASINYEN		NADYAREGAE	F	NO	YES		
33.	INOK		KANGAKINAK	F	NO	YES		
34.	AKUDEL		NADYAREGAE	F	NO	YES		
35.	AKAI		NADYAREGAE	F	NO	YES		
36	ASURUT		KANGAKINAK	F	NO	YES		

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COUNTY GOVERNMENT OF TURKANA
MINISTRY OF WATER SERVICES
PAYMENT SCHEDULE
ATTENDANCE SHEET

Meeting Name: [redacted] agement for HoAGW4RP Kenya Programme **Venue:** Kanglakimak **Date** 5/09/24

NO.	NAME	VILLAGE	M/F	PWD	Above 35 YES/NO	PHONE NO	SIGNATURE
37.	AKUWAM	KANGAKIMAK	F	NO	YES		
38.	MARY	NADYAREGAE	F	NO	YES		
39.	ASEKON	NADYAREGAE	F	NO	YES		
40.	AMANMAN	TUKUM	F	YES	YES		
41.	LOMEDEK	TUKUM	F	NO	NO		
42.	AKUWAM	TUKUM	F	NO	NO		
43.	NYANGA	NADYAREGAE	F	NO	YES		
44.	KAAPOKOR	KANGAKIMAK	F	YES	YES		
45.	ADUKAN	KANGICHUCHUR	F	NO	YES		

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COUNTY GOVERNMENT OF TURKANA
MINISTRY OF WATER SERVICES
PAYMENT SCHEDULE
ATTENDANCE SHEET

Meeting Name: [redacted] agement for HoAGW4RP Kenya Programme Venue: Kanglakimak Date: 5/09/20

NO.	NAME	VILLAGE	M/F	PWD	Above 35 YES/NO	PHONE NO	SIGNATURE
46.	AKENO	KACHEMEDEI	F	NO	YES		
47.	CHEELE	KACHEMEDEI	F	NO	YES		
48.	ALOTO	TUKUM	F	YES	YES		
49.	LOPERI	UADYARELIAE	F	NO	YES		
50.	ANNA	TUKUM	F	NO	NO		
51.	AKAALE	KACHEMEDEI	F	NO	NO		
52.	MUYA	ANGAKIMAK	F	NO	YES		
53.	ESTHER	AKATUKOK	F	NO	YES		
54.	IKIMAT	ANGICHUCHUK	F	NO	YES		

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MINISTRY OF WATER & SANITATION AND IRRIGATION

Horn of Africa
Groundwater for Resilience Project– Kenya (P174867)

COMMUNITY LAND RESOLUTION AND CONSENT FORM
(HoAGW4R PROJECT SITES)

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State Department for Water and Sanitation

County\ Turkana

ITEM	DESCRIPTION
Sub-Project name	Kanglakimak Water supply
Component 1:	Rehabilitation
Activity Code:	N/A
Output 1.2:	N/A
Name of Investment	Rehabilitation of Kanglakimak WS
Project Location:	Kanglakimak
GPS coordinates	-
Estimated cost of the investment	200,000 USD
Source of Funding	WB
Financial Year	2023-2024

Please attach the community consultation minutes and summary safeguards report explaining how the requirements for voluntary land donation for this investment have been met.

TERMS OF THE AGREEMENT

1. As discussed in our community baraza on ....3/04/2024....to which all residents and regular users of the investment area (specify) ..... were invited. We the nominated representatives at that meeting confirm that the following issues were discussed, and the residents and regular users of this land are in unanimous agreement.
2. That, ... shall be site of the proposed ..... and that:
3. We all are aware that the land set aside for the investment is community land and no one is claiming individual ownership because it belongs to all of us, and no alternative claims will be made later on the land.
4. We have all agreed unanimously that the project implementation should continue.
5. We will all allow other neighbouring and cross-border communities access to the investment as agreed between elders of both communities.
6. We all shall strive to peacefully resolve any conflicts with other communities concerning the investment.
7. We will strive to peacefully co-exist and resolve any conflict arising out of the investment facility following due process provided by the laws of Kenya.
8. The land to be donated was identified in consultation with all residents and users of the land.
9. We all understand the likely impacts of proposed activities on donated land.
10. We all understand that the community could have refused this investment.
11. We all agreed to this investment and donation of the land without coercion, manipulation, or any form of pressure on the part of public or traditional authorities.

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12. We all agreed that we do not require any monetary or non-monetary benefits or incentives as a condition for the donation.
13. Donation of land will not adversely affect the livelihoods of occupiers and users of the land.
14. If any structure will be moved or any access to land be limited as a result of the sub-project, support will be provided to the individual, so their livelihoods are not adversely affected.
15. The land is free of encumbrances or encroachment and is not claimed by any individual and its ownership is not contested.

We have been designated by the community of (KANGAKINAK , _____ , _____ , _____ , _____)

Confirm the above information to be true and that we have resolved to abide by ALL terms of this agreement. (Please attach minutes of the community meeting including the signed attendance sheet and photos of the meeting).

S/No.	Name	Village/Location KANAODON	ID/No.	Signature
1.	JOHN EKALALE LOKADONGOI	TOKUM (KANGAKINAK)	25124586	
2.	NELSON NGILIMO	KANGAKINAK	42502211	
3.	AKIDAP LOROI LOMANAT	KAYENG (KANGAKINAK)	29253395	
4.	EKACHARAN NAKURIO LOMORUK	KANGAKINAK	24849664	
5.	NGIKAMATAK NAIRO	KANGAKINAK	29254146	

Witnessed on this ..2nd.. Day of ..April.. in the Year..2024..: by:

1. Area Chief

Name	ID/No.	Signature & R/Stamp
DANIEL MORITO SILALE	21328731	ASSISTANT CHIEF KANAODON SUB-LOCATION P. O. Box 43 -30500, LODWAR Date. Sign.

2. Ward Administrator

Name	ID/No.	Signature & R/Stamp
EMMANUEL LOMURIA	35048144	ADMINISTRATOR KANAODON VILLAGE UNIT P.O. BOX 11-30500, LODWAR

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3. Community Land Registrar/land adjudication officer

Name	ID/No.	Signature & R/Stamp
Ekitela Mored	14444707	MINISTRY OF LAND, PHYSICAL PLANNING & URBAN AREAS MANAGEMENT SUB-COUNTY LAND ADMINISTRATOR Date 11/4/24

4. County Government (Physical Planning Department)

Name	ID/No.	Signature & R/Stamp
DAVIES MUNIALO	22794644	APPROVED 11 APR 2024 Sign..... TURKANA COUNTY GOVERNMENT

COUNTY PROJECT TEAM LEADER

5. ~~County Ministry~~ Relevant to the project e.g. Water/Livestock Production etc.

Name	P/No.	Designation	Signature & R/Stamp
FREDRICK RUKSO	29140816	COORDINATOR	COORDINATOR OF AFRICA-GROUNDNUTS FOR RESILIENCE 11 APR 2024 P.O. BOX 11-30500, LODWA

6. ~~County Project Team Leader~~ DIRECTORATE OF WATER

Name	ID/No.	Signature & R/Stamp
PAUL LOTUM	24501282	DIRECTOR WATER SERVICES (TURKANA COUNTY GOVERNMENT) 11 APR 2024 MINISTRY OF WATER SERVICES P.O BOX 11-30500,-LODWAR

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Appendix XI Chance Find Procedure

CHANCE FIND PROCEDURES

This document describes the Chance Find Procedure for Kangakimak Water Supply Project (hereafter referred to as "the Project"), outlining the procedures that the project will follow should potential cultural heritage discoveries occur during project construction and/or rehabilitation activities associated with the Project.

The Chance Find Procedure has been developed in alignment with international good practice, including the World Bank Environmental and Social Standards (notably ESS8), and also complies with the National Museums of Kenya (NMK) requirements.

The Kangakimak Water Supply Project has established a provisional Chance Find Procedure before project start. The scope and scale of the Chance Find Procedure will be proportionate to the nature, scale and type of potential risks and impacts to cultural heritage that may arise from the Projects' construction and/or rehabilitation activities. In addition, the Chance Find Procedure will be commensurate with the type and scale of the planned construction/ rehabilitation activities. As such, construction/ rehabilitation activities deemed at screening to have a negligible potential negative impact on cultural heritage (e.g. borehole rehabilitation and solarization, etc.) or with a small/ negligible footprint will not require a Chance Find Procedure.

Cultural heritage is defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. Cultural heritage encompasses tangible and intangible heritage, which may be recognised and valued at a local, regional, national or global level, as follows[1]:

- Tangible cultural heritage, which includes movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Tangible cultural heritage may be located in urban or rural settings, and may be above or below land or under the water; and
- Intangible cultural heritage, which includes practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artifacts and cultural spaces associated therewith— that communities and groups recognise as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.

Tangible cultural heritage is the focus of this Chance Find Procedure and in particular, chance finds which are when archaeological, historical, cultural and/or remain material is unexpectedly encountered during project construction or operation.

For this Project, the construction and/or rehabilitation activities include:-

[1] World Bank Environmental and Social Framework, 2017.

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i. Borehole rehabilitation;
ii. Construction of water storage tanks and associated infrastructure;
iii. Site Clearing and Trenching; and
iv. Pipe Laying.

As such, risks and impacts to tangible cultural heritage, and in particular, archaeological material, that may arise from Project activities could include damage to archaeological material owing to earth works, flooding areas, etc.

Purpose of the Chance Find Procedure

A Chance Find Procedure is a project-specific procedure which is to be followed if previously unknown cultural heritage is encountered during project activities. The Chance Find Procedure sets out how chance finds associated with the project will be managed. The procedure includes a requirement to notify (NMK of found objects or sites by cultural heritage experts; to fence off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with the requirements of WB ESS8 and national law; and to train project personnel and project workers on chance find procedures[2].

The Chance Find Procedure aims to:

- Protect physical cultural resources from the adverse impacts of physical investment activities and support their preservation;
- Promote the equitable sharing of benefits from the use of Physical Cultural Resources; and
- Raise awareness of all construction workers and management on site regarding the potential for accidental discovery of cultural heritage resources.

This Chance Find Procedure therefore intends to provide the project and the contractors with an appropriate response in accordance with the relevant national legislation and international good practice. As such, all contracts for civil works will include this Chance Find Procedure.

In order for the Chance Find Procedure to be effective, the Site Agent/Project Manager must ensure that all the project personnel on site understand the Chance Find Procedure and the importance of adhering to it if cultural heritage resources are encountered. In addition, training or induction on cultural heritage resources that might potentially be found on site should be provided.

Procedure

Description of section:

- This section describes the procedure that should be followed if cultural resources are discovered when undertaking small-scale construction activities, civil works and/or renovation activities.

Prior to project implementation, the Site Agent/Project Manager is responsible for siting and designing project activities to avoid significant adverse impacts to cultural heritage. The environmental and social

[2] World Bank Environmental and Social Framework, 2017.

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risks and impacts identification process at the screening stage should help determine whether the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations.

In such cases, the project contractor will develop provisions for managing chance finds through a chance find procedure which will be applied in the event that cultural heritage is subsequently discovered. The contractor and any sub-contractors will make sure not to disturb any chance find further until an assessment by competent professionals is made. Where necessary, this will include qualified experts, including the relevant government authorities and civil society organisations, as well as traditional knowledge holders and other people from the area who should be consulted on whether disclosure of information is desirable, since there are situations in which disclosure may compromise the safety or integrity of the cultural heritage in question and/or endanger the sources of information.

Procedures for accidental discovery of cultural resources (chance finds)

This Chance Finds Procedure covers the actions to be taken from the discovering of a heritage site or item to its investigation and assessment by a professional archaeologist or other appropriately qualified person to its rescue or salvage.

If cultural resources (e.g. archaeological sites, historical sites, remains, objects, graveyards or individual graves) are discovered when undertaking project construction activities, civil works and/or rehabilitation activities, the following procedure will be followed:-

1. Halt the construction activities around the chance find to avoid any (or further) damage;
2. Report the discovery to your supervisor or the Environmental Officer immediately;
3. Delineate and fence the discovered site or area and provide a 25 meter buffer zone around all sides of the find;
4. Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard will be arranged until NMK officers can take over;
5. Forbid any removal of the objects by the workers or other parties;
6. Note the type of archaeological materials you think you have encountered, their location (GPS) and if possible, the depth below the surface the find occurred;
7. Photograph the exposed materials, preferably with a scale (e.g. a file binder, coin, rules etc.);
8. Notify NMK immediately (within 24 hours or less);
9. NMK would oversee the protection and preservation of the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by NMK. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; these include the aesthetic, historic, scientific or research, social, and economic values;
10. Decisions on how to handle the finding shall be taken by NMK. This could include changes in the physical investment layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration, and/or salvage;

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11. Implementation for the NMK decision concerning the management of the finding shall be communicated in writing by NMK;

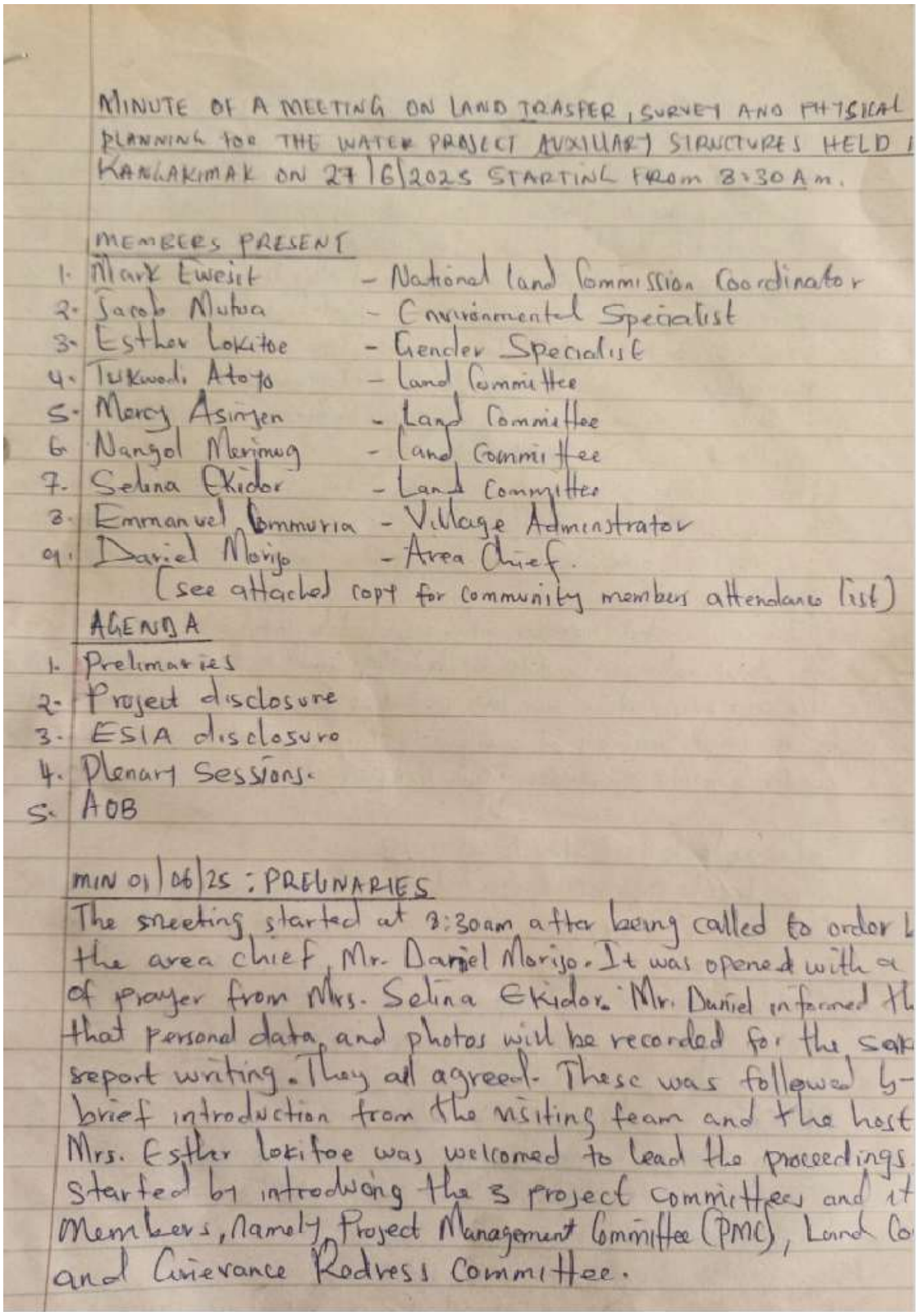
12. The mitigation measures could include the change of proposed Project design/ layout, protection, conservation, restoration, and/or preservation of the sites and/or objects;

13. Construction work at the site could resume only after permission is given from NMK concerning safeguard of the heritage; and

14. The physical investment proponent is responsible for cooperating with NMK to monitor all construction activities and ensure that the adequate preservation actions are taken and hence the heritage sites protected.

In addition, the Site Agent/Project Manager is obliged to declare the chance find discovery at the earliest possible date to the project proponent.

Appendix XII. Minutes of ESIA disclosure Meeting and Consent



MINUTE OF A MEETING ON LAND TRASFER, SURVEY AND PHYSICAL PLANNING FOR THE WATER PROJECT AUXILIARY STRUCTURES HELD I KANGAKIMAK ON 27/6/2025 STARTING FROM 8:30 Am.

MEMBERS PRESENT

1. Mark Eweit - National land Commission Coordinator
2. Jacob Mutua - Environmental Specialist
3. Esther Lokitoe - Gender Specialist
4. Tukwodi Atoyo - Land Committee
5. Mercy Asinyen - Land Committee
6. Nangol Merimug - Land Committee
7. Selina Ekidor - Land Committee
8. Emmanuel Lmmuria - Village Administrator
9. Daniel Morijo - Area Chief.

(see attached copy for community members attendance list)

AGENDA

1. Preliminaries
2. Project disclosure
3. ESIA disclosure
4. Plenary Sessions.
5. AOB

MIN 01/06/25 : PRELIMARIES

The meeting started at 8:30am after being called to order b the area chief Mr. Daniel Morijo. It was opened with a of prayer from Mrs. Selina Ekidor. Mr. Daniel informed th that personal data and photos will be recorded for the sak report writing. They all agreed. These was followed by- brief introduction from the visiting team and the host Mrs. Esther Lokitoe was welcomed to lead the proceedings. started by introducing the 3 project committees and it Members, Namely, Project Management Committee (PMC), Land Co and Grievance Redress Committee.

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Min 02/06/25: Project disclosure

Mrs Esther continued with the project disclosure that the Forest Africa groundwater for resilience project is implemented in 5 ASAL counties, namely, Turkana, Marsabit, Wajir, Mandera and Garrisa. It is funded by World Bank. In Turkana, it is implemented by the Department of Water Services and divided into two lots; lot 1 comprises of Kaibor, Lowarengak, Kalobeyei, Nariamaa and Kaitese rural schemes. Lot 2 has Lotsbae-Loarui-Namoruinga, Kangakuruk, Nangolekurok and Lore Amatet/Loturtur rural schemes. The project is a boot construction, rehabilitation and expansion of ground water based in rural schemes.

The construction period is 1 year for each lot from the time of award. The bidding/tendering process has been advertised. The contractors are expected to arrive the following week for the pre-site visit.

The estimated number of households who will access clean water in this scheme is 880 households and a population of 5280 persons. The activities done so far include: Environmental and Social issues screening, Signing of community land consent, pumping or pump testing, water quality analysis and preparation of the designs.

Min 03/06/25: ESIA Disclosure

Mr. Jacob Mutua presented the ESIA findings completed in December 2024, they are: into risks and mitigation measures.

1. Social impacts

* Child abuse and exploitation
* Sexual Exploitation Abuse and Harassment (SEAH)
* Labour influx
* Mismanagement and neglect of VMGs

Mitigation measures

* Not to employ children or persons below 18 yrs.
* Implement SEAH prevention
* The locals should be a Priority
* Ensure inclusiveness of all group including PWDs

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2. Environmental Impacts

* Noise, air pollution and vibrations.
* Soil erosion
* Degradation of the Vegetation
* Water quality contamination

Mitigation measures

* Use quiet equipments and get Personal Protective equipments (PPES)
* Revegetate and re-use soil
* Minimize vegetation clearance and do tree planting
* Ensure waste protocols are followed.

3. GBV/SEA disclosure

All the GBV related cases to be handled swiftly by the respective people or agencies. Uphold the rights and Protection of the people during the project implementation. Address complains and challenges through an established mechanism like GRM and finally safeguarding children on issues like child labour and oppression.

4. Grievance Redress Committee

The committee handles all the complains and challenges from the project activities. The committee helps in smooth running of project activities and usually work closely with the County social specialist.

Project Pending activities

Mr. Jacob Mutsa highlighted the project pending activities as follows: WRA permit and ESIA license, land transfer, commissioning and implementation phase.

MIN 04/06/25: PLENARY SESSION

The community members had some views, comments and suggestions. They were given an opportunity to present them one by one.

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1. Mercy Asinyen
Insisted that women to be given same opportunity as men on issues like jobs and protection

2. Sarah Ekuton
the Kiosks are few and yet the villages are many. Asked if the number of Kiosks can be increased

3. Esther Ekesu
When will the project start exactly. There as been many visits to the community members yet the project is not starting.

4. Simon Lokwameri
The idea of removing vegetation or trees will be very bad for land, we need to protect our environment.

5. Peter Apaya
Most contractor workers tend to mingle with our women and children and these is a big problem or even issue of HIV/AIDS and unwanted Pregnancies.

Responses

1. Both the women and men will be granted equal opportunities on jobs and other aspects
2. The number of Kiosks cannot be increased for it is already in the documents. they might only change the location of the current Kiosks
4. Many trees will be planted on the degraded land during the Project implementation since the water will be available.
3. The project will start after the awarding of contract to the winning bidder. This should be around october this year
5. The SEAH prevention plans, continous sensitization and regular M&E will be ensured.

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Min 04/06/25: LAND DEMACATION, SURVEY AND PHYSICAL PLANNING

Mrs. Esther rose and stated that the main objective of the team's visit is for the community member to demacate enough land where the auxillary water project structures will be contructed and placed. The Kangakimak water project structures are:

- 2 tanks
- 4 Kiosks
- 1 water trough

The existing water borehole has to be located at least 1.5 acres for it will have extra solar panels and other accesories. The extra space will be used for future use like placing the water users office. The surveyor and the physical planner have the land coordinates which shows where the tanks, kiosks and the water will be located. The best guese is for project activities to commence on september 2025

Mr. Mark was finally invited and mentioned he is there as witness during the land demacation by the surveyor and the physical planner. The information will be used to develop a PDP (project development plan). He urged the community members to be supportive for the water project will be of great benefit to the whole community.

The community members were then given a chance to give out their views, comments and suggestions.

1. Lokariwole AKeno

He thanked the HoA team for the water project. The water will be used for both domestic and livestock use. He is hoping that that project will begin as soon as possible.

2. Alice Esibitar

She wanted to know why some kiosks were located far from the community. Mrs. Esther responded and told her that the community can always decide where to put a kiosk where they will feel comfortable. The coordinates from the new sites can be incooperated in the PDP

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MIN: 05/06/25: ANY OTHER BUSINESS

There being no other business, the meeting ended at 11:00Am with a word of prayer from Mr. Mark Ewesit.

Minutes:

Prepared by: Jacob Mutua

Name: Kangakimare Community

Position: Community Specialist

Signature:

Checked by:

Name: EMMANUEL EKITELA LOMURIA

Position: VILLAGE

Signature

TURKANA COUNTY GOVERNMENT
VILLAGE ADMINISTRATOR
KANAODON VILLAGE UNIT
P.O Box 260-30500, LODWAR
Date 27/6/2025

Approved by:

Name: DANIEL MORIJO SILACE

Position: SENIOR ASSISTANT CHIEF

Signature:

ASSISTANT CHIEF
KANAODON SUB-LOCATION
P.O. Box 63-30500, LODWAR
27/6/25 Sign.

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me of Settlement: KANGAKIMAK County: TURKANA Date of Engagement: 27/6/25

urpose of Engagement: Project disclosure. Land transfer and planning.

otal Number of Participants 22 people.

	Participants from the Community	Persons With Disabilities	Vulnerable and Marginalized Groups (VMGs)	Other Disadvantaged Groups (Child heading a household)	Local Leaders	Civil Society Organizations	County Government	National Government
Male	10	1			2	1	1	1
Female	12		0	2				
Total								

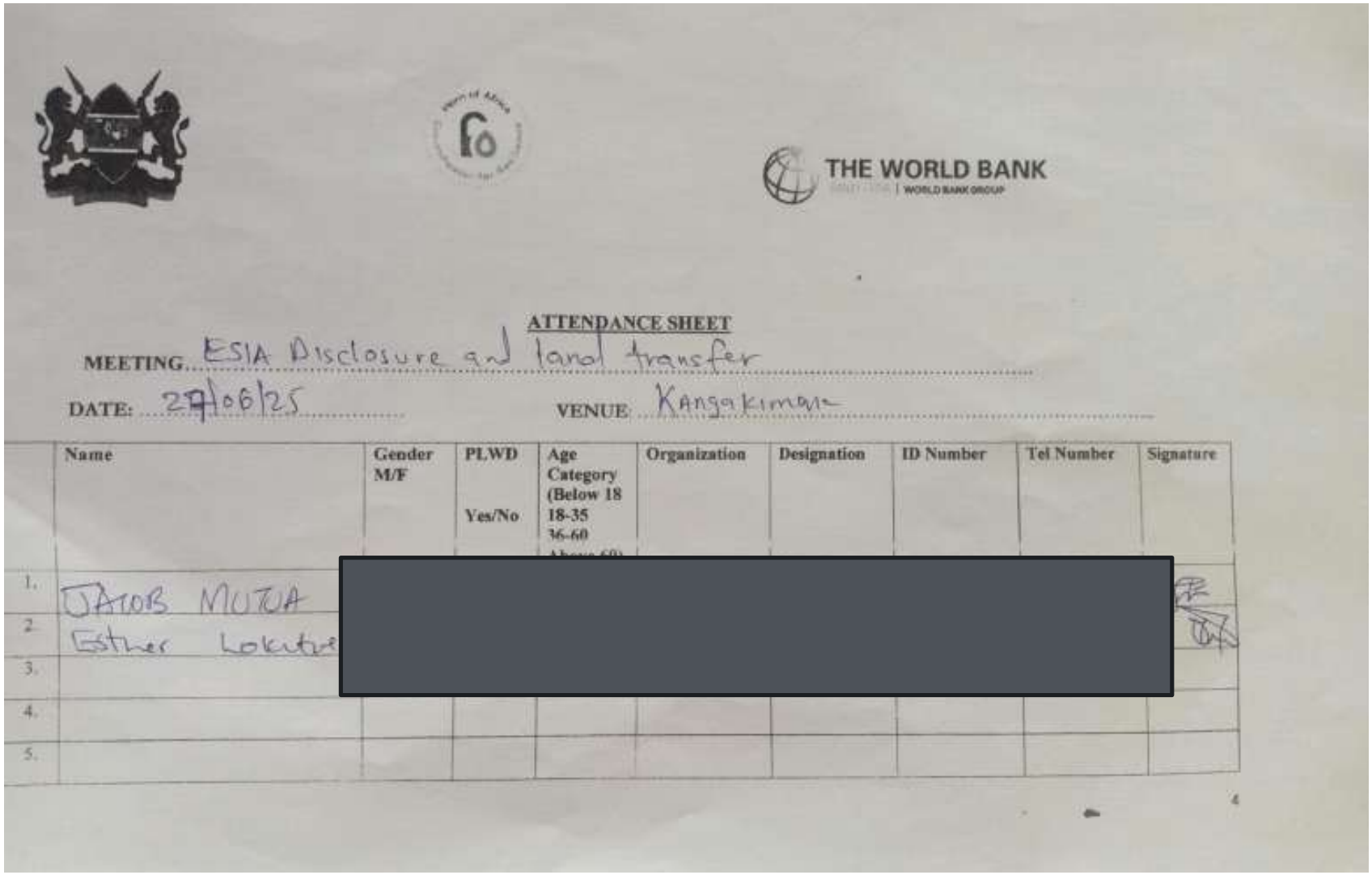
Key Issues Discussed (*In Verbatim*)

inute 1: Land transfer

inute 2:

2

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THE WORLD BANK
WORLD BANK GROUP

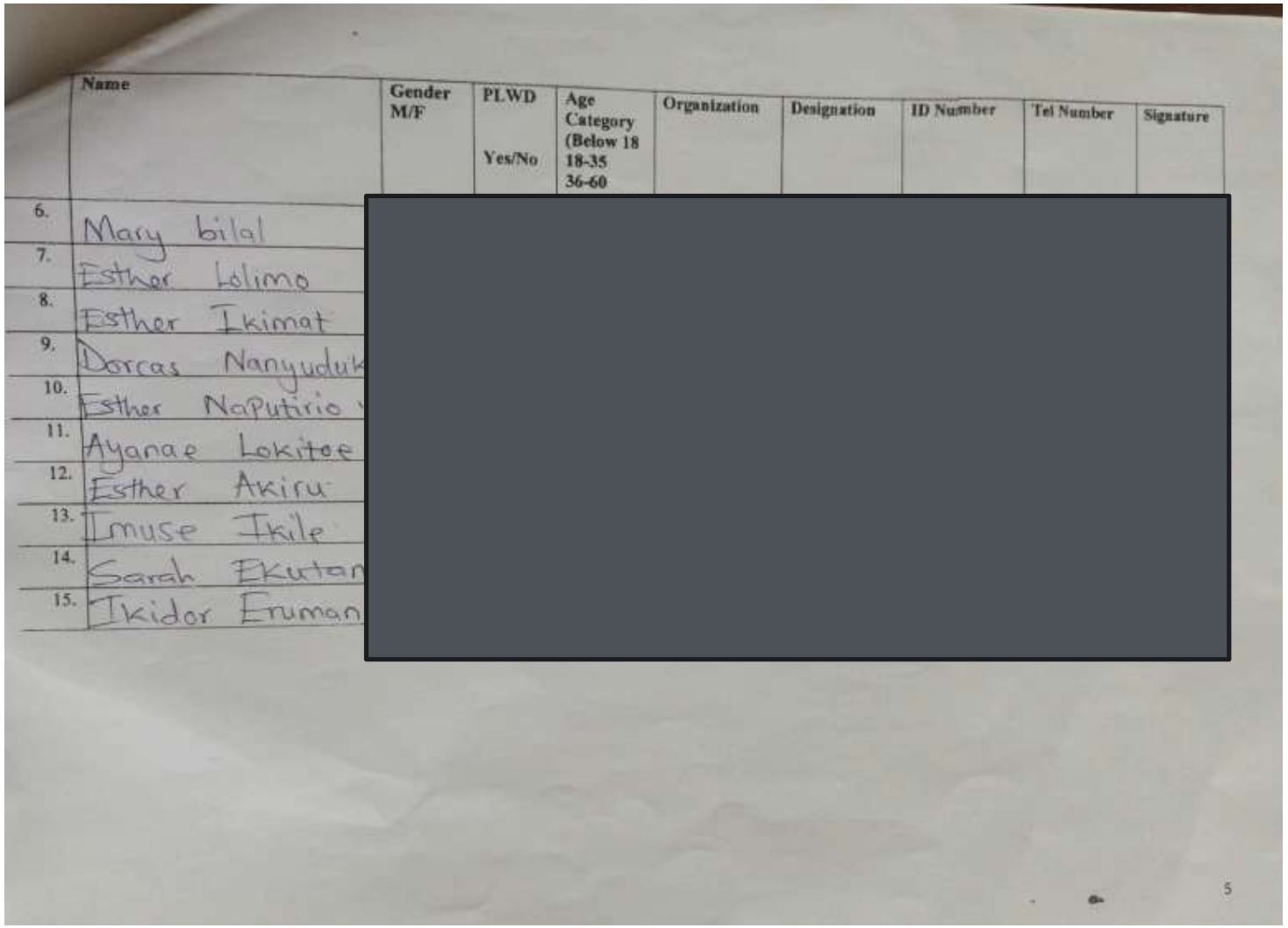
ATTENDANCE SHEET

MEETING: ESIA Disclosure and land transfer

DATE: 27/06/25 VENUE: Kangakimani

	Name	Gender M/F	PLWD Yes/No	Age Category (Below 18 18-35 36-60 Above 60)	Organization	Designation	ID Number	Tel Number	Signature
1.	JACOB MUIA	[redacted]							
2.	Esther Lokuta								
3.									
4.									
5.									

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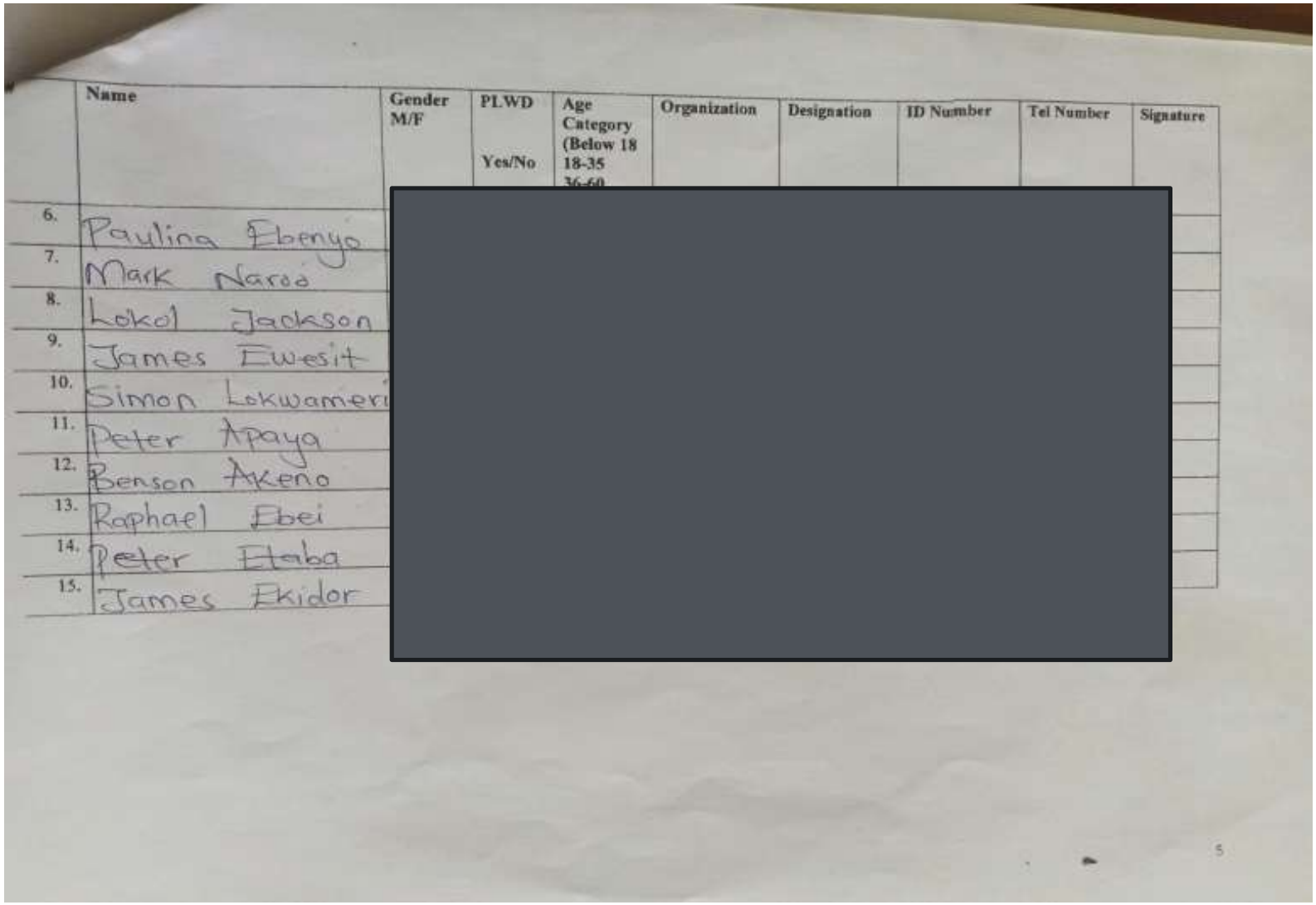


	Name	Gender M/F	PLWD Yes/No	Age Category (Below 18 18-35 36-60	Organization	Designation	ID Number	Tel Number	Signature
6.	Mary bilal								
7.	Esther Lolimo								
8.	Esther Ikimat								
9.	Dorcas Nanyuduk								
10.	Esther NaPutirio								
11.	Ayanae Lokitoe								
12.	Esther Akiru								
13.	Imuse Ikile								
14.	Sarah Ekutan								
15.	Ikidor Eruman								

[redacted]

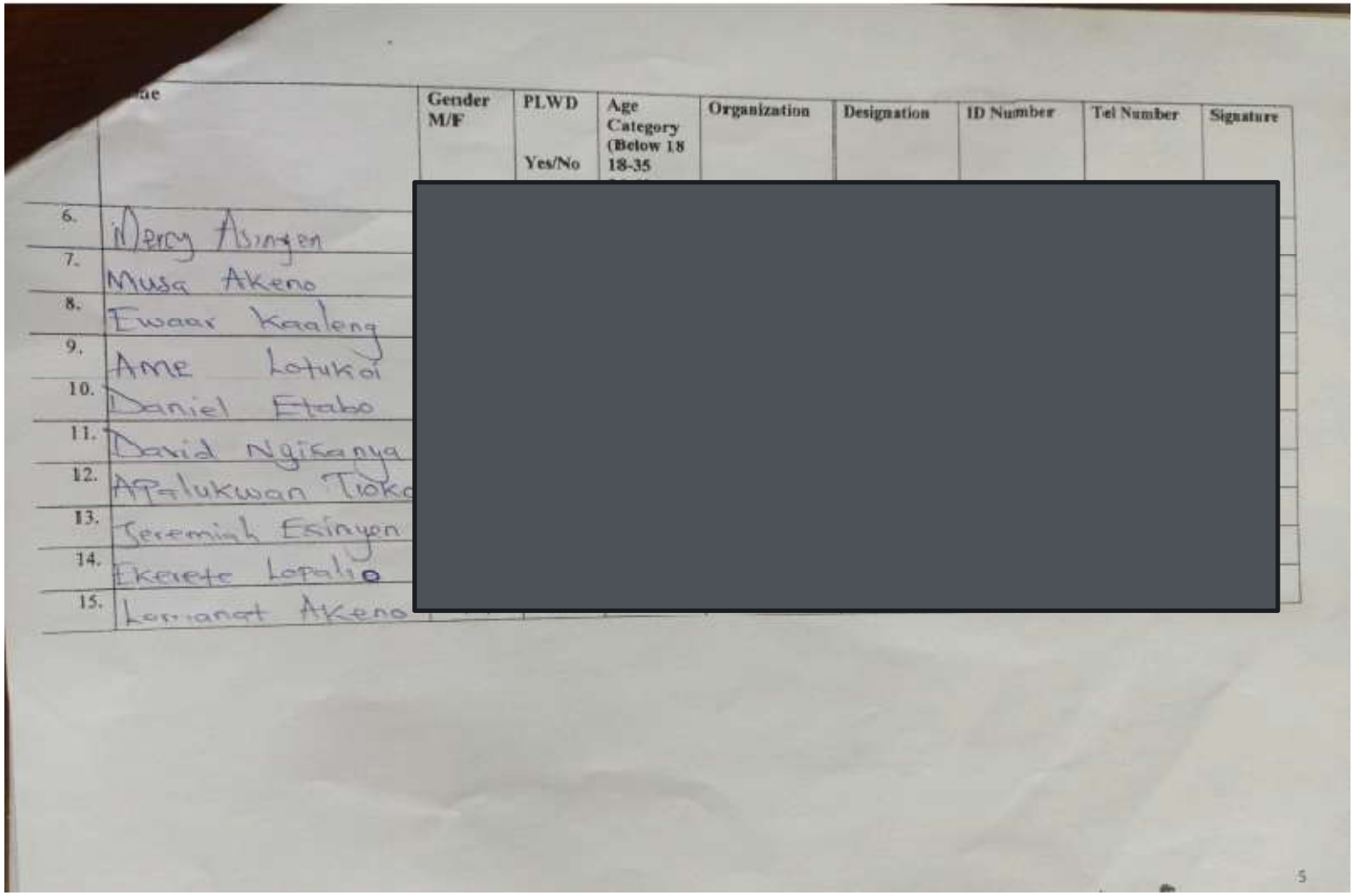
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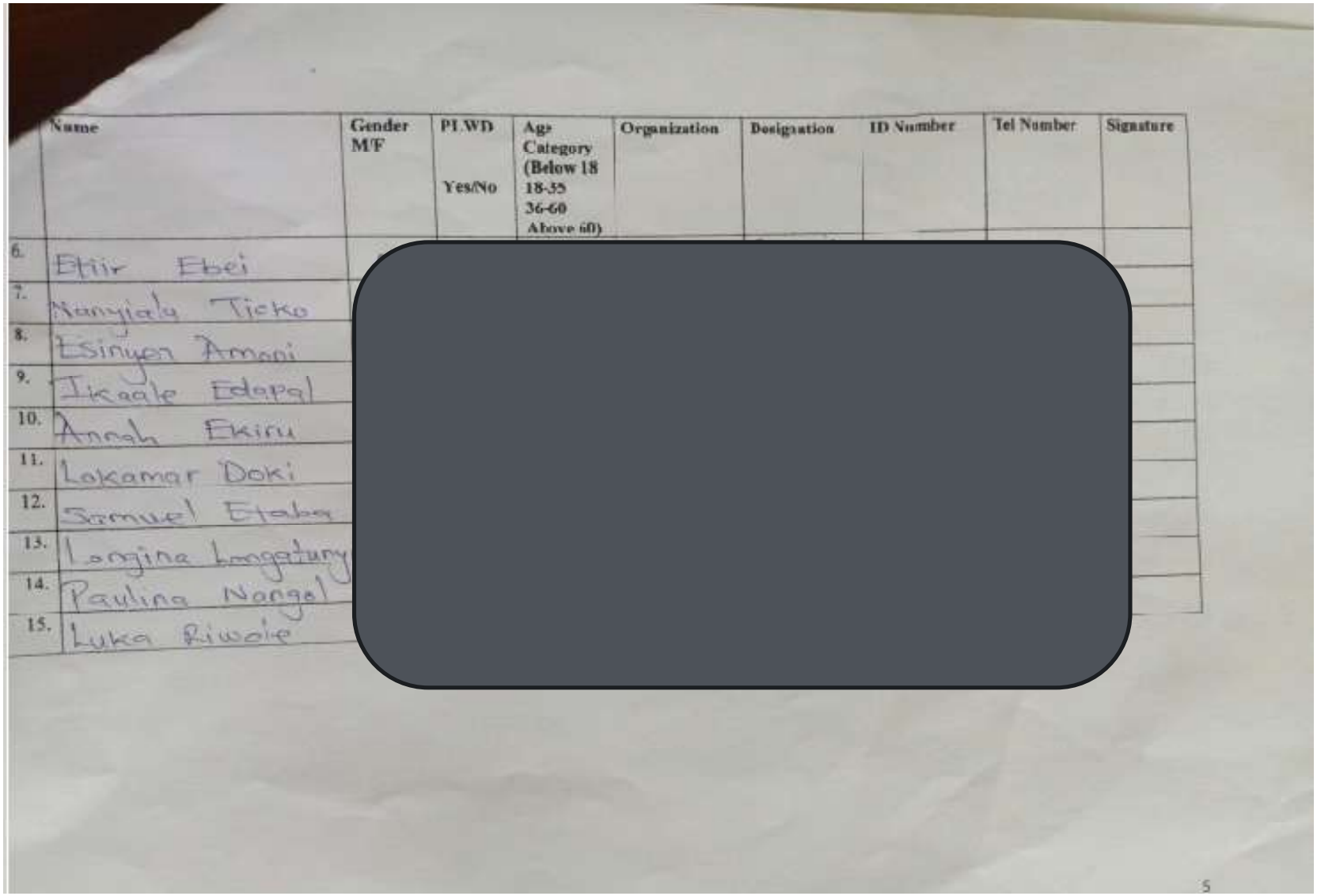
	Name	Gender M/F	PLWD Yes/No	Age Category (Below 18 18-35 36-60	Organization	Designation	ID Number	Tel Number	Signature
6.	Paulina Ebenyo								
7.	Mark Naroo								
8.	Lokol Jackson								
9.	James Ewesit								
10.	Simon Lokwameri								
11.	Peter Apaya								
12.	Benson Akeno								
13.	Raphael Ebei								
14.	Peter Etaba								
15.	James Ekidor								

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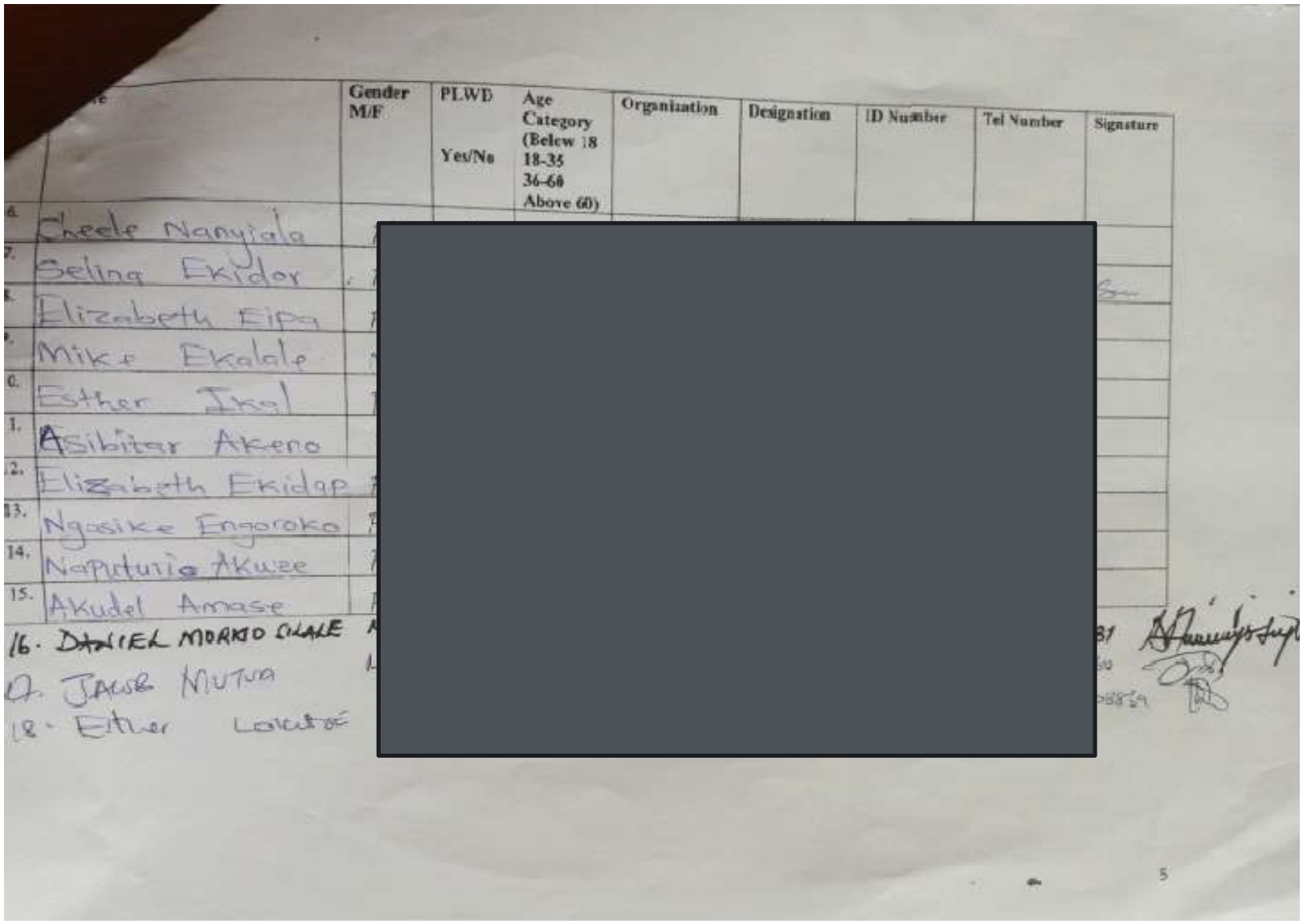
	...ae	Gender M/F	PLWD Yes/No	Age Category (Below 18 18-35	Organization	Designation	ID Number	Tel Number	Signature
6.	Mercy Asingen								
7.	Musa Akeno								
8.	Ewaar Kaaleng								
9.	Anne Lotukoi								
10.	Daniel Etabo								
11.	David Ngisanya								
12.	Apalukwan Tioko								
13.	Jeremiah Esinyon								
14.	Ekerete Lopalio								
15.	Lomanat Akeno								

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	Name	Gender M/F	PLWD Yes/No	Age Category (Below 18 18-35 36-60 Above 60)	Organization	Designation	ID Number	Tel Number	Signature
6.	Ekiir Ebei								
7.	Nanyiala Ticko								
8.	Esiniyen Amani								
9.	Ikaale Edapal								
10.	Anaah Ekiru								
11.	Lokamar Doki								
12.	Samuel Etabo								
13.	Longina Lmogatuny								
14.	Paulina Nangol								
15.	Luka Riwale								

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		Gender M/F	PLWD Yes/No	Age Category (Below 18 18-35 36-60 Above 60)	Organization	Designation	ID Number	Tel Number	Signature
6.	Cheele Nanyiala								
7.	Seling Ekidor								
8.	Elizabeth Eipa								
9.	Mike Ekalale								
10.	Esther Ikal								
11.	Asibitar Akeno								
12.	Elizabeth Ekidap								
13.	Ngasike Engoroko								
14.	Napuruia Akwee								
15.	Akudel Amase								
16.	DANIEL MORIO OLALE								
17.	JACOB MUTUA								
18.	Esther Lokuto								

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