Ministry of Water, Sanitation and Irrigation

CONDITIONAL LIQUIDITY SUPPORT GRANT (CLSG) II PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT

THE PROPOSED CONSTRUCTION OF AMANI PIPELINE DN50 TO DN90, 1500M LONG AND THE SOLARISATION OF KASUKU BOREHOLE PROJECT - NYANDARUA WATER & SANITATION COMPANY (NYANDAWAS)

DECEMBER 2024

PROPONENT	EIA LEAD EXPERT
Nyandarua Water and Sanitation Company (NYANDAWAS) P.O. BOX 164, NYAHURURU	Eng. James Wainaina NEMA Reg. No.: 1042 P.O Box 4356 – 00506 Nairobi Tel.+254722987824

CERTIFICATION

This ESIA Report has been prepared in accordance with the Environmental Management and Coordination Act (EMCA) 1999 and the Environmental (Impact Assessment and Audit) Regulations 2003 for submission to the National Environment Management Authority (NEMA).

Proponent: Nyandarua Water and Sanitation Company (NYANDAWAS)

Activity: Preparation of Environmental Impact Assessment (ESIA) Study for the construction of Amani pipeline DN50 to DN90, 1500m long and the solarization of Kasuku Borehole Project

Report Title: Environmental Impact Assessment (ESIA) Study for the proposed **construction of** Amani pipeline DN50 to DN90, 1500m long and the solarization of Kasuku Borehole Project for Nyandarua Water and Sanitation Company (NYANDAWAS)

Name and Address of EIA Expert
Eng. James Wainaina (**NEMA Registration No.:** 1042)
P.O Box 4356 – 00506 Nairobi

Signed: _____ Date: _____13/02/2025_____

Name and Address of Proponent
Managing Director: ____Dickson Njiru_____
Nyandarua Water and Sanitation Company (NYANDAWAS)
P.O. BOX 164, NYAHURURU

Signed: _____ **Date:** ___13/02/25_____

ABBREVIATIONS AND ACRONYMS

C-ESMP	Contractor's Environment and Social Management Plan
CIDP	County Integrated Development Plan
CLSG	Conditional Liquidity Support Grant
DOSHS	Directorate of Occupational Safety and Health and Services
EIA	Environmental impact assessment
ESIA	Environmental and social impact assessment
ESHS	Environmental, Social Health and Safety Guidelines
ESMF	Environment and Social Management Framework
ESMMP	Environmental and Social Management Plan
GoK	Government of Kenya
GRM	Grievance Redress Mechanism
HASP	Health and Safety Plan
HIV/AIDS	Human Immuno-deficiency Virus
KNBS	Kenya National Bureau of Statistics
LA	Land Act
MDG	Millennium Development Goal
MOWSI	Ministry of Water Sanitation and Irrigation
NEMA	National Environment Management Authority
NEP	National Environment Policy
NGO	Non-Governmental Organization
NLC	National Land Commission
NYANDAWAS	Nyandarua Water & Sanitation Company
OP	Operational Procedures
OS	Operational Safeguards
PAP	Project Affected Person
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SEA	Sexual Exploitation and Abuse
SMP	Social Management Plan
SGBV	Sexual and Gender Based Violence
STDs	Sexually Transmitted Diseases
ToR	Terms of Reference
VMGs	Vulnerable and Marginalized Groups
WASREB	Water Services Regulatory Board
WB	World Bank
WHO	World Health Organization
WRA	Water Resources Authority
WSDP	Water and Sanitation Development Project
WSP	Water Service Provider
WSTF	Water Sector Trust Fund

EXECUTIVE SUMMARY

1. Project background

The Ministry of Water, Sanitation, and Irrigation (MoWS&I) is implementing the Water and Sanitation Development Project (WSDP) with a credit from the International Development Association (IDA) that aims at improving water supply and sanitation services in selected regions in Kenya through the Water Service Providers (WSPs). The Project Development Objective (PDO) is to improve water supply and sanitation services in select Coastal and Northeastern regions in Kenya and improve the financial performance of Water Service Providers (WSPs) affected by the COVID-19 pandemic. Nyandarua Water & Sanitation Company (NYANDAWAS) has been identified as one of the WSPs with potential to achieve financial recovery within a period of less than 12 months and therefore eligible to receive the support under the Conditional Liquidity Support Grant (CLSG) II Program.

Nyandarua Water and Sanitation Company Limited (NYANDAWAS) is a legal entity under the Companies Act No. 17 of 2015 wholly owned by the County Government of Nyandarua. The principal activity of the Company is to provide water and sanitation services to the rural residents of Nyandarua County. This is done either by running water supplies directly or overseeing some smaller entities who have been authorized to provide water in certain areas of the County.

Currently, NYANDAWAS directly operates four water supply schemes namely: -
1) Kirima Water Supply which covers Shamata Township and its environs in Ndaragwa Division of Nyandarua North Sub-County.
2) Gatimu Water Supply covers Gatimu Division of Nyandarua West Sub-County.
3) Ol joro orok/Kangui Water Supply covering Oljoro orok Division of Nyandarua West Sub-County.
4) Kasuku water Supply covering Kasuku Township and its environs.

NYANDAWAS has proposed the construction of Amani pipeline and solarisation of Kasuku Borehole water pumping system under the CLSG II Program to improve water supply services for the residents in Kasuku Township and its environs. The implementation of such a development project will generate positive socio-economic benefits, but also adverse impacts to human community and environment. Thus, in compliance with the requirements of the Environmental Management and Coordination Act (EMCA) 1999 and the World Bank procedures, an ESIA should be prepared which will be approved by NEMA and the World Bank prior to the implementation of the project.

2. Project description and activities

Kasuku Township is located in Weru Ward, Ol Joro Orok Sub- County of Nyandarua County and has a present population of about 2,210 residents. The Township is located at an elevation of 2,418 metres and about 30 Km North of Ol Kalou Town, the County Headquarters. The proportion of households with access to clean and potable water in the area is about 32% while the rest of the population rely on water from water vendors and from other unreliable sources. The County Government of Nyandarua has developed a borehole within the Township with a yield of 14M3/hr. currently, the borehole water pumping system is connected to the grid power which renders the operations unsustainable due to the high electricity costs. The existing water distribution network is limited and therefore only a few homesteads and institutions have been connected to the system. To increase the capacity of local households to access clean and safe drinking water as well as improve on operational sustainability of the Kasuku Borehole Water Project, NYANDAWAS intends to implement the installation of Amani DN50 - DN90 HDPE water distribution pipeline (approximately 1,500m) and solarize the water pumping system. The implementation of the proposed measures will significantly improve the water supply within Kasuku Township and its environs.

Therefore, the summarized Scope of Works for the proposed project include:

i. Construction of Amani pipeline DN50 to DN90, 1,500m long
ii. Solarisation of Kasuku Borehole

The Estimated Cost of the proposed Project is **KES 3,208,334**

According to the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 the above interventions are Medium Risk projects that will require a Comprehensive Project Report (CPR) to be completed in accordance with the requirements of Part II of the Environmental (Impact Assessment and Audit) Regulations, 2003. Additionally, the identification and management of environmental and social issues associated with the proposed interventions is expected to be in accordance with the triggered World Bank Operational Policies to meet the lender's requirements.

3. Objectives of the ESIA study

The Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives:

- Generate baseline data for monitoring and evaluation of how well the mitigation measures will be implemented during the project cycle.
- Communicate the results of the ESIA process for the Proposed Water Supply Project and alternatives considered.
- Ensure that the impacts identified during the ESIA process are assessed.

- Present the mitigation and enhancement measures which will be implemented by the Project to manage impacts identified.
- Provide a record of comments and responses received from Interested and Affected Parties (I&APs) during the ESIA process.
- Facilitate an informed decision-making process by the relevant authorities.
- Recommend cost effective mitigation measures against the expected impacts.

The project implementation consists of three main stages, namely: Pre-construction Construction and Operational.

4. Scope of the ESIA study

The ESIA study has been undertaken by the Consultant with the intention of collecting enough and relevant information inherent to ensure the production of an appropriated ESIA document including an Environmental and Social Management and Monitoring Plan (ESMMP). The scope of the ESIA study is:

- Detailed Project's description.
- Description of the Baseline Environment.
- Stakeholders Engagement.
- Description of the Relevant National and International Legislative and Institutional Regulatory Framework.
- Identify all potential significant environmental and social impacts of the proposed Project and recommend measures for mitigation.
- Cumulative Impact Assessment.
- Assessment of the Project's alternatives.
- Development of Environmental & Social Management & Monitoring plan to avoid, mitigate and where not possible, offset the identified impacts to ensure sustainability of the proposed Project.

5. Methodology

The general methodology utilized has focused on:

- In-depth review of existing literature on the project.
- Field surveys conducted for gathering baseline conditions on physical, biological, and socio-economic environment.
- Observations for appreciation of impacts likely to be generated during project implementation.
- Consultations with different stakeholders and public for socioeconomic information and getting their opinions and expectations about the project.

6. Policy-legal and institutional framework

The proposed project has undergone a comprehensive review of relevant national laws, policies, plans, and strategies, as well as international conventions to assess their applicability to the project and highlight their relevance. The national statutes and legislation that were reviewed include:

- Constitution of Kenya 2010
- Water Act, 2016
- Environmental Management and Coordination Act (EMCA), 1999
- Occupational Safety and Health Act (OSHA 2007)
- The Public Health Act
- Work Injury Benefit Act 2007
- Labour Relations Act 2012
- Climate Change Act of 2016
- Land Act, 2012
- Public Participation Bill of 2023
- The Environmental (Impact Assessment and Audit) Regulations, 2003
- Environmental Management and Coordination (Water Quality) Regulations, 2006
- (Waste Management Regulations, 2006
- Noise and Excessive Vibration Pollution (Control) Regulations, 2009
- The Environmental Management and Coordination (Air Quality Regulations 2014)

The ESIA Study has considered the World Bank's Operational Policies (OPs), which aims to protect the environment and people from potential adverse impacts and ensure the sustainability of project outcomes.

Table 0-1: Applicable World Bank Operational Safety Policies

Safeguards Policies	Provision	Relevance to the Project
World Bank OP 4.01 on Environmental Assessment	Provides for environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making	An Environmental and Social Impact Assessment of the development of water supply schemes will be carried out.
World Bank OP 4.12 on Involuntary Resettlement	The World Bank Involuntary Resettlement Policy OP 4.12 covers direct economic and social impacts that result	The pipelines shall be installed along the provided wayleaves on the public roads while the solar power units will be located within the existing borehole

	from Bank-assisted investment projects.	site. The site where the existing borehole, pumphouse and water storage tank are located belong to the County Government of Nyandarua. (The County is waiting for the transfer of land from the National Government to process land ownership documents). NYANDAWAS has been advised to follow up on the issuance of land ownership documents with the County Government. Social screenings along the wayleaves for the proposed 1.5 Km pipelines have been undertaken and confirmed that the proposed project does not involve any resettlements of PAPs. There are no PAPS who are likely to suffer economic displacement. The entire 1.5 Km pipelines will be within County Road reserves with no encumbrances. Consultations with KENHA was done due to the proximity of the project near the Gilgil – Nyahururu Highway. However, during the transect walk along the proposed 1.5 km pipeline extension, it was established that no section of the pipeline will be on the Gilgil – Nyahururu KENHA highway.
World Bank OP 4.11 on Physical Cultural Resources	Provides for measures to protect cultural heritage from the adverse impacts of project activities and support its preservation.	No physical cultural resources were identified within the project areas. However, the ESIA has provided chance find procedures to be adopted by the contractor during civil works.

International Conventions and Treaties

Kenya is signatory to several international conventions and treaties that would need to be adhered to in implementing this project and are geared towards environmental protection and conservation. Some of these include:

- International Convention on Biological Diversity (1992)
- Ramsar Convention 1971
- The United Nations Framework Convention on Climate Change (UNFCCC)
- Convention on the Elimination of all forms of Discrimination against Women (CEDAW)

7. Baseline conditions in the project area

Under this chapter, physical and biological environmental conditions prevailing within the project's circumscription as well as socio-economic profile in the administrative entities covering the project were considered to understand the current conditions of the project areas.

Baseline Bio-Physical Environment:

The baseline bio-physical environment of the project area for the Project comprises various natural features and ecosystems. The following aspects provide an overview of the baseline bio-physical environment:

- Topography and Geology
- climate, Water Resources
- Vegetation and Land Cover
- Biodiversity

Baseline Socio-Economic Environment:

The baseline socio-economic environment encompasses the social and economic aspects of the project area. The following elements provide an overview of the baseline socio-economic environment:

- Population and Settlements
- Economy and Livelihoods
- Infrastructure and Services
- Social and Cultural Aspects.

8. Stakeholders and public consultations

As part of the ESIA preparation for the proposed Project, the consulting team conducted several stakeholder consultations to gather valuable input and address concerns. The following is a summary of the consultations conducted:

Managing Director - NYANDAWAS

The consulting team met with the MD of NYANDAWAS to discuss the about the scope of the proposed project and implementation schedule. This meeting provided an opportunity to understand the activities to be undertaken during the implementation of the project.

Technical Manager – NYANDAWAS

This engagement facilitated discussions on technical aspects, water management strategies, and the integration of the project within the existing water infrastructure under the management of the WSP.

Other Key Informants:

- KENHA County Engineer – Nyandarua County
- County Engineer (Roads & Public Works) – Nyandarua County
- Ward Administrator – Weru Ward
- Area Sub- Chief – Kasuku Sub- Location
- Sub - County Public Health Officer
- Sub - County Water Officer
- Sub - County Agriculture/Livestock Officer

The discussions allowed for a deeper understanding of the area residents' specific needs and concerns related to the water supply services. The consulting team gathered information from key informants who provided insights into the perceptions and expectations of the local population regarding the new water project. These informal discussions helped identify community priorities and concerns.

Area residents (Public Meeting)

Consultations were conducted with local area residents including existing and potential beneficiaries of the proposed project. This public consultation meeting was organized by the area Assistant chief in consultation with the Ward Administrator and was held on 20th June 2024 at Kasuku Trading Centre and was attended by 28 participants. The purpose of these consultations was to ensure that the concerns and perspectives of those directly affected by the project were considered. The consultations played a crucial role in the ESIA process, enabling the consulting team to understand the diverse perspectives, address concerns, and incorporate local knowledge and expectations into the environmental and social management planning of the proposed Project. Some of the key concerns and issues raised by stakeholders included:

- To fast track the project which was already long overdue. The participants were informed that the implementation of the project will commence immediately after the approval of the ESIA Study Report since funds were available.
- The proposed installation of only 1.5 Km will not reach other consumers within the sub-location. The participants were informed that the proposed pipelines are extensions to the already existing distribution systems and the borehole water source has limited yields. The County Government of Nyandarua has planned other water supply projects for the other parts of the Sub-Location
- Priority on employment opportunities will be given to the locals as requested by the participants.
- The borehole has not been operating optimally due to the high operation costs (high electricity bills for water pumping). However, with the installation of solar power pumping system, water production is expected to significantly increase.

9. Potential environmental and social impacts

Environmental and Social Screening

Environmental and Social Screening has been undertaken to determine the potential environmental and social impacts. The impacts of the proposed project were assessed through project site visits and the following:

- Evaluation of the design and proposed construction activities, materials and methodology.
- One on one interviews with key stakeholders and proposed project beneficiaries were applied in the determining location of pipeline available way leaves especially in areas where there are no settlements and general opinions of the people.
- Discussion with the area residents on the potential impacts related to project implementation activities and corresponding mitigation measures.

Positive Impacts

The positive impacts that the proposed project will bring are summarized in the table below:

Table 0-2 Summary of positive impacts

Impact Category	Positive impacts due to project implementation
Environmental	- Adoption of sustainable construction practices. - Erosion control and protection of natural habitats. - Implementation of green technologies for energy efficiency.
Water supply distribution	- Enhanced water supply distribution and integration with existing County planning and development.
Community Development	- Job creation and economic opportunities for locals. - Skill development through on job training during construction of the Project. - Strengthening community ties through shared infrastructure. - Improved overall quality of life for the community.
Project Area Economic Growth	- Injection of funds into the local economy. - Increased property values and attractiveness for investment. - Stimulating growth in related small-scale industries and businesses. - The proposed project does not involve any resettlements of PAPs. - No impacts are anticipated to people's assets and sources of livelihood due to the entire 1.5 Km pipelines will be within County Road reserves with no encumbrances.
Public Health Improvement	- Reduction of health risks associated with improper waste disposal. - Improved sanitation infrastructure for community health. - Health and safety measures for workers and residents.

Negative Impacts

Below is a summary of the significant risks and impacts identified, and their proposed mitigation measures:

Table 0-3 Summary negative impacts and mitigation matrix

Risk/Impact	Significance	Mitigation Measure(s)
Pollution and health & safety hazards from poor management of wastes.	Major	- Implement a waste management plan for all wastes generated including hazardous wastes from solar equipment.
Handling of Hazardous Materials (oils, paints solar panels & batteries).	Major	- All hazardous products and waste should be labeled and handled properly to avoid contact with the ground. - Material handling to be done by trained and qualified staff. - Disposal of wastes to done at designated and approved sites. - Engage suppliers of the solar equipment to "Take Back" Obsolete solar batteries and depleted solar panels as per the Extended Producer Responsibility Regulations.
Occupational safety and health incidents and accidents.	Major	- Contractor to develop and implement Site Health and Safety rules and Regulations. - Full implementation of the ESMP.
Labour influx into the project area	Moderate	- Contractor to establish local employment targets to maximize local employment.
Exploitation of workers by the Contractor's management.	Moderate	- Contractor to develop an employment policy in line with International Labour Standards and the local labour administration requirements.
Nuisance and increased safety hazards to the public and other road users.	Moderate	- Implementation of a traffic management plan, public safety measures including restrictions on site access, erecting of barricades, installation of warning signage.
Nuisance and human health impacts from air pollution.	Moderate	- Implement dust control and other point-source emission controls. - Immediate reinstatement of disturbed grounds.
Water pollution from spillages, erosion and sedimentation, and direct discharges into water courses.	Moderate	- Establishment of comprehensive spill control and response plans. - Implementation of erosion control measures.
Degradation of soil resources from hydrocarbon contamination, compaction, erosion, and off-site disposal.	Moderate	- Immediate reinstatement of disturbed ground. - Implementation of spill control plans.
HIV /AIDS & other communicable diseases.	Moderate	- HIV/AIDS awareness , Counselling & Testing.

		- Monitoring health trends during Project construction in order to be aware of and respond appropriately to any negative health trends that may be linked to the Project and its workers.
Sexual Exploitation and Abuse (SEA) & Gender-Based Violence (GBV).	Moderate	- Develop and implement code of conduct, signed by all workers. - Provide training and awareness programs to project contractor's staff, and community members on GBV and sexual harassment prevention and reporting. - Collaborate with local communities, leaders, and women's groups to address concerns related to GBV and sexual harassment.

The proposed installation of pipeline installations will be on the wayleaves along public roads with no encumbrances or business activities that would be affected during the implementation of the proposed project. This has been confirmed through social screening along the proposed 1.5 Km pipeline. Throughout the implementation of the project, the risks/negative impacts will be monitored and managed as detailed in the Environmental, Social Management & Monitoring Plan (ESMMP). Overall, the positive/beneficial impacts of the project outweigh the temporary and short term environmental and social impacts that will result.

10. Environmental and social management and monitoring plan (ESMMP)

The ESIA study has identified some minor negative social and environmental impacts of the sub-project but also socio- economic benefits to the communities. The potential negative impacts will be minimized through the implementation and rigid monitoring of the recommendations as set out in the ESMMP. The Environmental and Social Management Plan (ESMMP) has addressed the environmental and social safeguards issues arising during the implementation of the project and the post construction maintenance period. The ESMMP will be the guidance document to be continually referred to during the construction, maintenance, and operation phases of the project. The ESMP should therefore be included in bidding documents and compliance clearly emphasized in the contract documents.

The contractor will be required to fully comply with implementation of the ESMP. The contractor will be required to submit a detailed Construction Environmental & Social Management Plan (C-ESMP), which comply with the ESMP, prior to mobilization to the construction sites. The Contractors will also be required to prepare constructions Method Statements that will be task-specific after undertaking specific risk assessments. Among the Key Staff of the Contractor will be an Environmental and Social Safeguard officer with the necessary qualifications and experience to manage the implementation of ESMP. The

Contractor's E&S officer will full time and site based during the implementation of the Project. Among the key responsibilities of the Contractor's E&S officer will include:

- Managing the implementation of ESMP with strict compliance of the provisions.
- Preparation of regular progress reports (weekly, monthly or quarterly) as applicable, on the implementation of ESIA including incidents reports and mitigations.

The Project Proponent (NYANDAWAS) shall ensure that the implementation of the Environmental and Social Management Plan (ESMP) is effectively executed and that adequate resources have been provided. NYANDAWAS do not have an Environmental and Social Safeguards Officer within its establishment. The WSP will need to employ Environmental and Social Safeguards Officer during the duration of project implementation, who will be responsible for supervision and monitoring for compliance of the ESMP implementation and reporting.

The responsibilities of NYANDAWAS will include:

- Responsible for day-to-day coordination and implementation of the project & ESMP.
- Ensure the grievance committees are established and working.
- Monitor the ESMP implementation.

Roles of the proponent's Environmental and Social Safeguards Officer:

- Ensure compliance to proposed ESMP by the contractor.
- Ensure review of ESMP is up to date.
- Carry out periodic audits of the ESMP to ensure that its performance is as expected.
- Preparation and submission of ESMP implementation Reports.

Monitoring of the ESMP implementation will include site inspections, reporting and photographic documentation designed to assess and record the contractor's compliance with the ESMP and other applicable regulations. It is also anticipated that additional inspections would be required in response to complaints and issues raised by local communities.

11. Project affected persons

The are **NO** Project Affected Persons (PAPs) since proposed pipelines extensions shall be installed on the wayleaves along public roads. Social screening has been done on the proposed 1.5 Km pipeline extension through a transect along the pipeline alignment to confirm that the wayleaves are free from any encumbrances. The solar power system will be installed at the compound where the existing Kasuku Borehole and other water works infrastructure are located. This is public under the County Government of Nyandarua. However, the County Government and NYANDAWAS should follow up on the documentation for the land to avoid loss of land and infrastructure to land grabbers in the future.

12. Project alternatives

These alternatives included the selected area, design, and construction techniques, as well as the no-project alternative. The purpose of considering these alternatives was to evaluate the socio-economic importance of the project, its location within Ol Joro Orok Sub-County, and the adherence to water infrastructure construction standards.

Selected Area:

Different potential areas for implementing the project were evaluated. Factors such as proximity to the water source, accessibility, terrain characteristics, and socio-economic considerations were considered. The selected area was determined based on these factors to ensure efficient water supply, minimal environmental impact, and maximum benefit to the target communities.

No-Project Alternative:

The no-project alternative was also assessed as part of the evaluation process. This alternative considers the scenario where the proposed Project is not implemented. The potential consequences, such as the continued lack of access to safe drinking water, socio-economic implications, and environmental impact, were evaluated to highlight the necessity and importance of the project. Based on the evaluation of these alternatives, the preferred option was selected i.e. to implement the proposed solarization of Kasuku Borehole and extension of water distribution pipelines. The selected areas ensure optimal water supply and distribution to the target communities while minimizing environmental impact. The chosen design and construction techniques adhere to established standards to ensure the sustainability and longevity of the infrastructure. The project's socio-economic significance, location within Kasuku Township, and the need for improved water infrastructure were key factors that justified the selection of the preferred alternatives.

13. Conclusions & Recommendations

Conclusions

- The project will be constructed within existing public land for the solar power system while pipelines will be installed on the public road reserves and therefore no private land will need to be acquired.
- The World Bank Operational Procedure 4.12 (Involuntary Resettlement) is not triggered since the proposed pipeline routes are in clear lands free from encroachment and is a reserve for the water pipelines.
- The Environmental and Social Screening undertaken for the project revealed that the investment is low impact on both social and biological environment; therefore, this project is categorized as a category B project. The level of ESIA assessment required is

at Project Report Category, which should be approved by Nyandarua County NEMA office.

- The cost of implementation of the proposed environmental management and mitigation plan is estimated at **KES 860,000**

Recommendations

- The project is recommended for implementation provided that the mitigation measures identified in the study for the potential negative impacts are implemented, the recommendations will also form part of NEMA License that will be issued for the Project.
- During the implementation of the Project, NYANDAWAS should hire an environmental & Social to assist in the supervisions, monitoring and reporting on the progress for the implementation of ESMP.
- The County Government of Nyandarua and NYANDAWAS should follow up and ensure that the documentation of land ownership for the site where the Kasuku Bore hole, pump house, water storage tanks and the proposed solar system are located. This will prevent loss of the land and the developed infrastructure in the future.
- The proponent needs to support the implementation of environmental and social management plan (including mitigation plan and monitoring) in order to protect the environment of the project area from the negative impacts of project implementation.
- Priority for employment should be given to the local community including women and
- youth. This will enhance social economic and capacity building.
- The proponent should adopt a participatory and collaborative approach during all the phases of the project. This will ensure active participation of all key stakeholders towards success and sustainability of the project.

TABLE OF CONTENTS

CERTIFICATION ……i

ABBREVIATIONS AND ACRONYMS ……..ii

EXECUTIVE SUMMARY……iii
INTRODUCTION ……1
1.1. Project background ……1
1.2 Justification for the ESIA ……1
1.3 Objectives of the ESIA study ……2
1.4 Scope of the ESIA study ……2
1.5 Approach and methodology of the study ……3
2 PROJECT DESCRIPTIONS……7
2.1 Project area description ……7
2.2 Project's objectives ……9
2.3 Description of the proposed project's components ……9
2.4 Proposed project's implementation activities……10
3.2 Policy Provisions ……12
3.3 Legal Framework ……14
3.4 Institutional Structure of the Water Sector ……19
3.5 Institutional Structure – Environmental……21
3.6 Sectoral Integration ……22
3.7 World Bank Operational Procedures ……22
3.8 The World Bank Safeguards ……23
3.9 Relevant International Conventions and Treaties ……26
3.10 Harmonization of both WB and GoK requirements for social and environmental sustainability……27
3.11 Project implementation institutional structure……28
4.2 Environmental baseline conditions……30
4.3 Social and economic setting ……32
5.1. Background……37
5.2. Stakeholders and public consultations objectives……37
5.3 The adopted consultative process……38
5.4 Public disclosure of the ESIA ……46
6.2. Types of impacts……48
6.3. Potential impacts identification and assessment……49
6.4. Positive impact during construction phase……49
6.5. Negative impacts during construction phase ……51
8 ENVIRONMENTAL AND SOCIAL MONITORING PLAN (ESMoP) ……66
8.1 Overview ……66
8.2 Purpose and objectives of ESMoP……66
8.3 Auditing of Environmental and Social Management and Monitoring Plan (ESMMP)……70
8.4 Management responsibility of ESMMP ……70
9 CHANCE FIND PROCEDURES ……72
9.1 Purpose of the chance finds procedure……72
9.2 Responsibility……72
9.3. Scope of the chance finds procedure……72
9.4. Induction/Training ……72
9.5. Details on chance find procedures……72
10 GRIEVANCE REDRESS MECHANISM (GRM)……75

10.1 Introduction **75**
10.2 Potential grievances **75**
10.3 Objective of a grievances redress mechanism **75**
10.4 Guiding principles for an effective grievance redress mechanism **76**
10.5 The proposed grievance structure **76**
11 CONCLUSION AND RECOMMENDATIONS **79**
11.1 Conclusion **79**
REFERENCES **81**
ANNEXES **82**
ANNEX I: SAMPLE QUESTIONNARE RESPONSES **82**
ANNEX II: MINUTES OF PUBLIC CONSULTATION MEETING HELD ON 20/06/2024 ..... **82**
ANNEX III: LIST OF PARTICIPANTS IN THE PUBLIC CONSULTATIVE MEETING **88**
ANNEX 1V: LAYOUT ROUTE FOR THE PROPOSED AMANI PIPELINE **88**
ANNEX V: PROPOSED PROJECT BOQs AND COST ESTIMATE **88**
ANNEX VI: ESIA STUDY Team Leader NEMA License – 2024 ..... **89**

INTRODUCTION

1.1. Project background

The Ministry of Water, Sanitation, and Irrigation (MoWS&I) is implementing the Water and Sanitation Development Project (WSDP) with a credit from the International Development Association (IDA) that aims at improving water supply and sanitation services in selected regions in Kenya through the Water Service Providers (WSPs). The Project Development Objective (PDO) is to improve water supply and sanitation services in select Coastal and Northeastern regions in Kenya and improve the financial performance of Water Service Providers (WSPs) affected by the COVID-19 pandemic. Nyandarua Water & Sanitation Company (NYANDAWAS) has been identified as one of the WSPs with potential to achieve financial recovery within a period of less than 12 months and therefore eligible to receive the support under the Conditional Liquidity Support Grant (CLSG) II Program.

Nyandarua Water and Sanitation Company Limited (NYANDAWAS) is a legal entity under the Companies Act No. 17 of 2015 wholly owned by the County Government of Nyandarua. The principal activity of the Company is to provide water and sanitation services to the rural residents of Nyandarua County. This is done either by running water supplies directly or overseeing some smaller entities who have been authorized to provide water in certain areas of the County. Currently, NYANDAWAS directly operates four water supply schemes namely: -
1) Kirima Water Supply which covers Shamata Township and its environs in Ndaragwa Division of
Nyandarua North Sub-County.
2) Gatimu Water Supply covers Gatimu Division of Nyandarua West Sub-County.
3) Ol joro orok/Kangui Water Supply covering Oljoro orok Division of Nyandarua West Sub-County.
4) Kasuku water Supply covering Kasuku Township and its environs.

NYANDAWAS has proposed the construction of Amani pipeline and solarization of Kasuku Borehole water pumping system under the CLSG II Program to improve water supply services for the residents in Kasuku Township and its environs. The implementation of such a development project will generate positive socio-economic benefits, but also adverse impacts to the human community and environment. Thus, in compliance with the requirements of the Environmental Management and Coordination Act (EMCA) 1999 and the World Bank procedures, an ESIA should be prepared which will be approved by NEMA and the World Bank prior to the implementation of the project.

1.2 Justification for the ESIA

The proposed project is classified as a medium risk based on NEMA Public Notice on ESIA and Legal Notice No. 31 thus requiring Comprehensive project report (CPR) and categorized

by the World Bank as category 2 with moderate risk operations likely to cause adverse environmental and social impacts and readily minimized by applying appropriate management and mitigation measures. It is against this backdrop that this ESIA was undertaken in accordance with the regulations and guidelines set out by the National Environmental Management Authority (NEMA), and the World Bank's Safeguard Policies. The ESIA done was to determine the status of the environment, environmental considerations for the project in the design phase, operation phase and the decommissioning phase.

1.3 Objectives of the ESIA study

The Environmental & Social Impact Assessment (ESIA) is expected to achieve the following objectives:

- Generate baseline data for monitoring and evaluation of how well the mitigation measures will be implemented during the project cycle.
- Communicate the results of the ESIA process for the Proposed Water Supply Project and alternatives considered.
- Ensure that the impacts identified during the ESIA process are assessed.
- Present the mitigation and enhancement measures which will be implemented by the Project to manage impacts identified.
- Provide a record of comments and responses received from Interested and Affected Parties (I&APs) during the ESIA process.
- Facilitate an informed decision-making process by the relevant authorities.
- Recommend cost effective mitigation measures against the expected impacts.

The project implementation consists of three main stages, namely: Pre-construction Construction and Operational.

1.4 Scope of the ESIA study

The ESIA study has been undertaken by the Consultant with the intention of collecting enough and relevant information inherent to ensure the production of an appropriate ESIA document including an Environmental and Social Management and Monitoring Plan (ESMMP). The scope of the ESIA study is:

- Detailed Project's descriptions.
- Description of the Baseline Environment.
- Stakeholders Engagement.
- Description of the Relevant National and International Legislative and Institutional Regulatory Framework.
- Identify all potential significant environmental and social impacts of the proposed Project and recommend measures for mitigation.
- Cumulative Impact Assessment.
- Assessment of the Project's alternatives.

- Development of Environmental & Social Management & Monitoring plan to avoid, mitigate and where not possible, offset the identified impacts to ensure sustainability of the proposed Project.

1.5 Approach and methodology of the study

This ESIA study has followed procedures stipulated in the NEMA EMCA Regulations establishing the list of projects that must undergo an ESIA study, compliance with the World Bank's Environmental and Social safeguards procedures as well as General Guidelines and Procedures for Environment Impact Assessment. The study has adopted the following approach:

a) Scoping study/ preliminary assessment.
b) Review of secondary data on baseline information.
c) Review of Policies, Laws, and Regulations.
d) Review of meetings and consultations with stakeholders.
e) Field surveys along the entire project sites, to gather information and collect data on various aspects of the project sites.

1.5.1 Preliminary Assessment/ Scoping Study

A scoping study has been done involving consultation with NYANDAWAS's senior technical staff, local community's leaders, and Kasuku Trading Centre residents. The scoping exercise entailed a preliminary visit to the various project sites for the following reasons:

- Sites reconnaissance to understand the spatial coverage of the project.
- Identification of the likely stakeholders who will be involved in the public consultations, affected, or benefitting from project activities.
- Preliminary findings of the existing environment (physical, biological, and socio-cultural environment).
- Preliminary predictions of likely positive and adverse impacts.
- Establishing clear boundaries of the study and focus on the relevant issues concerning the study.

1.5.2 Consultation with stakeholders

Involvement of Stakeholders

The study applied different participatory methods, namely:

(i) Exchange with one-to-one key informant (Key Informant Interviews).

(ii) Public Meeting.

(iii) Administration of a questionnaire.

The consultations were first undertaken with NYANDAWAS's senior technical staff (MD & the Technical Manager) to get the details of the proposed project activities. Stakeholders have been informed about components and planned activities of the project, the advantages, and

potential impacts likely to be encountered and proposed mitigation measures. The Consultant has offered to them an opportunity to express their concerns, raising their opinions and worries through questions. Any issue raised by one individual, or a group of people was cross-checked by discussing it with other individuals or groups.

1.5.3 Baseline information gathered on the Project

Information on the physical, biological, socio-economic environment, institutional and legal framework were collected from various sources, namely:

- Concept design of the project.
- Literature review of published and miscellaneous documents.
- Field observations in project's areas.
- Consultations with selected stakeholders and discussions with NYANDAWAS's senior technical staff for getting expert opinions.

Field data / information collection

The Consultant accompanied by NYANDAWAS technical team conducted field surveys to capture a broad picture of the prevailing situation at the sites. Among the activities performed include:

- Appraisal of physical and environmental conditions of the project sites and sensitive areas likely to be impacted by project activities.
- Baseline data on climate, topography, soils, drainage/hydrology, flora, and fauna etc… have been recorded.
- Appraisal of land use at adjacent areas dedicated to infrastructures construction and assessment of other relevant socio-economic parameters.
- Understanding the detailed project description through comparison of the field survey and the preliminary technical study.
- Collecting opinions and point of views of residents about the proposed project, their expectations, and concerns in relation to positive and adverse impacts likely to be generated by implementation of the project and on proposed mitigation measures.

1. 5.4 Impacts identification and assessment

The environmental and social impacts identification and assessment was done by superimposing project elements onto the existing environmental conditions of the project site. Environmental impacts were then identified, their significance assessed, and mitigation/enhancement measures proposed to properly eliminate or reduce negative environmental and social impacts and suggest remedial measures for positive impacts. The identification and evaluation of impacts was based on qualitative criteria, and thus the importance of each impact was assessed against the following:

- The degree of sensitivity

- The occurrence

The degree of sensitivity or intensity of the environmental and social impact corresponds in this case to the relative importance of the disturbance / alteration induced by a project activity on an environmental or social component. The degree of sensitivity of the impact can be very high, high, or low. About the occurrence criterion, this is the probability of the occurrence of the impact over the entire period during which the activity is carried out. In this case, the occurrence is either very limited, limited, or permanent for the entire duration of the activity. The assessment criteria and ratings for determining the impact significance are as following:

(i) **Nature or status of the impact:** the type of the effect the activity would have on the environment that can be:

- Positive: has a benefit to the holistic environment
- Negative: has a cost to the holistic environment
- Neutral: has no cost or benefit

(ii) Duration of the impact: the lifetime of the impact:

- Short term: less than 2 years
- Short to medium: 2 to 5 years
- Medium term: 6 to 25 years
- Long term: 26 to 45 years
- Permanent: 46 years or more

(iii) Extent or scale of the impact: the distance from the source that impacts may be experienced:

- Site specific: within the site boundary
- Local: affects immediate surroundings areas
- Regional: extends substantially beyond the site boundary
- National: affects country

(iv) Reversibility of the impact: to what degree its influence on the relevant environment can be negated:

- Completely reversible: reverses with minimal rehabilitation and negligible residual effects
- Reversible: requires mitigation and rehabilitation to ensure reversibility
- Irreversible: cannot be rehabilitated completely/ rehabilitation not viable

(v) Intensity or magnitude of the impact: severity of the negative and magnitude of positive impacts:

- Low: little effect- negligible disturbance/benefit.
- Low to moderate: effects observable-environmental impacts reversible with time
- Moderate: effects observable-impacts reversible with rehabilitation
- Moderate to high: extensive effects – irreversible alteration to the environment
- High: extensive permanent effects with irreversible alteration

(vi)The probability of the impact: describes the likelihood of the impact occurring:

- Unlikely: less than 15 % sure of an impact occurring
- Possible: between 15% and 40 % sure of an impact occurring
- Probable: between 40 % and 60 % sure that the impact will occur
- Highly probable: between 60 % and 85 % sure that the impact will occur
- Definite: Over 85 % sure that the impact will occur

1.5.5 ESIA Study Report Structure

This ESIA Study Report is organized in 10 Sections:

1- Introduction
2 - Project description
3 - Policy, Legal and Institutional Framework
4 - Environmental and Social Baseline Conditions
5 - Public Participation and Consultations
6 - Environmental and Social Impacts and Mitigation Measures
7 - Environmental and Social Management Plan (ESMP)
8 - Environmental and Social Monitoring Plan (ESMoP)
9 - Chance Find Procedures
10 - Grievance Redress Mechanism (GRM)
11 - Conclusion and recommendations
References & Annexes

1.5.6 Public Disclosure of the ESIA

This ESIA provides for the below listed provisions with regards to public disclosure:

(i) In accordance with EMCA 1999 Cap 385 and World Bank OP 4.01, the Project Proponent in this case NYANDAWAS will ensure that the Results of Public Consultations including ESIA area disclosed on NEMA, World Bank, WSTF & NYANDAWAS websites.

(ii) The Report will also be made available at the Ol Joro Orok Sub-County & WEMA Ward Offices, Nyandarua County, for ease of access by the Project's interested parties at location level.

(iii) At completion of the Project construction works, the EIA/EA Audit Regulations of 2003 requires the Project proponent to undertake a closeout audit after completion of the project and undertake an initial Environment Audit (EA) immediately after commissioning of the project.

2 PROJECT DESCRIPTIONS

2.1 Project area description

Nyandarua County lies in the central part of Kenya between latitude 0°8' North and 0°50' South and between Longitude 35° 13' East and 36°42' West. It is linked to the other counties through the major trunk roads. To Nairobi, it is connected via (A8) to Mombasa, and to Kisumu via (A12). Ol'Kalou, the County headquarters, is situated about 150 kilometres Northwest of Nairobi. Ol'Kalou town has strong economic ties with other regional towns such as Nyahururu, Gilgil, Naivasha, Kiambu, Embu, Nakuru and Nyeri. The major economic activities in the County include farming, quarrying and trade. Agriculture is the backbone of Nyandarua's economy due to the fertile soils and favourable climate. It is considered the food basket of Kenya because of its high production of potatoes, cabbages, carrots, peas and milk that are sold in Nairobi and most other towns in the country. Ol Joro Orok Sub- County and particularly Weru Ward, where the project site is located has a few challenges including lack of a good road network and adequate distribution of electricity and water.

2.1.1 Project location

Kasuku Township is located in Weru Ward, Ol Joro Orok Sub- County of Nyandarua County and has a present population of about 2,210 residents. The Township is located at an elevation of 2,418 metres and about 30 Km North of Ol Kalou Town, the County Headquarters. Transport access to Kasuku Township is via the Gilgil - Ol Kalou – Nyahururu tarmac road.

Kasuku Township geo- location:

Latitude: -0.13202° or 0° 7' 55" south
Longitude: 36.37884° or 36° 22' 44" east
Elevation: 2,418 metres (7,933 feet

2.1.2 Existing Kasuku Water Supply Scheme

The County Government of Nyandarua has developed a borehole within the Township with a yield of 14M3/hr. The BH was drilled in 2014 (after EMCA of 1999). However, no records of the ESIA License could be obtained from either the County Water Department or NYANDAWAS. The quality of water is good for domestic consumption. The borehole is located on public land as confirmed by the area chief, Weru Ward County Administrator and local residents. The WSP does not have title of the land where the BH is located. The process of transferring the land ownership from the National Government to County Government is still under progress. Currently, the borehole water pumping system is connected to the grid power which renders the operations unsustainable due to the high electricity costs. Water from the borehole is pumped to an elevated storage tank from where it is distributed to consumers.

The existing water distribution network is limited and therefore only a few homesteads and institutions have been connected to the system.



Kasuku Borehole site



The existing DN32 pipeline connection currently serving Amani area



The existing Amani branch pipeline connection crossing the Nyahururu – Gilgil Road through a culvert.

2.2 Project's objectives

The principal objective of the project is to improve access to clean water supply in the targeted area at Kasuku Township and its environs. The proposed project will also contribute to enhanced hygiene and sanitation hence reducing water borne diseases. Specifically, this project will contribute to alleviation poverty within the area through improvement of socio-economic activities.

2.3 Description of the proposed project's components

The summarized Scope of Works for the proposed project include:

i. Construction of Amani pipeline DN50 to DN90, 1500m long
ii. Solarisation of Kasuku Borehole

2.3.1 Supply and installation of pipes

The distribution network is designed to cover a total length of about1.5 kilometers, exclusively using HDPE pipes. HDPE pipes are selected for their flexibility, corrosion resistance, and ease of installation, making them suitable for the distribution of treated water to various areas within Kasuku Township and its environs. The installed pipelines will be of varying diameter of 0D 50-90mm complete with all fittings. NYANDAWAS has identified priority pipeline routes that best suit the terrain and intended goal of reaching as many people as possible through individual connections as well as communal water points where necessary.

Through field site visits and the use of topographic maps and engineering designs, the following was adhered to in aligning distribution pipelines:

- The distribution pipelines will be installed within the available road reserves or public open spaces to ensure easy accessibility for maintenance.
- There are no structures, obstructions or underground installations along the proposed pipeline routes that could affect the installation of pipelines.
- The adopted pipeline routes allow for easy access to the pipelines and do not interfere with the existing infrastructure.

2.3.2 Air Valves and Wash Outs

The number of high and low points within the pipelines have been kept at minimum in the pipeline profile design to keep the number of air-valves and washout as low as possible. Several air valves and washouts are proposed for incorporation within the existing network to mitigate the issue of rampant airlocks.

2.3.3 Inspection chambers

The Kasuku Township Water Supply System Project includes the construction of various types of inspection chambers to enhance the functionality and maintenance of the water supply infrastructure. The project entails the construction of air-release chambers, which release air pockets within the pipeline system to optimize water flow. Additionally, washout chambers will be built to provide access points for pipeline flushing and cleaning, ensuring water quality is maintained. Control valve chambers will house valves to regulate water flow and pressure. Five sectioning valve chambers will be constructed to allow for segmenting the system during maintenance or repairs. Furthermore, valve chambers will connect the existing water supply system with the new system, ensuring seamless integration. These inspection chambers contribute to the overall reliability, efficiency, and longevity of the Water Supply System, providing sustainable and high-quality water supply to the communities it serves.

2.3.4 Installation of Solar Power water pumping system

This will entail the design, supply, install and test a solar power system fully connected to the pumping system with the following components as a minimum programmed to give solar system priority over the grid power. The solar power unit components include monocrystalline solar panels mounted on frames, hybrid inverter, cabling, and system integration accessories. A perimeter fence will be constructed at the solar power unit area.

2.4 Proposed project's implementation activities

The implementation of the proposed project is anticipated to consist of various activities such as excavation of trenches for the 1.5km distribution pipeline extension, installation of the pipelines and backfilling of trenches, transportation of materials and construction of water

kiosks, valve chambers, perimeter fence at the solar power unit and installation of last mile connections to households, business premises and institutions. The construction activities will also include the installation of solar panels on steel support structures and the associated electrical connections.

The project activities during operations will include the maintenance of pipelines and attending to blockages and breakages along the pipelines and other necessary repairs for the water supply scheme infrastructure.

2.4.1 Raw materials for the construction works.

- HDPE, Steel, and uPVC pipes.
- Steel valves & fittings.
- HDPE valves & fittings
- Sand, aggregate, cement, water for concrete works on the various chambers.
- Steel members for mounting of solar panels.
- Solar panels.
- Electrical cables and associated fittings.

2.4.2 Anticipated waste material and by-products

Wastes Generated during Construction Phase:

- **Construction Debris:** During the construction phase, there will be various types of construction debris, such as concrete, bricks, stones, and wood waste among others.
- **Excavated Soil:** Depending on the nature of the project, excavation activities may generate large amounts of soil waste.
- **Packaging Waste:** Construction materials, equipment, and supplies are often delivered in packaging that can contribute to waste generation.
- **Chemical Waste:** Construction activities may involve the use of various chemicals, including solvents, paints, adhesives, and lubricants.

2.5 Proposed Project Costs

The estimated cost of the proposed project is KES 21,426,426

	Component	Approx. Cost (KES
1	Pipeline network upgrading network at Ol-JoroOorok Water Supply- Amani Estate.	916,667
2	Supply and installation of solar panels for Kasuku Bolehole	2,291,667
	Total	**3,208,334**

3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Overview

The activities of the proposed project are regulated by several legal instruments and policies, the main ones being the Environmental Management and Coordination Act (EMC 1999, which sets the requirements and procedures for obtaining operating licenses and permits. This chapter highlights the specific sections of both national and international legal and institutional framework which will enable the proponent, NYANDAWAS, to be compliant with the law and attain the set standards.

3.2 Policy Provisions

3.2.1 The Kenya Vision 2030

Kenya Vision 2030 is the current national development blueprint for period 2008 to 2030. The objective of the vision 2030 is to transform Kenya into a middle-income country with a consistent annual growth of 10 % by the year 2030". One of the aims of the vision is to make Kenya to be a nation that has a clean, secure, and sustainable environment by 2030. This will be achieved through promoting environmental conservation to better support the economic pillar.

Developing and improving basic infrastructure and services namely will achieve Kenya's transformation into a middle-income country: roads, streetlights, storm water drains, footpaths, and water and sanitation facilities among others. Improving pollution and waste management through the application of the right economic incentives in development initiatives is critical.

Relevance

This Project aims at improving water supply in Kasuku Township and the surrounding environs through the installation of Amani DN50 - DN90 HDPE water distribution pipeline (approximately 1,500m) and solarization of the water pumping system, which will improve the economy, health, and sanitation of the area. The project will offer an opportunity for the local community to empower themselves economically through securing employment and service provision.

3.2.2 National Environment Policy (NEP), 2013

Sessional Paper No. 6 of 1999 on Environment and Development since adoption by parliament in 1999 has been in use and influenced the formation of EMCA in 1999 with 2015 amendments but has since been surpassed by time and is therefore under revision to comprehensively cover areas that were previously left out to augment it. The revised draft of the National Environmental Policy, dated April 2012, sets out important provisions relating to the management of ecosystems and the sustainable use of natural resources, and recognizes that natural systems are under intense pressure from human activities particularly for critical

ecosystems including forests, grasslands, and arid and semi-arid lands. The objectives of the Policy include developing an integrated approach to Environmental management, strengthening the legal and institutional framework for effective coordination, and promoting environmental management tools.

Relevance

The Project shall implement the Environmental and Social Management and Monitoring Plan (ESMMP) to mitigate the impacts of the resulting impacts during the construction and operational phases of the Project; this will ensure that the sensitive ecosystems are not destabilized by the subsequent Project activities.

3.2.3 The National Water Policy of 2021

The Sessional Paper No. 1 of 2021 was developed in line with the mandate, vision and mission of the Ministry responsible for water affairs in Kenya. The National Water Policy of 2021 build on the achievements of the water sector reforms that commenced with the enactment of the Water Act, 2002, which were based on the principles outlined in the Sessional Paper No. 1 of 1999 on National Policy on Water Resources Management and Development. Therefore, the Policy aims at moving the water sector to the next level of development to contribute to the National Goals, and realization of the Sustainable Development Goals.

The Government of Kenya is committed to ensuring the progressive realization of the human rights to water, and reasonable standards of sanitation through taking steps to protect, respect and fulfil these rights, as required by the Constitution. This is in addition to realization of the human right to a clean environment. This Policy takes into account the need for Kenya, at both levels of government, to take steps, through this Policy, law, institutional mandates, planning and financing, in order to secure universal coverage of the entire population through access to water, and sanitation in accordance with constitutional standards The Government of Kenya is committed to ensuring the progressive realization of the human rights to water, and reasonable standards of sanitation through taking steps to protect, respect and fulfil these rights, as required by the Constitution. This is in addition to realization of the human right to a clean environment. This Sessional Paper considers the need for Kenya, at both levels of government, to take steps, through this Policy, law, institutional mandates, planning and financing, to secure universal coverage of the entire population through access to water, and sanitation in accordance with constitutional standards.

Relevance

The proposed water supply project will comply with this Policy by improving and upgrading water supply networks within the target areas for sustainable access to potable water.

3.2.4 National Climate Change Response Strategy of 2010

The strategy paper recognizes that Kenya is a water scarce Country and offers a variety of strategies for ensuring that the resource is utilized in ways that recognize that it is a finite resource. The strategy paper also argues that interventions in the water sector should take a participatory approach involving different water users including gender groups, socioeconomic groups, planners, and policy makers in water resource management.

Relevance

The source of water for the proposed pipelines extension is the Kasuku Borehole which experience low yields during the dry spells. There is therefore need to conserve water and reduce water wastages. The ESIA has proposed measures to be complied with during the proposed Project's operation by NYANDAWAS to reduce water loses that through illegal connections and leakages. Installation of solar power unit for water pumping is another measure to mitigate against climate change effects.

3.3 Legal Framework

3.3.1 Constitution of Kenya

Article 42 of the Bill of Rights of the Kenyan 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. Under Chapter 5 (land and Environment), Part 1 is devoted to land. It requires that land be used and managed in 'a manner that is equitable, efficient, productive, and sustainable, and in accordance with the following principles:

(i) Equitable access to land.
(ii) Security of land rights.
(iii) Sustainable and productive management of land resources.
(iv) Transparent and cost-effective administration of land.
(v) Sound conservation and protection of ecologically sensitive areas.

Part 2 of Chapter 5 of the constitution is dedicated to Environment and Natural Resources. Article 69 in Part 2 provides 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 tree cover of at least ten per cent of the land area of Kenya.
(iii) Encourage public participation in the management of, protection and conservation of the environment.
(iv) 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.

Utilize the environment and natural resources for the benefit of the people of Kenya.

Further, Article 70 states that if a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed, or threatened, the person may apply to a court for redress. The sub-project should ensure compliance with the constitution in so far as equitable sharing of the resources, between the stakeholders. Further, the project should ensure the sustainability of livelihoods and biological resources within the project areas are protected. Any development proposals should also be cognizant of the increased powers under the Constitution given to communities and individuals to enforce their rights through legal redress.

Relevance

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

3.3.2 The Environment Management and Co-ordination Act, 1999

The Act provides for the establishment of a legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. Just as in the New Constitution, Part II of EMCA confers to every person the right to a clean and healthy environment and to its judicial enforcement. The new Constitution and EMCA therefore obligates the project's Executing Agency and Contractor to work in a clean environment and not to contravene the right of any person within its zone of influence, to this entitlement.

EMCA has provided for the development of several subsidiary legislations and guidelines, which govern environmental management and are relevant to the project implementation. These include:

(i) The Environmental (Impact Assessment and Audit) Regulations, 2009 Legal Notice No. 101.
(ii) The Environmental Management and Coordination (Waste Management) Regulations, 2006 Legal Notice No. 121.
(iii) The Environmental Management and Coordination (Water Quality) Regulations, 2006 Legal Notice No. 120.
(iv) The Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61.

(v) The Environmental Management and Coordination (Air Quality Regulations 2014).
(vi) The Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006 Legal Notice No. 160.
(vii) Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores, and Sea Shore Management) Regulation, 2009.
(viii) The Environmental Management and Coordination (Controlled Substances) Regulations, 2007

Relevance to the Project

The EMCA and the above listed regulations will form the main statutory instruments which will guide the implementation of the project so that any likely adverse impacts that could be caused by the project are promptly mitigated as recommended in this study.

3.3.2 Water Act 2016

The Water Act 2002 was amended in the year 2016 to align to the Kenyan Constitution 2010, the Act vest the responsibility of developing water and Sanitation infrastructure (sewerage and water supply) to the water service boards and ownership and management to the WSPs that acts as the agent for the board Section 73 of the Water Act allows a person with a license to supply water (licensee) to make regulations for purposes of protecting against degradation of sources of water, which he is authorized to take. Under the Act, the licensee could be a local authority; a private Trust or an individual and the law will apply accordingly under the supervision of the Regulatory Board.

Section 75 and sub-section 1 of the Water Act allows a licensee for water supply to construct and maintain drains, sewers, and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing water belonging to the licensee or which he is authorized to take for supply from being polluted. However, if the proposed works will affect or is likely to affect any body of water in the catchment, the licensee shall obtain consent from the Water Resources Management Authority. Section 76 states that no person shall discharge any trade effluent from any trade premises into sewers of a licensee without the consent of the licensee upon application indicating the nature and composition of the effluent, maximum quantity anticipated, flow rate of the effluent and any other information deemed necessary. The consent shall be issued on conditions including the payment rates for the discharge as may be provided under section 77 of the same Act.

Relevance to the Project

This Act will be relevant during construction of the project whereby the contractor will be required from time to time ensure that Project activities do not pollute water resources in the

project area. The Contractor will also be required to comply with the effluent discharge requirements during construction of the project, which will require that the contractor obtain relevant permits from Water Resource Authority (WRA) on case-by-case basis when required.

3.3.3 County Government Act No. 17 of 2012

Part II of the Act empowers the county government to oversee of the function described in Article 186 of the constitution, (county roads, water and Sanitation, Health), Part XI of the Act vest the responsibility of planning and development facilitation to the county government with collaboration with national government. This arrangement has been adopted for interventions in order not to conflict with provisions of the Kenyan Constitution.

Relevance to the Project

The project will be implemented by Nyandarua water and Sanitation Company (NYANDAWAS), which is a water utility, wholly owned by Nyandarua County Government and responsible for the provision of efficient and economical water within the rural areas of Nyandarua County. This Legislation calls for effective and coordinated public participation during the planning of public projects. The ESIA study has complied with this Legislation through consultations with relevant National & County Governments Departments and the other Project's stakeholders including the target beneficiaries.

3.3.4 Physical and Land Use Planning Act 2019

Section 56 of the said Act empowers the County Governments to reserve and maintain all land planned for open spaces, parks, urban forests, and green belts as well as land assigned for public social amenities. The Project identified will be implemented as provided by Nyandarua County Government and Land Use Plan for Urban areas.

Relevance to the Project

As the Act directs, regulates, and harmonizes development and use of land in the Country. The proposed pipelines extensions have been designed within the public road reserves (wayleaves for public utilities). This was to avoid cases of acquisition of private property and resettlement complications. The proposed pipelines extensions will be installed along the wayleaves for the County managed roads. Consultations with the Nyandarua County Roads Department have been held with confirmation that the existing road reserves have adequate provisions for installation of public utilities including water pipelines. NYANDAWAS will be required to liaise with the County Road Department for supervisions during the installation of the pipelines.

3.3.5 Occupational Health and Safety Act (OSHA 2007)

This legislation provides for protection of workers during construction and operation phases. It is tailored at implementation of the EHS plan in compliance with the relevant sections of this Act. The ESMP prepared under this assessment has provided for specific health and safety aspects to be complied with during implementation of the project.

Relevance to the Project

The Act provides EHS guidelines which shall be followed by both the contractor and supervising consultant during implementation of the project to avoid injuries and even loss of life to workers and neighbouring community.

3.3.6 The Public Health Act (Cap 242)

Part IX section 115 of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires Local Authorities to 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. Such nuisance or conditions are defined under section 118 and include nuisances caused by accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbour rats or other vermin.

Relevance to the Project

The Act provides guideline to the contractor on how he shall manage all wastes (Liquid and Solid Wastes) emanating from the project in a way not to cause nuisance to the community, this Act during construction shall be read alongside the waste management regulations of EMCA Cap 387 for utmost compliance.

3.3.7 Work Injury Benefits Act, (WIBA 2007)

This is an Act of Parliament to provide for compensation to employees for work related injuries and diseases contracted in the course of their employment and for connected purposes. An employee is a person who has been employed for wages or a salary under a contract and includes apprentice or indentured learner.

Relevance to the Project

The proposed project will adhere to the provisions of this act throughout the construction period of the project.

3.3.8 Land Act, 2012 (Revised 2016)

It is the substantive law governing land in Kenya and provides legal regime over administration of public and private lands. It also provides for the acquisition of land for public

benefit. The government has the powers under this Act to acquire land for projects, which are intended to benefit the public.

Relevance to the Project

The proposed Project will be implemented within the existing road reserves. Therefore, no land will be acquired.

3.4 Institutional Structure of the Water Sector

The Water Act 2002 has repealed and replaced by Water Act 2016, this Act now aligns Water Services Management to the Kenyan Constitution 2010.The Ministry of water, sanitation & Irrigation is responsible for policy development, sector co-ordination, monitoring and supervision to ensure effective Water and Sewerage Services in the Country, sustainability of Water Resources and development of Water resources for irrigation, commercial, industrial, power generation and other uses. The Ministry executes its mandate through the following sector institutions:

3.4.1 Water Sector Trust Fund

This body assists in the financing of the provision of Water Services to areas of Kenya, which are without adequate water services. This shall include providing financing support to improved water services towards:

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

3.4.2 Water Services Regulatory Board (WASREB)

Section 70 of the Water Act 2016 provides for establishment of Water Services Regulatory Board, this assessment assumes that the current Water Services Regulatory Authority (WASREB) will assume the roles proposed in the Water Act 2016. The regulatory Board is responsible for the regulation of the water and sewerage services in partnership with the people of Kenya. The mandate of the regulator covers the following key areas:

i. Regulating the provision of water and sewerage services including licensing, quality assurance, and issuance of guidelines for tariffs, prices, and disputes resolution.

ii. Overseeing the implementation of policies and strategies relating to provision of water services licensing of Water Services Boards and approving their appointed Water Services Providers,

iii. Monitoring the performance of the Water Services Boards and Water Services Providers,
iv. Establish the procedure of customer complaints,
v. Inform the public on the sector performance,
vi. Gives advice to the Minister in charge of water affairs.

3.4.3 Water Resources Authority (WRA)

Section 11 of the Water Act 2016 provides for establishment of Water Resources Authority, this assessment assumes that the current Water Resources Authority (WRA) will assume the roles proposed in the Water Act 2016. The authority is responsible for sustainable management of the Nations Water Resources:
i. Implementation of policies and strategies relating to management of water resources.
ii. Develop principles, guidelines, and procedures for the allocation of water.
iii. Development of Catchments level management strategies including appointment of catchments area advisory committees.
iv. Regulate and protect water resources quality from adverse impact.
v. Classify, monitor, and allocate water resources.

3.4.4 Water Works Development Agencies (WWDAs)

Section 65 of the Water Act 2016 provides for establishment of Water Works Development Agencies (WWDAs), this assessment assumes that the current WWDA will assume the roles proposed in the Water Act 2016. The WWDAs are responsible for planning and development of water and sewerage services infrastructure in their areas of jurisdiction. In Nyandarua County, the relevant WWDA is the Central Rift Water Works Development Agency (CRWWDA), which is mandated to:
i. Develop the facilities, prepare business plans and performance targets.
ii. Planning for efficient and economical provision of Water and sewerage services within their areas of jurisdiction.

3.4.5 Water Services Providers (WSPs)

The Kenyan Constitution Article 186 and 187 and corresponding further schedule item 11(b) mandates the county government to oversee Water and Sanitation in their respective counties. The County Government Act of 2012-part II provides more elaborate interpretation of the function. They have vested this mandate to Water Service Providers, which are utilities or water companies. They are County Government owned but have been commercialized to improve performance and run like business within a context of efficiency, operational and financial autonomy, accountability and strategic, but minor investment. In Nyandarua County there are only 2 WSPs mandated to provide water and sanitation services in different areas of jurisdiction i.e Ol Kalou Water & Sewerage Company & Nyandarua Water and

Sanitation Company. Nyandarua water and Sanitation Company (NYANDAWAS), is the mandated WSP that provides water in Kasuku Township and its environs.

3.5 Institutional Structure – Environmental

3.5.1 National Environmental Management Authority (NEMA)

The government established the National Environmental Management Authority (NEMA) as the supreme regulatory and advisory bodies on environmental management in Kenya under EMCA 1999. NEMA is charged with the responsibility of coordinating and supervising the various environmental management activities being undertaken by other statutory organs. NEMA also ensures that environmental management is integrated into development policies, programs, plans and projects.

3.5.2 County Environmental Committees

The County Environmental Committees also contribute to decentralized environmental management and enable the participation of local communities. These environmental committees consist of the following:

i) Representatives from all the ministries.
ii) Representatives from local authorities within the county.
iii) Two farmers / pastoral representatives.
iv) Two representatives from NGOs involved in environmental management in the county.

3.5.3 Public Complaints Committee on Environment

The Public Complaints Committee is established under Section 31 of EMCA. The PCC is concerned with the investigation of complaints relating to environmental damage and degradation generally. The PCC has powers to investigate complaints against any person or even against NEMA or on its own motion investigate any suspected case of environmental degradation. The PCC is required by law to submit reports of its findings and recommendations to NEC. The law, however, is weak in that it does not provide PCC with the mandate to see its recommendations carried through. Further, NEC is not specifically required to do anything regarding the reports submitted by the PCC and will often note and adopt the same without any further follow up action. So far, the PCC has experienced challenges such as failure to honour summons, hostility between parties, hostility directed at PCC investigators, lack of understanding of EMCA and abdication of duty by Lead Agencies.

3.5.4 Standards and Enforcement Review Committee

The Standards and Enforcement Review Committee (SERC) is a committee of NEMA and is established under Section 70 of EMCA. This is a technical Committee responsible for formulation of environmental standards, methods of analysis, inspection, monitoring, and technical advice on necessary mitigation measures. The Permanent Secretary under the

Minister is the Chairman of the Standard and Enforcement Review Committee. The members of the SERC are set out in the third schedule to EMCA. They consist of representatives of various relevant government ministries and parastatals that are Lead Agencies as well as those responsible for matters such as economic planning and national development, finance, labour, public works, law, and law enforcement, etc. Other members are drawn from public universities, and other government institutions.

3.5.5 National Environmental Tribunal (NET)

The NET is established under Section 125 of EMCA for the purpose of hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA License or by a local community upon the grant of an EIA License to a project proponent. NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. The proceedings of NET are not as stringent as those in a court of law and NET shall not be bound by the rules of evidence as set out in the Evidence Act. Upon the making of an award, NET's mandate ends there as it does not have the power to enforce its awards. EMCA provides that any person aggrieved by a decision or award of NET may within 30 days appeal to the High Court.

3.5.6 Land and Environment Court

The new constitutional dispensation has provided for the creation of land and environment courts for specific handling of land and environmental related disputes and grievances.

3.6 Sectoral Integration

This integration encourages provision of sustainable development and a healthy environment to all Kenyans. The key functions of NEMA through the NEC include policy direction, setting national goals and objectives and determining policies and priorities for the protection of the environment, promotion of cooperation among public departments, local authorities, private sector, non-governmental organizations, and such other organizations engaged in environmental protection programs and performing such other functions as contained in the act. Other stakeholder authorities include Nyandarua County, Ministry of Water, Sanitation, and Irrigation, WSTF and the local community.

3.7 World Bank Operational Procedures

Like in any project financed by, or with financial participation of, the World Bank, the environmental and social safeguards as defined in the Bank's Operational Procedures will be respected for the purposes of this project implementation. The World Bank classifies its projects into three Environmental Assessment categories according to the likely impacts on the environment they will have. This classification is as below:

Category A: The proposed project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. For a Category A project, the Proponent is responsible for preparing an EIA report.

Category B: The proposed project has potential adverse environmental impacts on human populations or environmentally important areas such as wetlands, forests, grasslands, and other natural habitats - but these are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases, mitigation measures can be designed more readily than for Category A projects. Like Category A the environmental assessment examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

Category C: The proposed project is likely to have minimal or no adverse environmental impacts. Beyond screening, no further environmental assessment action is required for a Category C project.

This Project has been categorized as B

3.8 The World Bank Safeguards

3.8.1 OP/BP 4.01 (Environmental Assessment)

The World Bank has well-established environmental assessment procedures, which apply to its lending activities and to the projects undertaken by borrowing countries, to ensure that development projects are sustainable and environmentally sound. Although its operational policies and requirements vary in certain respects, the World Bank follows a relatively standard procedure for the preparation and approval of an environmental assessment study, which:

(i) Identifies and assesses potential risks and benefits based on proposed activities, relevant site features, consideration of natural/human environment, social and trans-boundary issues.
(ii) Compares environmental pros and cons of feasible alternatives.
(iii) Recommends measures to eliminate, offset, or reduce adverse environmental impacts to acceptable levels (sitting, design, technology offsets).
(iv) Proposes monitoring indicators to implement mitigation measures.
(v) Describes institutional framework for environmental management and proposes relevant capacity building needs.

Relevance to the Project

(vi) An Environmental and Social Impact Assessment (ESIA) Study shall be conducted on this Project.

3.8.2 OP/BP 4.04 (Natural Habitats)

The policy is designed to promote environmentally sustainable development by supporting the protection, conservation, maintenance and rehabilitation of natural habitats and their functions. The policy seeks to ensure that World Bank-supported infrastructure and other development projects consider the conservation of biodiversity, as well as the numerous environmental services and products which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present). This project has no notable interaction with notable natural habitats apart from limited localized riverine aquatic systems.

Relevance to the Project

This project has no notable interaction with notable natural habitats apart from limited localized riverine aquatic systems during the desilting of intakes.

3.8.3 OP/BP 4.11 (Physical Cultural Resources)

This policy is meant to assist in preserving physical cultural resources including the movable or immovable (above or below ground, or under water) objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance including sites and unique natural values. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The objective of this policy is to avoid or mitigate adverse impacts on physical cultural resources from development projects. There are no cultural features at the site. However, a chance to find cultural features during construction analysis has been discussed under the section on Impacts and mitigation measures.

Relevance to the Project

There are no cultural features at the site. However, a chance to find cultural features during construction analysis has been discussed under the section on Impacts and mitigation measures

3.8.4 OP/BP 4.12 (Involuntary Resettlement)

The policy states that "Where large-scale of population displacement is unavoidable, a detailed resettlement plan, timetable, and budget are required. Resettlement plans should be built

around a development strategy and package aimed at improving or at least restoring the economic base for those relocated. Experience indicates that cash compensation alone is normally inadequate. Voluntary settlement may form part of a resettlement plan, provided measures to address the special circumstances of involuntary resettlers are included. Preference should be given to land-based resettlement strategies for people dislocated from agricultural settings. If suitable land is unavailable, non-land-based strategies built around opportunities for employment or self-employment may be used".

Relevance to the Project

Not Triggered. The proposed project is on public land reserved for the water pipelines & works with no encumbrances as confirmed through social screening.

3.8.5 OP/BP 4.36 (Forests)

The policy on forest safeguards seeks to realize the potential of forests to reduce poverty in sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. Among the principles is to screen as early as possible for potential impacts on forest health and quality and on the rights and welfare of the people who depend on them. The area is characterized with agro-forestry that would be highly affected. The Kenya Forest Services (KFS), therefore, plaid a great role in ensuring sustainability.

Relevance to the Project

Not applicable. The proposed project sites have no forests.

Table: Applicability of WB OPs

OP	Title	Comments
4.01	Environmental Assessment	Triggered. This project falls under category B as per the World Bank OP 4.01 and an environmental and social impact assessment has been undertaken as part of the project preparation to ensure the design, construction, operation, and decommissioning phase mitigate the significant adverse environmental and social impacts.
4.04	Natural Habitats	Not applicable. There are no significant natural habitats on the site of the proposed project.
4.09	Pest Management	Not applicable. There are no pests at the proposed project site.
4.11	Physical Cultural Resources	Applicable. Site visits and inventories have not indicated the presence of any cultural (historical, archaeological) sites in

		the sample settlements. However, to manage "chance finds" an appropriate procedure has been provided in section 9 of this ESIA report.
4.12	Involuntary Resettlement	Not Triggered. The proposed project is on public land reserved for the water pipelines. The proposed solar power system will be installed at the existing borehole water works which is public land under the County Government.
4.36	Forests	Not applicable. The proposed project site has no forest.
7.60	Projects in Disputed Areas	Not applicable. The proposed project sites are located within public land with no encumbrances.

3.9 Relevant International Conventions and Treaties

Conventions are agreements that are legally binding on states that have become parties to them. Kenya is signatory to several international conventions and treaties that would need to be adhered to in implementing this project and are geared towards environmental protection and conservation. Some of these include:

3.9.1. International Convention on Biological Diversity (1992)

The convention promotes the protection of ecosystems and natural habitats, respects the traditional lifestyles of indigenous communities, and promotes the sustainable use of resources.

Relevance to the Project

The Contractor will adhere to this Convention during the clearing of pipelines routes and excavations works for pipe laying.

3.9.2. Ramsar Convention 1971

The convection governs wetlands of international importance. The convention was entered into force in Kenya in 1990 and it governs Lake Nakuru, Lake Baringo, and Lake Natron, which is a shared ecosystem between Kenya and Tanzania. Kenya is therefore committed to avoid degradation of wetlands under its jurisdiction. Kenya has also ratified the Agreement of the Conservation of Eurasian Migratory Water Birds (2001) and the African Convention on the Conservation of Nature and Natural Resources (1968), the Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES) 1973 which prohibits trade in species such as Dugongs and in Ivory. The proponent will need to ensure that these important conventions are not violated during construction, operation or decommissioning of the proposed projects.

Relevance to the Project

The proponent will need to ensure that these important conventions are not violated during construction, operation or decommissioning of the proposed projects.

3.9.3. The United Nations Framework Convention on Climate Change (UNFCCC)

This is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from 3rd to 14th June 1992. The objective of the treaty is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The treaty itself sets no mandatory limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding. Instead, the treaty provides for updates (called "protocols") that would set mandatory emission limits. The principal update is the Kyoto Protocol, which has become much better known than the UNFCCC itself.

Relevance to the Project

This Convention is relevant due to the significance of climate change on existing water sources and water resources management.

3.9.4 Convention on the Elimination of all forms of Discrimination against Women (CEDAW)

The Convention on the Elimination of all forms of Discrimination against Women (CEDAW) places explicit obligations on states to protect women and girls from sexual exploitation and abuse. Universal Declaration of Human Rights (Article 7), the UN Charter (Articles 1, 13, 55, and 76) and the International Covenant on Civil and Political Rights (Article 24) reaffirm the freedoms and rights of all children, including internally displaced children. Gender balance should be given priority when hiring employees for the project implementation. Children should not be engaged in any form of employment.

Relevance to the Project

This Convention will be applicable in the employment of construction workers to avoid discrimination against any gender and hiring of children.

3.10 Harmonization of both WB and GoK requirements for social and environmental sustainability

The World Bank (WB) and Government of Kenya (GoK) require that Projects of such nature are subjected to environmental and social impact assessment as stipulated under EMCA Cap 387 and its tools; the same process simultaneously fully resolves requirements of OP 4.01 generally, both requirements are aligned in principle and objective in that:

- Both require Environmental Assessment before project implementation leading to development of comprehensive Environmental and social Management plans to guide resolution of social and environmental impacts as anticipated.

- While OP 4.01 of World Bank stipulates different scales of Project Report for different category of projects, EMCA requires Project Report for all sizes of projects, which are required to be scoped as relevant.
- Where EMCA requires consultation of Lead Agencies comprising of relevant sectors with legal mandate under GoK laws, the WB has equivalent safeguards for specific interests.
- The Bank requires that stakeholder consultations be undertaken during planning, implementation, and operation phases of the project, which is equivalent to the statutory annual environmental audits at the operation phase of projects in Kenya.

The understanding of this Project Report study is that pursuit of an in-depth Project Report process as stipulated by EMCA Cap 387 is adequate to address all World Bank requirements in the OP. This is a major guiding principle in this study. Therefore, in keeping with this trend, public consultation has been done to the stakeholders, and their comments have been incorporated in the final Environmental Assessment and final design of the project. In addition, the Environmental Assessment report will be made publicly available to all stakeholders through disclosure at the project's proponent website, NEMA, and WB website, as well as copy of the report available at the project site.

3.11 Project implementation institutional structure

3.11.1 Nyandarua Water and Sanitation Company (NYANDAWAS)

NYANDAWAS will be the Project's proponent and shall therefore ensure that the implementation of the Environmental and Social Management Plan (ESMP) is effectively executed and with adequate resources provided. NYANDAWAS do not have an Environmental and Social Safeguards Officer within its establishment. The WSP will need to employ Environmental and Social Safeguards Officer during the duration of project implementation, who will be responsible for supervision and monitoring for compliance of the ESMP implementation and reporting.

The responsibilities of NYANDAWAS will include:

- Responsible for day-to-day coordination.
- and implementation of the project.
- Oversee the contractor's work.
- Ensure the grievance committees are established and working.
- Monitor the ESMP implementation.

Roles of the proponent's Environmental and Social Safeguards Officer:

- Ensure compliance to proposed ESMP by the contractor.
- Ensure review of ESMP is up to date.
- Carry out periodic audits of the ESMP to ensure that its performance is as expected.
- Preparation and submission of ESMP implementation Reports.

3.11.2 The Contractor

The contractor will be required to fully comply with implementation of the ESMP. The contractor will be required to submit a detailed Construction Environmental & Social Management Plan (C-ESMP), which comply with the ESMP, prior to mobilization on the construction site. The Contractor should establish, implement, and maintain procedures to identify potential emergency situations and potential accidents that can have an impact on the environment, surrounding communities, the employees, and/or the public.

Among the Key Staff of the Contractor will be an Environmental and Social Safeguard officer with the necessary qualifications and experience to manage the implementation of ESMP. The Contractors will also be required to prepare constructions Method Statements that will be task-specific after undertaking specific risk assessments.

Contractor's Responsibilities:

- ESMP Implementing contractor for the project.
- To ensure strict compliance of environmental specifications in the ESMP.

4 ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

4.1 General overview

Nyandarua County covers an area of 3,245.2 Square Km lying between latitude 0°8'to the North and 0°50'to South and between 35° 13'East and 36°42' West. Nyandarua County is divided into five Sub-Counties namely: Ol'Kalou, Kinangop, Kipipiri, Ndaragwa and Ol'Joro Orok and further into twenty-five Wards. Kinangop is the biggest Sub-County with eight Wards. Kipipiri, Ol'Kalou and Ol'Joro Orok have four Wards each, whereas Ndaragwa has five Wards. The major urban centres in the County are Ol'Kalou, Njabini, Engineer and Mairo Inya. Other vibrant centres include Ndunyu Njeru and Miharati.

4.1.1 Project location

Kasuku Township is located in Weru Ward, Ol Joro Orok Sub- County of Nyandarua County and has a present population of about 2,210 residents. The Township is located at an elevation of 2,418 metres and about 30 Km North of Ol Kalou Town, the County Headquarters.

4.2 Environmental baseline conditions

4.2.1 Topography and physiography

The topography of Nyandarua County is a mixture of plateaus and hilly areas. The County's physiography was a result of volcanism and faulting that created the major landforms namely: the Great Rift Valley to the west and the Aberdare ranges to the east. The highest point of the Aberdare Ranges is about 3,999 metres above sea level. The lowest parts include Lake Ol'Bolossat, Leshau and the northern part of Central Ward, lower Kaimbaga and the western parts of Kipipiri, Githioro and Murungaru Wards. The flat areas include Kinangop and Ol'Kalou/Ol'Joro Orok plateaus. Over time, rock weathering has transformed the Aberdare ranges, which dissected the slopes into shallow valleys and the gorges with deep and well-drained soils. As they approach Ol'Kalou and Kinangop plateaus, these valleys flatten with only a few gorges draining river water down the escarpment and onto the floor of the Rift Valley. Ol'Kalou Salient Plateau in the north and Kinangop Plateau to the south stretch north-south between the Aberdare ranges and a system of fault scarps which form the escarpment. Dundori Hills represent a high weathering resistant block of scarp. The two plateaus extend to about 80 km from north to south and about 40 km wide north of Ol'Kalou town. Gentle slopes interrupted by low hills flatten into marshlands and swamps. The rest of the land is well-drained and has fertile soils.

4.2.2 Vegetation and Flora

Some areas in the County are in the highland savannah zone, characterized by scattered trees with expansive grass cover. In elevated areas, tree cover increases forming thick forests with thick undergrowth. However, most of the natural vegetation has been cleared leading to

environmental hazards such as environmental degradation which has claimed large portions of arable land. This has had some negative effects such as reduced rainfall, soil erosion, reduced soil fertility, poor health and reduced food production.

4.2.3 Soils

The soils in the County are of volcanic origin and vary in both fed distributions. Soils in the Kinangop and Ol'Kalou plateau are poorly drained clay loams. However, Ndaragwa, the northern part of Ol'Joro Orok and Ol'Kalou has well drained clay loams. These soils have different crop production potentials.

4.2.4 Climatic conditions

4.2.4.1Temperatures

The County has a moderate temperature. High temperatures, which are low by national average, are experienced between December and March with the lowest temperatures occurring in July. The highest temperature in December has a mean average of 21.5 degrees centigrade while the lowest in July have a mean average of 7.1 degrees centigrade. Variation of the temperature has adverse effects especially on maize cultivation; when cold air during clear nights on the moorlands of the Aberdare Ranges flows down the Kinangop and Ol'Kalou Plateaus it causes night frost almost monthly. These temperatures range between 1^{o} C and 2^{o} C and last a few hours before sunrise.

4.2.4.2 Rainfall

Nyandarua County has a cool and temperate climate with reliable rainfall which is generally well distributed throughout the year. In a typical year, the County experiences two rainy seasons: long rains from March to May with a maximum rainfall of 1,600 mm and short rains from September to December with a maximum rainfall of 700 mm. The average annual rainfall of the County is 1,500 mm. The major relief features which consist of Kinangop plateau, the Ol'Kalou Salient Plateau, the Aberdare Ranges and the Dundori Hills influence rainfall distribution in the area, with areas like Njabini and South Kinangop receiving higher amounts of rainfall while areas of Ndaragwa and Ol'Kalou receive comparatively low rainfall. Areas near the Aberdare slopes receive sufficient rainfall with the plateau receiving scanty and erratic rainfall.

4.2.5 Water resources

The County is categorized as water scarce. The situation has been aggravated by degradation of water catchments leading to reduced ground water recharge. As a result, boreholes have medium to low yields. The main source of water in the County is rainwater which ends up in dams and rivers. A total of 22 rivers flow through Nyandarua County, of which eight are permanent, namely Malewa, Ewaso Narok, Pesi, Turasha, Chania, Kiburu, Mkungi and Kitiri.

Lake Ol'Bolosat, which is the only lake and the largest water mass in the County, is fed by streams and groundwater seepage from the Aberdare and Dundori hills. Human activities and clearance of the catchment areas for settlement have affected its natural replenishment system. The major rivers within the County originate in the Aberdare Forest and drain to the Ewaso Ng'iro, Rift Valley, Tana and Athi catchments.

4.2.5.1 Surface Water

There are eight permanent rivers: Malewa, Ewaso Narok, Pesi, Turasha, Chania, Kiburu, Mkungi and Kitiri. Lake Ol'Bolosat which is the largest water mass in the County is fed by streams and underground water seepage from the Aberdare and Dundori hills. Human activities and clearing of the catchments areas for settlement has affected its natural refilling system and its existence is threatened.

4.3 Social and economic setting

4.3.1 Administrative location

Nyandarua County has five constituencies whose boundaries and names are the same as those of the County Government sub-counties namely, Kinangop, Kipipiri, Ol Kalou, Ol Joro Orok and Ndaragwa. Ol Joro Orok Sub-County has 4 Wards namely: Gathanji, Gatimu, Weru and Charagita. Kasuku Township (Project site) is in Weru Ward, Ol Joro Orok Sub- County of Nyandarua County

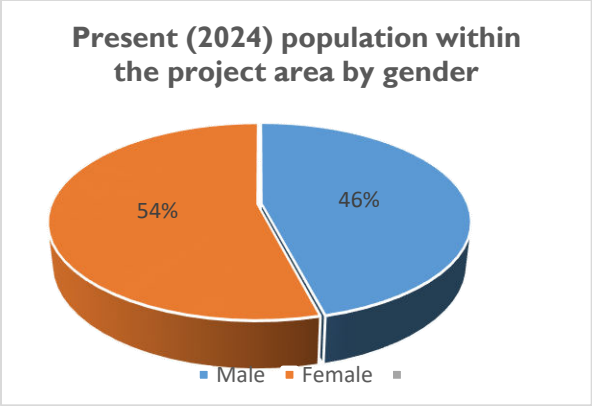
4.3.2 Population features

The Kenya National Population and Housing Census, 2019, stated that the county had a population of 638,289 persons of whom 315,022 (49.3 per cent) were male and 323,247 (50.6 per cent) were female. The County had a total number of 179,686 households with an average household size of 3.5 persons. The population density at the time was 194 persons per km^2.

Population projections for Kasuku Township

2019 Census			**2022 Projection**			**2025 Projection**		
Male	Female	**Total**	Male	Female	**Total**	Male	Female	**Total**
1,020	1,189	**2,209**	1,087	1,276	**2,363**	1,147	1,350	**2,497**

This shows that the population will increase gradually thereby the county needs to plan accordingly to factor in the gradual population growth over the years, especially in key areas such as Health, Education and Employment.



4.3.3 Settlement patterns and housing

The predominant human settlement patterns in the County are linear in the urban centres along the major trunk roads, clustered in the rural areas and sparse in the agricultural farmlands. The housing in the County is of various typologies, including permanent, semi-permanent and dwelling units, made of different materials such as stones, wood, mud, and iron sheets. Most of the urban centres including Kasuku Township lack planning, have outdated plans, and have inadequate infrastructure facilities. In this regard, it is essential to have detailed planning for the Township, ensuring balanced development while safeguarding the agricultural hinterland, which is the main economic activity. Most of the houses in the Project area are walled using timber which constitutes 42.9% of the total houses. Other walling materials include mud/wood 33.4 %, stone 13.5 %, corrugated iron sheets 3.1 %, mud/cement 3 %, brick/block 2.6 % and tin 0.1 %. Kasuku Township's proximity to Lake Ol'bolossat and location along the B77 Gilgil – Nyahururu Road makes it ideal for development of a resort Town.

4.3.4 Social Economic Survey of the Project Area

The socio-economic survey covered a sample of 22 households drawn from Kasuku Township and its environs. The survey sought views from household heads or adult members found in the household at the time of the interview. Where the household heads were not available, the spouses or adult children responded to the household questionnaire.

- **Gender of Respondents**

Among the respondents interviewed, 61% were male while 39% were female.

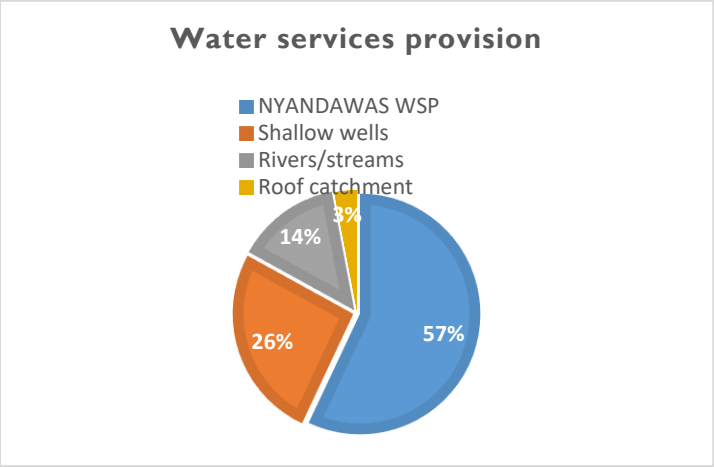
4.3.4.1 Social Setting

- **Education Level of respondents**

Analysis of level of education of the household head indicate that the highest education level achieved at primary school education level is 100%, 66% at secondary school level and 12% at post-secondary level.

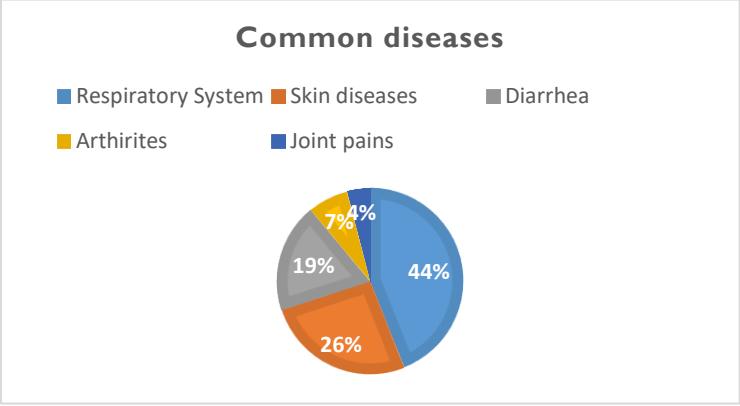
- **4.3.4.1 Water services provision**

Kasuku Borehole Water Supply Project is the main source of water for the Township and its environs. This Scheme currently serves about 57% of the residents while the other households depend on water from shallow wells (26%), rivers/streams (14%) and roof catchments (3%). The average distance to the nearest water point is 0.6km.



- **4.3.5 Common diseases**

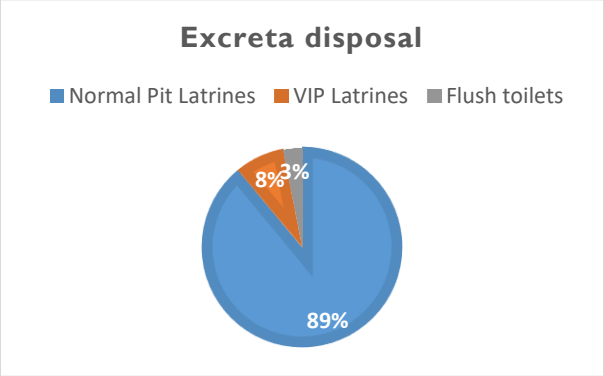
Kasuku Health Centre is the only health facility within the Project area. The health Centre treats minor illnesses for the residents while serious cases are referred to JM Level 5 Hospital in Ol Kalou Town or to private hospitals in Nyahururu Town. The five most common diseases (in order of prevalence) include: diseases of the respiratory system, skin diseases, diarrhea, arthritis and joint pains.



- **Sanitation and Hygiene**

On waste disposal, 97 % of the population have access to latrines with 89 % utilizing pit latrines, eight % VIP latrines, and 3 % flush toilets. There is no sewerage system in the area. There are no private firms engaging in waste disposal. This has a negative effect on the

environment and hence proper mechanisms for waste disposal need to be put in place to ensure the Township remains clean.



4.3.7 Economic Setting

4.3.7.1 Agriculture

The region enjoys adequate rain, making it suitable for farming apart from some periods of dry spells. The county has a large proportion of its farming area dedicated to food crops which include potatoes, cabbages, peas, carrots among others. These crops are not exclusively meant for subsistence as they also account for significant income for most of the households.

4.3.7.2 Livestock Keeping

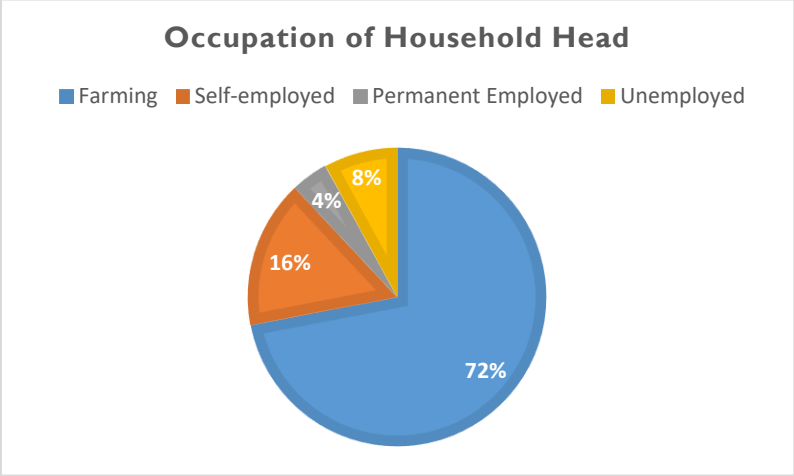
Livestock farming is also a major activity in the county and the main animals reared are indigenous and exotic species of cattle, goats, sheep, rabbits, and poultry. Dairy farming is the dominant enterprise in the livestock subsector. Bee keeping is also being practiced by several farmers in the region. The main value addition activities on livestock products include milk processing, cooling of milk, processing and packaging of honey and leather tanning. Most of these activities are on small scale.

4.3.7.3 Trade, Tourism, and Industry Sector

Kasuku Township has scheduled market days where buyers and sellers congregate for trading purposes on retail basis. Major goods traded in these markets include potatoes, cabbages, and tomatoes among other agricultural produce, secondhand clothes, and household items. The main tourist attractions include Lake Ol'bollosat that is ideal for bird and hippos watching, boating and water surfing activities and sport fishing. At the Aberdare ranges there is mountain climbing and nature trails.

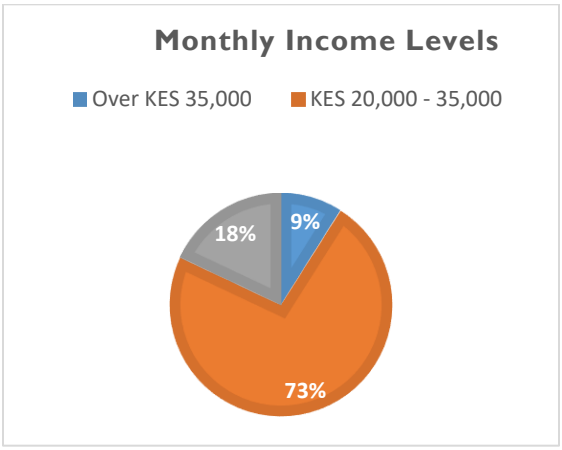
- **Occupation of the Household Head**

Analysis of the household head against their occupations revealed that 72% within the sample size derive their livelihoods from farming, 16% are self-employed, 4% are permanently employed and 8% are unemployed.



- **Income Levels**

According to self-reported income levels, the average household monthly income within the proposed Project areas was estimated at KES 11,000 drawn from a minimum of KES 4,000 and a maximum of KES 45,000. Analysis of household income by category revealed that 9% proportion of the households earn over KES 35,000/month, 73% of the household earned KES 20,000 –KES 35,000/month while 18% earn between KES 9,000 – 20,000/month. The Average amount earned as daily wage per household was reported as KES 400.



5 PUBLIC PARTICIPATION AND CONSULTATIONS

5.1. Background

Consultation and participation are processes through which stakeholders influence and share control over development initiatives and participate in decisions on resources that affect them. It is a two-way process where the executing agencies, policy makers, beneficiaries and affected persons discuss and share their concerns in a project process. According to the World Bank's policies, project affected persons and host communities are to be meaningfully consulted early in the planning process and encouraged to participate in all stages up to the implementation of the project. Prior to commencement of works and during ESIA scoping and sites visits, consultations were held with potential Project Affected Persons, neighboring communities of the project areas, local leaders, and client personnel. The stakeholders and public consultations were carried out in accordance with the provisions of Environmental Management and Coordination Act (EMCA) of 1999, establishing the list of projects to be the subject of an environmental impact study, instructions, conditions, and procedures to carry out the environmental impact assessment.

This Section highlights the need for stakeholder participation and the consultative process adopted during the study and summary results of the process.

5.2. Stakeholders and public consultations objectives

The principal objective of these consultations is to inform, consult and involve the stakeholders at different levels concerned by the project to ascertain their sensitivity to the project (acceptance, reluctance, nature of fears and requirements), the needs of the actors and their recommendations in view of good environmental performance of the project. The specific objectives of the ESIA stakeholders and public consultations process are to:

- Make the ESIA study participatory and transparent.
- Share the potential positive and negative environmental and social impacts and their proposed mitigations.
- Inform the PAPS about their right and how they will be put in actions.
- Determine the attitudes of PAPS towards the proposed project.
- Provide a platform for future consultation by:
    - Reducing conflict through early identification of contentious issues.
    - Improving transparency and accountability of decision making.
    - Facilitating participation to increase public confidence in the ESIA process.
    - Identifying stakeholders with who further dialogue will be constructive in subsequent stages of the project.

5.3 The adopted consultative process

The environmental survey team recognized the significance of the assignment findings to intended project users and in this regard, considered active involvement of all potential project stakeholders. To attain this objective, the consultant adopted a participatory approach in the identification of environmental and social impacts that are related to the project cycle. Several methods were used to engage stakeholders in the process of capturing their views, issues, and concerns on the proposed project during data collection. The levels of project stakeholder engagement during data collection approaches and procedures were through household questionnaire data collection, key informant interview with selected leaders and through community meeting at Kasuku Borehole site. The process of public involvement started by determining the scope of the interested and affected public. The interested and affected public included:

- National & County Government officials in Ol'Joro Orok Sub-County.
- Management staff of Nyandarua Water & Sanitation Company (NYANDAWAS).
- Local Leaders, Religious Leaders.
- Water consumers in Kasuku Township and its environs.
- Traders and business operators in Kasuku Township.
- Farmers within the proposed project area.
- Public & private institutions & entities.

5.3.1 Household Questionnaire

The Household questionnaire was administered to a sample of 22 No. participants, representing the diverse groups of residents who are potentially affected (either directly or indirectly) by the implementation of the proposed project. These included domestic water consumers, local farmers, traders, and business operators in Kasuku Township.

Analysis of the questionnaire responses

- Among the respondents interviewed, 13 No. (61%) were male while 9no. (39%) were female.
- Analysis of level of education of the household head indicate that the highest education level achieved at primary school education level is 100%, 66% at secondary school level and 12% at post-secondary level.
- The existing water supply scheme serves about 57% of the residents while the other households depend on water from shallow wells (26%), rivers/streams (14%) and roof catchments (3%). The average distance to the nearest water point is 0.6km.
- The five most common diseases (in order of prevalence) in the proposed Project area include: diseases of the respiratory system (44%), skin diseases (26%), diarrhea (19%), arthritis (7%) and joint pains (4%).
- On excreta waste disposal, 97 % of the respondents indicated having access to latrines with 81 % utilizing pit latrines, 8 % VIP latrines, and 3 % flush toilets.

- Analysis of the household head against their occupations revealed that 72% within the sample size derive their livelihoods from farming, 16% are self-employed, 4% are permanently employed and 8% are unemployed.
- Analysis of household income by category revealed that 9% proportion of the households earn over KES 35,000/month, 73% of the household earned KES 20,000 – KES 35,000/month while 18% earn between KES 9,000 – 20,000/month.
- 54% of the respondents indicated having prior knowledge of the proposed Project.
- All the respondents supported the implementation of the project.
- The main concerns regarding the implementation of the project were mainly on the water tariffs which the majority felt were too high and that the Borehole water source may not have adequate water to meet all their requirements.
- 76% of the respondents indicated their willingness to pay water tariffs of between Ksh 500 – Ksh 1,000 if supply of water was regular, and the water supplied was of acceptable quality.
- All the respondents acknowledged the benefits from the implementation of the proposed project being:
    - Provision of safe drinking water.
    - Decrease in water borne diseases.
    - Improved hygiene and sanitation.
    - Employment during construction and operational phases.
- The negative impacts mentioned by majority of the respondents include possible discriminations during the hiring of workers during the construction phase of the project and generation of dust.

5.3.2 Key Informant Interviews

This Sub - section highlights the summary of key observations made by purposively selected officers consulted during the study. The key informant consultations were conducted on 20th June 2024. The discussions were as indicated in Table 5-1

Table 5.1: Summary of Key Informant Interview

	Key informant interviewed	Summary of remarks
1	Managing Director - NYANDAWAS	• The proposed project will increase water supply coverage by extending the pipelines to unserved areas within the outskirt of Kasuku Township. • With the installation of solar water pumping system, water production will increase due to the additional water pumping hours at sustainable costs.

2	Technical Manager - NYANDAWAS	• The Kasuku Borehole water source has a high yield with good quality water. • Currently, water is supplied to a few households and the proposed pipeline extension will allow additional connections. • In addition, public institutions including the Health Centre and schools will be supplied with adequate water.
3	Commercial Manager - NYANDAWAS	• With the solarization of the water pumping system at the Borehole, NYANDAWAS will significantly reduce the costs of operations, particularly on the electricity bills. • With increased water supply coverage through the pipeline extensions, revenue generation will increase.
4	KENHA Roads County Engineer – Nyandarua County	• Consultations with KENHA was done due to the proximity of the project near the Gilgil – Nyahururu Highway. However, during the transect walk along the proposed 1.5 km pipeline extension, it was established that no section of the pipeline will be on the Gilgil – Nyahururu KENHA highway. • KENHA will support if any section of the pipeline will need to be installed within the road reserve along the Gilgil – Nyahururu Highway. • In that case, the proponent will be required to submit application and pay the necessary charges.
5	County Engineer (Roads & Public Works) – Nyandarua County	• The County Government of Nyandarua is responsible for County Roads under the Roads ACT. • Most of the pipelines will be installed on the way leaves along County maintained roads within the area. • NYANDAWAS will need to provide layout plans for the proposed pipelines. • The Sub-County Roads Officer will supervise the pipelines installation works for compliance with works standards.
6	Sub-County Water Officer (Ol Joro Orok Sub-County)	• The proposed interventions will increase water supply to not only to the residents, but also to the schools and small businesses such as hotels and butcheries within Kasuku Township and its environs.

7	Sub-County Agriculture / Livestock officer (Ol Joro Orok Sub-County)	• The main economic activity within the Project area is agriculture and livestock. • Dairy farming which is a major source of income in the area will benefit from adequate water supply as well as other chicken rearing.
8	Sub-County public Health officer (Ol Joro Orok Sub-County)	• The officer acknowledged prevalence of diarrhea and dysentery as the most common waterborne diseases within the sub-county since several residents in the Sub-County consume untreated water from streams and shallow wells. • Improved access of clean drinking water for the residents of Kasuku area will significantly reduce cases of water borne diseases.
9	Ward Administrator – Wema Ward	• There will be clean and safe water accessibility, and this will reduce the incidences of diarrhea among children. • Increase water supply will support in the dairy farming which is a source of income for the area residents.
10	Assistant Area Chief – Kasuku Sub-Location	• Locals will benefit from employment opportunities during construction of the project. • Since the pipelines will be installed along the road reserve, there shall be no conflicts regarding land matters as it happens with other public projects. • The small businesses within Kasuku Township as well as nearby schools will benefit from the project.

5.3.3 Project Area Community Consultations

The community consultation was held in addition to Key informant interviews and household survey as a means of seeking the opinion of community members regarding the proposed project. The consultation meeting was organized by the area Assistant chief in consultation with the Ward Administrator and was held on 20th June 2024 at Kasuku Trading Centre. The number of participants in this meeting was 28. The main objective of the public consultations with the affected project area residents was to gather information on their concerns, perceptions, reactions, and fears of the livelihood changes to be brought about because of the proposed Project implementation. Other specific objectives were the following:

- Explain the proposed project's scope of works and the construction activities in details to the local people.
- Gathering information on socio- economic and environmental information on the community and project sites.



Public meeting at Kasuku Trading Centre

During the presentation session, the residents were given detailed information about the project by the consultant team. The presentation highlighted the project background, components, objectives, expected upcoming activities, potential socio-economic and environmental impacts. After the presentations the community was given the opportunity to give their views, comments, and queries. The general point of view expressed by local community was that the project is really needed in their living environment. Questions were answered, clarifications offered, and their recommendations recorded.

This meeting raised an intense discussion on the following:

- The needs of the Kasuku pipeline extension and installation of solar power unit for water pumping.
- Identification of different problems that may be related to the project.
- Related socio-cultural and economic parameters to be considered in enhancing and mitigating associated positive and negative impacts respectively.
- Suggestions and propositions on what can be done to address raised problems due to the potential displacement of people and their affected properties.

5.3.4 Summary of Issues Raised during local community consultative meeting and the responses provided:

1. Mr. Joseph Murigi

Comment:

Residents within the proposed project areas were aware of the project but they didn't know more details about it.

Response:
The representative from NYANDAWAS and the ESIA consultant explained to the residents the project's components, objectives, positive advantages, and adverse impacts to be mitigated, scope and implementation schedule.

2. Mr. William Njoroge
Q - Is there is likelihood of vegetation being cleared during the process of construction?
A – The pipeline will be constructed along the public road wayleave and there shall be minimum clearance of vegetation. However, if any tree will be affected during the excavations for the installation of pipeline, then it will be replaced by planting other trees at designated areas.

3. Mr. James Njue
Q – Will the Contractor use machines to avoid hiring of local labourers?
A - The contractor will be requested to use local work force as much as is practical and only use machine where necessary.

4. Ms. Esther Waceke
Q – What will happen to a few vegetables and secondhand clothes sellers with temporary structures along the proposed pipeline installation works?
A - Pipeline installations will be along the road reserves and interruptions if any for the small-scale traders will be minimal (not exceeding 1 day for a pipeline section of about 30m). Excavations of trenches for pipelines installations and backfilling for any section will be done on the same day.

5. Mr. Samuel Ngure
Q – Who will provide labour during the installation of pipelines?
A - Residents shall be given priorities during recruitment of workers.

6. Mr. Timothy Wanjohi
Q – He asked whether the new pipeline shall use the same reserve as the existing water supply and distribution pipelines and whether there is an outlined plan for mitigation of incidences where existing pipelines are destroyed.
A- The existing road reserve measures 30 feet with an allowance of 20 feet for carriage way and drainage infrastructure. The remaining 10 feet is reserved for utilities including water supply works and thus there is sufficient allowance for installation of the project pipeline, Moreover, care will be taken not to disrupt the existing water infrastructure and that the water company and the contractor shall repair any destroyed pipes.

7. Ms. Jacinta Kariuki

Q – Will water now be available to all the residents?

A - All the residents along the proposed pipeline extensions are encouraged to apply for individual water connections to their homes and business premises. However, those without individual connections shall obtain water from the water kiosks.

8. Sebastian Mwangi

Q - Will NYANDAWAS consider a review of the exorbitant cost for new connections and monthly water bills?

A - The cost of new connections and monthly water bills will be as approved by WASREB.

9. Ms.Grace Nyambura

Q – Is there an assurance the Issue of water shortages and rationing will be addressed?

A - It is acknowledged that the available water sources are inadequate, and some level of rationing should be applied. Residents were advised to have some water storage capacity in their homes.

10. Ms. Margaret Wangari

Q - Which will be the benefits expected by the residents from the new project?

A - Project benefits include:

- Access to clean water which will enhance and promote hygiene and sanitation to the residents.
- The project is in areas with various institutions including public & private schools, a public Health Centre, religious institutions, and small-scale business premises which will benefit from the installed pipeline extensions.
- Improved wellbeing of households.

11. John Kamande

Q – Is the Company (NYANDAWAS) planning to bring down cost of water?

A - The technical manager's Representative informed the residents that the water tariff guidelines are provided by WASREB based on various factors. He explained that the company is incorporating climate proof and cost effective in its operations, for instance use of solar powered pumps. This will significantly reduce cost of pumping water which will lead to a reduction in water tariffs.

12. Ms Joyce Njoki

Q – Will the local youth get any employment opportunities during project implementation?

A - ESIA team informed residents that during construction phase, the contactor will source some skilled and semi-skilled labour from the community to supplement his staff when such

opportunities are available. However, all the unskilled labour will be sourced locally. Residents were further advised to liaise with the office of the chief and present their request for jobs in an orderly manner for consideration once the construction activities commence.

13. Ms Ann Wangui

Q - When is the expected commencement date of the project?

A - Resident were informed that the project will commence immediately after all the necessary designs have been done and required licenses issued including the NEMA license. They were further informed that the project was urgent and should start as soon as possible.

14. Ms. Jane Wanjiru

Q – Will additional water kiosks be constructed to serve those who shall not afford connection charges?

A - Residents were informed that 2 No. water kiosks have been incorporated in the Project. They were further informed that the primary objective of the company is to provide clean safe drinking water within homesteads and at the public water kiosks.

15. Mr. Julius Mwaniki

Q - How will moral issues that may occur because of labour coming from outside and money circulating in the area be addressed?

A - Parents, local leaders, and Government officers including NYANDAWAS as well as the Contractor shall sensitize the local community on the importance of morality and bring the culprits to book. Use of local labour to avoid influx of workers that can spread immoral issues will be given high priority.

16. Mr Moses Gitau

Q - Where will the new pipeline get its water from considering the area does not get adequate flows?

A - With the solar power system, the borehole will be operating more hours and therefore, water production is expected to increase significantly.

17. Samuel Ngure

Q - Will the new project be designed with a better quality to reduce water leakage from bursts as is common with the existing line?

A - The consultant noted that the new pipeline is undergoing technical design which shall ensure that the pipe design is adequate to withstand high pressures.

18. Mr. Francis Njaramba

Q - He was curious on whether there will be social impacts of the project such as displacement of people.

A - He was informed that the proposed pipeline route would go through the road reserve and thus no people will be displaced. Moreover, there were no observable encroachments that would necessitate resettlement within the project area.

19. Fredrick Mbugua

Q - He wanted to know whether the community will benefit economically in terms of work contracts during the construction phase and operation. In addition, he wanted to know how the community will benefit from the new pipeline.

A - The consultant informed the meeting that both mechanical and manual trenching would be used in trenching works. The community within the project area will be employed to dig and backfilling the pipeline trench. Moreover, those with businesses along the project route would benefit by selling consumables to the site workers after being receiving their wages. The consultant also noted that increased water supply in the areas will spur the development of other social facilities and businesses.

20. Isack Muturi

Q - He wanted to know whether the water to be supplied could also be used for agricultural benefit. He also wanted to know whether the project proponent could extend to them trainings on water harvesting techniques for the purpose of obtaining water for irrigation.

A - The consultant note that the projects shall supply treated portable water which will not be ideal for agriculture. Moreover, he reiterated that NYANDAWAS is a water service provider charged with providing safe drinking water to the residents and thus may not be able to provide irrigation water.

21. Ms. Alice Wanjiru

Q – She lamented that women in the project area must walk long trips to the rivers to fetch water in areas that are not served by piped water thus wasting a lot of productive time and sought to know whether the proposed project will provide enough water to be distributed to the residents.

A – The consultant agreed with the attendant that fetching water from far places wastes a lot of time and degrades the quality of life for the affected residents. However, the increased supply within the area will also increase the opportunity of most residents to be connected to the water network. This would then lead to better productivity of the residents.

5.4 Public disclosure of the ESIA

This ESIA provides for the below listed provisions with regards to public disclosure:

(i) In accordance with EMCA 1999 Cap 385 and World Bank OP 4.01, the Project Proponent in this case NYANDAWAS will ensure that the Results of Public Consultations including ESIA area disclosed on NEMA, World Bank, WSTF & NYANDAWAS websites.

(ii) The Report will also be made available at the Ol Joro Orok Sub-County & WEMA Ward Offices, Nyandarua County, for ease of access by the Project's interested parties at location level.

(iii) At completion of the Project construction works, the EIA/EA Audit Regulations of 2003 requires the Project proponent to undertake a closeout audit after completion of the project and undertake an initial Environment Audit (EA) immediately after commissioning of the project.

6 ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

6.1 Introduction

The objective of the identification and assessment of impacts is to provide accurate information on the effects of activity execution to human beings and environment in general, which will allow the competent authority to take decision as whether the activity will be authorized subject to mitigate proposed measures or rejected. Impacts are defined as the changes in an environmental parameter that result from undertaking an activity. These changes are the difference between effects on an environmental parameter where the activity is undertaken compared to that where the activity is not undertaken and occur over a specific period and within a defined area. This section entails assessment of impacts of the proposed Kasuku water supply project. Obviously, the proposed project has potential to cause positive as well as adverse impacts on the biophysical and socio-economic environment. The magnitude of potential impacts will vary between the phases of project implementation. The assessment of the project impacts given below is for the proposed Project which comprise the construction of main infrastructures namely: pipelines installations, solar power unit, water kiosks, fencing and valve chambers. During all phases of the project implementation, NYANDAWAS in collaboration with the contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in the Environmental and Social Management Plan. More specifically, the contractors shall ensure that the negative impacts are minimized, mitigated, or avoided.

6.2. Types of impacts

Different types of impacts may occur from the implementation of this type of project, which may be positive or negative, and can be categorized as being either direct (primary), indirect (secondary) or cumulative.

6.2.1 Direct impacts

Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (for example, dust generation excavation activities). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

6.2.2 Indirect impacts

Indirect impacts are induced changes that may occur because of the activity (for example the use of water from a natural source at the activity will reduce the capacity for supply to other users). These types of impacts include all the potential impacts that either does not manifest immediately when the activity is undertaken, or which occur at a different place because of the activity.

6.2.3 Cumulative impacts

Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (for example, removal of vegetation may cause soil erosion, leading to excessive sediments in receiving stream, leading to reduced sunlight penetrating the water and thus reducing dissolved oxygen in the water and adversely affecting aquatic life and water quality). Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

6.3. Potential impacts identification and assessment

Potential impacts associated with the project were identified based on the qualitative information and data on cause-and-effect relationship. The identification considers the sources of impacts and relates them to the environmental or social characteristics and conditions; hence concluding if the source of impact affect or not the specific environmental or social components of the project activities. The impacts identification considers all stages of the project:

- Design and planning,
- Pre-construction,
- Construction,
- Operational and
- Decommissioning phases.

The methodology used for impacts assessment in this report is related to risk assessment:

(i) Whereby certain impacts to the environment are identified.
(ii) Risk evaluation (by using a stipulated assessment criteria whereby impacts are given a rating or weighting and obtaining an overall rating or significance of an impact).
(iii) Risk management (relating directly to applicable mitigation measures to be implemented to manage a risk of an impact in the best interest of the project beneficiaries and surrounding communities.

6.4. Positive impact during construction phase

The Kasuku Borehole Water Supply Project implementation will result in many social-economic benefits for the beneficiaries and surrounding communities of the project. In general, it is expected that the project will result in better access to safe drinking water and sanitation facilities leading to improved standards of living in terms of reduction of diseases, creation of temporary employment during construction and other economic development upon commissioning of the improved infrastructure. The following section highlights the potential positive socio-economic impacts likely to be generated by the project:

- **Creation of temporal employment opportunities at the construction site**

The local people during community consultations reported anticipating for creation of employment at the construction site from the opportunities presented by the project activities. It was observed by the community that local youth will be given priority for any opportunities either at the construction phase of the project or during the operation of the proposed water supply system. Though there are fears of either use of machines for excavations or migrant labourers.

- **Creation of markets for project construction materials**
  It was evident from the discussions with the community that there shall be creation of markets for project construction materials which should be sourced locally from those who can supply. The contractor shall therefore be required to float open tendering to the local community with an objective of identifying such suppliers.
- **Access to water**
  It was apparent during the study that local people sometimes face challenges of access water especially during droughts when the existing streams dry up. Potable water sources are limited in most parts of the study area. Implementation of the project will provide an opportunity to access to improved water supply hence reducing time and distance travelled to fetch the commodity particularly by women and the girl child.
- **Improved hygiene**
  Increased access to clean water to the local population shall impact on personal and food hygiene and decline in cases of water-borne diseases.
- **Increased revenues**
  Increased revenue to NYANDAWAS who will distribute water at the approved tariff.
- **Improved dairy farming**
  Availability of water will improve livestock watering and milk production in the area hence contributing to improvement in both household income and nutritional security. The residents reported drought as one of those factors that affect milk production but with availability of sustainable source of water, the impacts will be reduced.
- **Improved Water Reliability:**
  The proposed solarization of water pumping system for Kasuku Borehole will improve the reliability of the existing water supply scheme through a cost effective and climate proof technology for sustainability.
- **Improved living conditions**
  This shall be through elimination of water fetching chores for women and children who can then focus on income-generating activities and education respectively, in view of the time saved because of the water supply source being closer to their homes and more reliable. The vulnerable groups in the community make tremendous physical and financial efforts to access potable water services. They often resort to unsafe sources to obtain this valuable commodity therefore the project will come in hand to improve access to safe source.

- **Reduced child mortality**
  Access to clean water is also anticipated to reduce the mortality rate, particularly among children, and helping to increase life expectancy within the environs of the proposed project area.
- **Knowledge transfer**
  Technical and planning skills will be gained by the local people who will be employed by the project, and this is likely to contribute to their enhanced capacity and skills to undertake such construction activities in future.

6.5. Negative impacts during construction phase

6.5.1 Clearing and loss of vegetation and other biodiversity

Through clearing of vegetation and soil excavations, there is loss of natural habitats and their biodiversity clearing the right of way and loss of microhabitats and their biodiversity.

Impact Characterization /Significance						
Direct	Negative	Short Term	Site Specific	Reversible	Moderate	Probable

Mitigation measures

- The soils excavated during laying of pipelines should immediately be used for back-filling to prevent it from being eroded during rainy season.
- The cleared sites should also be re vegetated to improve soil cover and minimize soil erosion and also improve on aesthetics of the project area.
- Landscaping and restoration of sites to their original state.

6.5.2 Impacts on Soils

The Project activities are likely to have minor impacts on soils, these impacts include:

- Destruction of soil structure due to topsoil excavations.
- Soil contamination caused by oils and fuel leaks from construction equipment.
- Soil erosion due to clearing of vegetation cover and trenching activities.

Impact Characterization /Significance					
Negative	Short Term	Site Specific	Reversible	Moderate	Probable

Mitigation measures

- The contractor to stick to clear delineation of the construction to minimise vegetation loss.
- Excavation works should be controlled so that land that is not required for the Project works is not disturbed.

- Excavated materials and excess earth should be kept at appropriate sites approved by the Supervising Engineer.
- Proper and compacted back filling of excavated areas.
- Planting of vegetation cover along the pipeline wayleaves after pipelines installations.

6.5.3 Dust and gaseous emissions

Emissions of dust and exhaust fumes will occur while opening trenches and by the operation of vehicles during the transport of building material and equipment. Clearance of sites and excavation will also cause dust emission. In addition, exhausts from trucks and construction machines will also have a certain impact on the air quality.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Moderate	Highly Probable

Mitigation measures

- Water the soil surface and any non-asphalted roads, especially in the dry season.
- Water the soil before starting to excavate and during and after burial of the pipeline.
- The storage and handling of spoil, subsoil, topsoil, and materials should be carefully managed to minimize the risk of wind-blown material and dust.
- Burning of any waste on site should be prohibited.
- Vehicle engines should not be left running unnecessarily.
- Regular and proper maintenance of vehicles and machinery.

6.5.4 Noise and vibration emissions

Noise and vibration during construction will be generated by the operation of heavy machines, heavy trucks, right of way preparation, soil stripping, trenching, pipe stringing, welding and laying and backfilling activities. Blasting may also be required in certain areas where rocky substrates prevent trenching by other means. These impacts are of temporary nature.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low	Probable

Mitigation measures

- Restrict construction and operation of heavy machines to daylight.
- Ensure noise emissions are kept within the NEMA acceptable standards and inform communities on the noisy activities schedule.
- All vehicles and construction machinery shall have an efficient muffler design in accordance with the manufacturer's specifications. This also includes high noise

generating handheld like power drills, saws, nail guns etc. The mufflers shall be well maintained and regularly tested with the results documented in the maintenance logs.
- Regular and effective equipment maintenance to ensure all machinery is in good working order and use does not generate excess noise/vibration.
- All vehicles and trucks should have valid Vehicle Inspection Certificates.

6.5.5 Pollution due to solid wastes

Solid wastes from the construction activities and worker's domestic waste can also have negative impacts on the environment. These wastes include construction debris such as plastics, stones, sand, gravel, timber, iron bar and human wastes and food leftovers. Non-hazardous solid waste generated at construction and decommissioning sites includes excess fill materials from excavation activities, scrap wood and metals, and small concrete spills.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- In addition to the implementation of waste prevention strategies, the total amount of waste may be significantly reduced through the implementation of recycling plan.
- All the solid waste should be collected; the biodegradable organic material composted properly on site for manure production and the non-biodegradable disposed of in a public landfill.
- A waste collection system will be in operation to handle solid wastes, oily rags, and used fuel and lube oil filters in a leak-proof container that will be stored and disposed off at the landfill site, to ensure effective management of solid wastes at the project site.

6.5.6 Accidental oil and fuel spills and leaks

The Project will involve use of oils and fuel for vehicles and construction equipment. If these oils and fuel accidentally leak into the environment, they could result to significant contamination of soil, surface and underground water resources.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- Checking and regular vehicles and construction equipment.
- Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.

6.5.7 Interference with the existing infrastructure and physical settings

The proposed project could result into the interruption of existing infrastructure such as access roads to residential estates and houses utility services such as internet cables and water pipelines.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- Liaisons with the relevant authorities and service providers to locate existing infrastructure before commencement of excavation works for pipe laying.
- Formal request for permission for a wayleave and laying the water pipeline should be sought from relevant roads authorities.

6.5.8 Workers, Community Health and Safety Risks during Construction

Construction workers are likely to have injuries and hazards at the construction works, unavoidably exposing them to occupational health and safety risks. The workers are also likely to be exposed to risk of accidents and injuries resulting from accidental falls, injuries from hand tools and construction equipment. The community in close proximity to the work sites could also affected through accidents caused by construction vehicles & equipment and falling into excavated but uncovered trenches.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer and the Proponent's Environmental & Safety Officer.
- Construction workers, the supervision team and authorized visitors to construction sites to be provided with Personal Protective Equipment (PPEs) including gloves, gumboots, overalls and helmets. Use of PPE to be enforced by the Environmental & Safety Officer.
- Fully stocked First Aid Kits to be provided within the sites, camps and in all Project vehicles.
- Isolate the site for access by the local communities during the construction for their safety and health.

- Use of warning signage and tapes where the trenches are open and at other active construction sites.

6.5.9 HIV /AIDS & other communicable diseases

Indirect impacts on the community can be the introduction of new communicable diseases such as HIV/AIDS due to in-migration for job opportunities, poverty, and prostitution. The extent of disease transmission between the communities and in-migrants would depend on the level of interaction between the two, the workforce size and health status of the workforce and casual migrants, and their susceptibility to disease infection.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- The contractor at the time of Project implementation will develop appropriate training on potential spread and awareness materials for Information, Education, and sensitization of workers during project construction phase.
- Develop an intervention strategy compatible with the construction program to address success of the HIV/AIDS prevention and provide peer educators for sustainability in collaboration with other stakeholders.
- Integrate monitoring of HIV/AIDS preventive activities as part of the construction supervision. Basic knowledge, attitude and practices are among the parameters to be monitored, and particularly on provision of condoms, status testing and use of ARVs.

6.5.10 Labour influx and effects of Immigrant Workers

The project will need to employ labourers and although most of the unskilled and semi-skilled labour requirements could be filled locally (from within the project areas), congregation of potential labourers from outside the project areas is likely, as they seek employment opportunities. This has the potential to result in a strain on local social dynamics including increased competition for local social and health services, other goods and services, increased crime
rates and illicit behaviour, social conflicts, and the risk of spread of communicable diseases. There may also arise complaints and dissatisfaction among the communities affected by the project if recruitment of workers is perceived to be biased and without local representation.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- Contractor should use the local workforce as much as possible (preference to local community members on skills locally available).

- Effective community engagement and strong grievance mechanisms on matters related to labour
- All workers to sign an employment contract including a Code of Conduct governing appropriate behaviour.
- The workforce should be sensitized to local social and cultural practices and be educated on the expected behaviour and conduct.
- Contractor should prepare and implement a gender action plan.

6.5.11 Child Labour

Due to provision of cheap labour and differentiation in bargaining power, the underage workers may be employed leading to exploitation.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low	Probable

Mitigation measures

- The contractor will comply with national and international labour laws in recruiting construction staff.
- All workers will be required to produce their national identification cards to confirm their age.
- Ensure no children are employed on site in accordance with national labour laws. This can be done through incorporating prohibitive provisions in the code of conduct and having the recruitment policies that prohibits child labour.
- Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police.

6.5.12 Sexual Exploitation and Abuse (SEA) & Gender-Based Violence (GBV)

Due to vulnerability of women, they could be taken advantage of in the Project workplace in order to receive what is due to them or favours. GBV incidences may increase due immoral behaviours arising from increased cash flows for the construction workers.

Impact Characterization /Significance						
Direct	Negative	Short Term	Local	Reversible	Low to Moderate	Probable

Mitigation measures

- Develop and implement code of conduct, signed by all workers.
- Provide training and awareness programs to project contractor's staff, and community members on GBV and sexual harassment prevention and reporting.

- Collaborate with local communities, leaders, and women's groups to address concerns related to GBV and sexual harassment.
- Collaborate with local law enforcement and authorities to address and prevent GBV incidents.
- Implement clear and confidential reporting mechanisms for any incidents of GBV or sexual harassment.
- Contractor should prepare and enforce a No Sexual Harassment and Non-Discrimination Policy.

7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

7.1 Overview

This chapter captures the environmental and social management measures for the anticipated negative impacts. The ESMP capture the impacts, receptor, proposed mitigation measures, institution responsible for the mitigation, frequency, and the budget at construction and at operation stages. Preparation of the plan was informed and guided by the mitigation measures that were anticipated in the Environmental and Social Management Framework 2017 for the WSDP project. The Environmental and Social Management Plan aims to make this project conform with the applicable environmental legal requirements and to help all stakeholders to find their role and responsibility in the environmental preservation during the implementation of the present project. This Environmental and Social Management Plan completes the information given for the environmental impacts and the specific mitigation measures proposed in the previous sections. It proposes the institutional responsibilities for the implementation of the mitigation measures, the timing and indicates the source of implementation cost of proposed mitigation measures.

The contractor will be required to fully comply with implementation of the ESMP. The contractor will be required to submit a detailed Construction Environmental & Social Management Plan (C-ESMP), which comply with the ESMP, prior to mobilization to the construction sites. The Contractors will also be required to prepare constructions Method Statements that will be task-specific after undertaking specific risk assessments. Among the Key Staff of the Contractor will be an Environmental and Social Safeguard officer with the necessary qualifications and experience to manage the implementation of ESMP. The Contractor's E&S officer will full time and site based during the implementation of the Project. Among the key responsibilities of the Contractor's E&S officer will include:

- Managing the implementation of ESMP with strict compliance of the provisions.
- Preparation of regular progress reports (weekly, monthly or quarterly) as applicable, on the implementation of ESIA including incidents reports and mitigations.

The Project Proponent (NYANDAWAS) shall ensure that the implementation of the Environmental and Social Management Plan (ESMP) is effectively executed and that adequate resources have been provided. NYANDAWAS do not have an Environmental and Social Safeguards Officer within its establishment. The WSP will need to employ Environmental and Social Safeguards Officer during the duration of project implementation, who will be responsible for supervision and monitoring for compliance of the ESMP implementation and reporting.

The responsibilities of NYANDAWAS will include:

- Responsible for day-to-day coordination and implementation of the project & ESMP.
- Ensure the grievance committees are established and working.
- Monitor the ESMP implementation.

Roles of the proponent's Environmental and Social Safeguards Officer:

- Ensure compliance to proposed ESMP by the contractor.
- Ensure review of ESMP is up to date.
- Carry out periodic audits of the ESMP to ensure that its performance is as expected.
- Preparation and submission of ESMP implementation Reports.

Monitoring of the ESMP implementation will include site inspections, reporting and photographic documentation designed to assess and record the contractor's compliance with the ESMP and other applicable regulations. It is also anticipated that additional inspections would be required in response to complaints and issues raised by local communities.

Table 7.1: Environmental and social management plan (ESMP)

Project Activities	Potential Impacts	Recommended mitigation measures	Responsibility	Cost Estimates (KES)
CONSTRUCTION PHASE				
1. Excavations for installation of pipelines network. 2. Installation of solar power system	**Clearing and loss of vegetation and other biodiversity**	- The soils excavated during laying of pipelines should immediately be used for back-filling to prevent it from being eroded during rainy season. - The cleared sites should also be re vegetated to improve soil cover and minimize soil erosion and improve on aesthetics of the project area. - Landscaping and restoration of sites to their original state.	Construction Contractor	160,000
	Impacts on Soils & Landslides due slope instability at excavation areas for pipelines installations.	- The contractor to stick to clear delineation of the construction to minimise vegetation loss. - Excavation works should be controlled so that land that is not required for the Project works is not disturbed. - Excavated materials and excess earth should be kept at appropriate sites approved by theSupervising Engineer. - Proper and compacted back filling of excavated areas.	Construction Contractor	140,000

		- Use of manual labour for trenching and backfilling. - Avoid utilization of heavy machinery near steep landscapes. - Construction activities to be conducted during dry season.		
	Dust and gaseous emissions	- Water the soil surface and any non-asphalted roads, especially in the dry season. - Water the soil before starting to excavate and during and after burial of the pipeline. - The storage and handling of spoil, subsoil, topsoil, and materials should be carefully managed to minimize the risk of wind-blown material and dust. - Burning of any waste on site should be prohibited. - Vehicle engines should not be left running unnecessarily. - Regular and proper maintenance of vehicles and machinery.	Construction Contractor	60,000
	Noise and vibration emissions	- Restrict construction and operation of heavy machines to daylight. - Ensure noise emissions are kept within the NEMA acceptable standards and inform communities on the noisy activities schedule. - All vehicles and construction machinery shall have an efficient muffler design in accordance with the manufacturer's specifications. This also includes high noise generating handheld like power drills, saws, nail guns etc. The mufflers shall be well maintained and regularly tested with the results documented in the maintenance logs. - Regular and effective equipment maintenance to ensure all machinery is in good working order and use does not generate excess noise/vibration. - All vehicles and trucks should have valid Vehicle Inspection Certificates.	Construction Contractor	80,000
	Pollution due to solid wastes	- In addition to the implementation of waste prevention strategies, the total amount of	Construction Contractor	45,000

		waste may be significantly reduced through the implementation of recycling plan. - All the solid waste should be collected; the biodegradable organic material composted properly on site for manure production and the non-biodegradable disposed of in a public landfill. - A waste collection system will be in operation to handle solid wastes, oily rags, and used fuel and lube oil filters in a leak-proof container that will be stored and disposed off at the landfill site, to ensure effective management of solid wastes at the project site.		
	Accidental oil and fuel spills and leaks	- Checking and regular vehicles and construction equipment. - Vehicle maintenance to be done in impervious concrete platforms and grease and oil traps to be used.	Construction Contractor	30,000
	Interference with the existing infrastructure and physical settings	- Liaisons with the relevant authorities and service providers to locate existing infrastructure before commencement of excavation works for pipe laying. - Formal request for permission for a wayleave and laying the water pipeline should be sought from relevant roads authorities.	Construction Contractor	150,000
	Workers, Community Health and Safety Risks during Construction	- Contractor to provide a Healthy and Safety Plan prior to the commencement of works to be approved by the Supervising Engineer and the Proponent's Environmental & Safety Officer. - Construction workers, the supervision team and authorized visitors to construction sites to be provided with Personal Protective Equipment (PPEs) including gloves, gumboots, overalls and helmets. Use of PPE to be enforced by the Environmental & Safety Officer. - Fully stocked First Aid Kits to be provided within the sites, camps and in all Project vehicles. - Isolate the site for access by the local communities during the construction for their safety and health.	Construction Contractor	200,000

		- Use of warning signage and tapes where the trenches are open and at other active construction sites.		
	HIV /AIDS & other communicable diseases	- HIV/AIDS awareness , Counselling & Testing. - Monitoring health trends during Project construction in order to be aware of and respond appropriately to any negative health trends that may be linked to the Project and its workers.	Construction Contractor	65,000
	Labour influx and effects of Immigrant Workers	- Contractor should use the local workforce as much as possible (preference to local community members on skills locally available). - Effective community engagement and strong grievance mechanisms on matters related to labour - All workers to sign an employment contract including a Code of Conduct governing appropriate behaviour. - The workforce should be sensitized to local social and cultural practices and be educated on the expected behaviour and conduct. - Contractor should prepare and implement a gender action plan.	Construction Contractor	Contractor's Cost
	Child Labour	- The contractor will comply with national and international labour laws in recruiting construction staff. - All workers will be required to produce their national identification cards to confirm their age. - Ensure no children are employed on site in accordance with national labour laws. This can be done through incorporating prohibitive provisions in the code of conduct and having the recruitment policies that prohibits child labour. - Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police.	Construction Contractor	Contractor's Cost
	Sexual Exploitation and Abuse (SEA) & Gender-Based Violence (GBV)	- Develop and implement code of conduct, signed by all workers. - Provide training and awareness programs to project contractor's staff, and community members on GBV and sexual harassment prevention and reporting.	Construction Contractor	80,000

		- Collaborate with local communities, leaders, and women's groups to address concerns related to GBV and sexual harassment. - Collaborate with local law enforcement and authorities to address and prevent GBV incidents. - Implement clear and confidential reporting mechanisms for any incidents of GBV or sexual harassment. - Contractor should prepare and enforce a No Sexual Harassment and Non-Discrimination Policy.		
Cost Estimates for the Construction Phase				**860,000**
OPERATIONAL PHASE				
Operations of the constructed project	Illegal connection to the new pipeline	- The project proponent will ensure that communities living along the pipeline route are adequately served with piped water. - The proponent will also conduct water balance studies and NRW audits to identify and plug points of water loss.	NYANDAWAS	Proponent's cost
	Generation of liquid and solid wastes	- The County Government of Nyandarua & NYANDAWAS to encourage the construction and usage of septic-tanks for disposal of wastewater by the residents of Kasuku township and its environs. - Solid wastes generated during repair and maintenance activities will be collected and disposed-off in designated manner	County Government NYANDAWAS	-
	Health and Safety Hazards	- Train all workers on Health, Safety and Environment (HSE) with an aim of improving awareness. - The proponent will erect appropriate safety signage during repair and maintenance activities. - The proponent shall provide first-aid facilities for repair and maintenance staff. - Proponent's staff will be required to use PPEs during repair and maintenance work.	NYANDAWAS	-
	Improved and reliable water supply for the residents of Kasuku	- Positive impact, no mitigation measures. - Improve customer experience through better water supply services. - Reduction of water outages/ rationing. - Expansion of coverage area.	NYANDAWAS	-

	Town and its environs			
	Increased reliability of water supply to the residents of Kasuku Township and its environs.	- Positive impact, no mitigation measures. - Reduction of water outages/ rationing.	NYANDAWAS	-
DECOMMISSIONING PHASE				
Demolition of project structures and disposal of construction materials	Reduced availability of potable water to beneficiaries	- The proponent shall provide an alternative source of potable water to the beneficiaries of the project.	NYANDAWAS	-
	Loss of Flora and Fauna	- The proponent shall ensure minimal clearing of vegetation. - Transportation of decommissioning wastes to be done through the existing local roads. - Sensitization of decommissioning workforce on environmental conservation and ecological protection. - Re-vegetation of cleared areas with indigenous vegetation species.	NYANDAWAS Decommissioning Contractor	
	Generation of solid wastes	- Provision of solid waste collection facilities (waste bins). - Sensitization of construction workers on proper disposal of solid wastes including hazardous wastes such as solar panel materials and solar batteries. - Engage suppliers of the solar equipment to "Take Back" Obsolete solar batteries and depleted solar panels as per the Extended Producer Responsibility Regulations.	NYANDAWAS Decommissioning Contractor	-
	Health and Safety Hazards	- Continuous supervision of occupational, health and safety management to ensure compliance. - Occupational Safety and Health - Training for contractor's staff. - Conduct orientation talks and visits. - Conduct toolbox talks.	NYANDAWAS Decommissioning Contractor	-
	Water quality degradation	- The contractor will maintain all site vehicles and equipment is a serviceable state.	NYANDAWAS Decommissioning Contractor	-

		- Oils and greases emanating from repair and maintenance activities will be collected in containers to avoid entry into local drainage channels. - Water from cleaning of equipment will be utilized within the project site and will not be discharged into water courses.		
	Increased Vehicular and Human Traffic	- Transportation of decommissioning wastes to specific sites will be done through the existing local roads. - The contractor will rehabilitate the local roads that will be damaged during decommissioning activities. - Consultation with the local communities on planned road diversions. - Restriction of Vehicular and Human Transportation of decommissioning wastes to specific sites will be done through the existing local roads. - The contractor will rehabilitate the local roads that will be damaged during decommissioning activities. - Consultation with the local communities on planned road diversions. - Restriction of Vehicular and Huma Traffic to the road reserve where possible. - Sensitization of drivers to comply with prescribed speed limits.	NYANDAWAS Decommissioning Contractor	-
	Air Quality Degradation	- Evacuation vehicles will only use the designated transport routes. The drivers will also be advised to stick to prescribed speed limits. - The contractor will ensure proper repair and maintenance of vehicles and equipment to minimize exhaust gases. - The contractor shall ensure recommended speeds on road sections that will be used by construction vehicles are adhered to on a needs basis to reduce the creation of dusts. - Construction workers will be provided with dust masks to mitigate.	NYANDAWAS Decommissioning Contractor	-
	Employment opportunities for local community	- Positive impact, no mitigation measures.	NYANDAWAS	-

		- The contractor shall reserve opportunities for semi-skilled and casual work for interested members of the local communities.	Decommissioning Contractor	

8 ENVIRONMENTAL AND SOCIAL MONITORING PLAN (ESMoP)

8.1 Overview

This chapter captures the environmental and social monitoring indicators for the anticipated negative impacts as highlighted in Table 8-1. The preparation of the plan was informed and guided by the indicators that were anticipated in WSDP project Environmental and Social Management Framework 2017. The institution responsibilities for implementation and supervision are presented in Section 3 of this report. The progress reports prepared, incorporating ESMP implementation status, shall be on monthly and quarterly basis. The client (NYANDAWAS) including the project supervising engineer and social safeguards consultant shall review the reports and submit to the World Bank. In addition to regular reporting, all ESHS incidents, accidents, dangerous occurrences including occupational diseases shall be promptly reported to the respective regulatory institution in the prescribed manner and template outlined in DOSH ML/DOSH/FORM 1 and further to the World Bank in line with the requirement of the Occupational Health and Safety Act (OSHA) 2007, EMCA CAP 387, and World Bank EHS guidelines. Investigation shall be conducted, and a corrective action plan developed for every reportable incident to prevent recurrence.

8.2 Purpose and objectives of ESMoP

The purpose of the Environmental and Social Monitoring Plan (ESMoP) 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. The Environmental and Social Mitigation and Management Plan has identified certain roles and responsibilities for different stakeholders for implementation, supervision, and monitoring.

The objectives of the ESMoP therefore are:

- To ensure that the recommendations in the approved ESIA report are adhered to by the various institutions.

  To ensure that the environmental and social mitigation and their enhancement actions are well understood and communicated to all involved stakeholders.
- To ensure that the proposed environmental and social remedial measures are implemented during the project execution stage.
- To evaluate the effectiveness of environmental and social remedial measures.
- To evaluate the effectiveness of various evaluation techniques and procedures.
- To provide the Proponent and the relevant Lead Agencies with a framework to confirm compliance with relevant laws and regulations.

Conversely, environmental monitoring provides feedback about the actual environmental impacts of the project. Monitoring results help judge the success of mitigation measures in protecting the environment. They are also used to ensure compliance with environmental standards, and to facilitate any needed project design or operational changes. A monitoring program, backed up by powers to ensure corrective action when the monitoring results show it necessary, is a proven way to ensure effective implementation of mitigation measures. By tracking the project's actual impacts, monitoring reduces the environmental risks associated with the project and allows for project modifications to be made where required.

TABLE 8-1: Environmental and social monitoring plan (ESMOP)

Parameter/ Activity	**Location**	**Means of Monitoring**	**Frequency**	**Responsible Agency**	
				Implemented by	**supervised by**
Occupational Health and Safety	Construction site	- Visual inspection of first aid area, - Injury reporting mechanism, - WIBA insurance policy, - Appropriate use and wearing of PPE, - Training programs for workers, health and safety plan prepared for site, - Clean drinking watering points, - Safety training certificates, gloves, earplugs, safety boots, reflector jackets, drinking water, nose mask, helmet, overall, sanitation facilities.	Daily	Contractor	Project Supervising Engineer E&S Expert
Public health	Areas surrounding the construct ion site.	- Visual inspection of site for; safety signs at strategic places, - Cordoned off working sites to protect the public	Weekly	Contractor	Project Supervising Engineer E&S Expert

		or unauthorized persons, usage of signs and warnings on sites with high risks, - Low speeding of construction vehicle and consideration of wind action, - No. of reported injuries and accidents and No. of grievances reported.			
Leakages and spills of greases, oil or fuel	Contractor's yard and construct ion site	- Visual inspection of hazardous waste leakage or spills to soils on site, - records of cutting pits for disposed off contaminated soils, - Developed site-specific incident management or response plan.	Weekly	Contractor	Project Supervising Engineer E&S Expert
Noise and vibrations	construct ion site	- Use equipment with low noise levels or fitted with mufflers. - Visual inspection of site for use of PPE, - Use of soundproof materials, - Notices to public on noisy construction activities, Restricting noisy activities daytime. - Regular measurement of noise levels through mobile phone gadgets.	Weekly	Contractor	Project Supervising Engineer E&S Expert
Air quality	Construction site and along construct ion vehicle	- Physical inspection of vehicles records to ensure meets emission requirements,	Daily	Contractor	Project Supervising Engineer

	movement routes	- Use of masks while working in dusty conditions, - Shielding wind impacts during construction, - Low speed of construction vehicle, catalytic devices on vehicle and suppress dust.			
Waste generation	Construction sites	- Visual inspection of; sanitation facilities for human waste management, - Amount of waste correctly disposed, - Visual inspection of haphazard littering, - Practicing of waste avoidance, reduction, reuse and recycle, - Designated waste transfer stations onsite, - Documented approved waste dumping site, - Presence and compliance to implementations of site-specific waste management plan.	Monthly	Contractor	Project Supervising Engineer E&S Expert
Flora and fauna	Construction sites	- Physical Inspection.	Weekly	Contractor	Project Supervising Engineer E&S Expert
Impacts on Soil	Construction sites	- Physical inspection	Monthly	Contractor	Project Supervising Engineer E&S Expert
Impacts on water sources	Water sources	- Physical inspection, - Chemical inspections.	Monthly	Contractor	Project Supervising Engineer E&S Expert

Labour and employment related issues	Construction site and contractor's office	Physical counts and inspection of records on: - No. of locals employed on the project from the employment records, - No. of Grievance recorded from employees and how they were addressed resolved.	Weekly	Contractor	Project Supervising Engineer E&S Expert
Immigration of workers	Construction site and contractor's office	- Review of records, - Interviews with staff and local community.	Monthly	Contractor	Project Supervising Engineer E&S Expert
Gender Equity and Sexual Harassment	Construction sites	- Number of female employees, - Number of male and female toilets, - Complaints from female employees.	Weekly	Contractor	Project Supervising Engineer E&S Expert
Damage to private property	Project area	- Review of records, - Interviews with staff and local community.	Daily	Contractor	Project Supervising Engineer

8.3 Auditing of Environmental and Social Management and Monitoring Plan (ESMMP)

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

- The ESMMP being used is the up-to-date version.
- Variations to the ESMMP and non-compliance and corrective action are documented.
- Appropriate environmental training of personnel is undertaken.
- Emergency procedures are in place and effectively communicated to personnel.
- Ensure that appropriate corrective and preventive action is taken by the Contractor once instructions have been issued.

8.4 Management responsibility of ESMMP

To ensure the sound development and effective implementation of the ESMMP, it will be necessary to identify and define the responsibilities and authority of the various persons and

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

- NEMA.
- Contractor.
- Works construction Supervision Consultant.
- County Government of Nyandarua & NYANDAWAS.

8.4.1 National Environment Management Authority (NEMA)

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

8.4.2 The Contractor

The persons/firms contracted to lay the proposed water pipeline will be required to comply with the requirements of the ESMMP below and should form part of the contract documents.

8.4.3 Works Construction Supervisions Consultant

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

8.4.4 County Government of Nyandarua & NYANDAWAS

The relevant departmental officers in the above County government will be called upon where necessary during Project implementation to provide the necessary permits and advisory services to the Project implementers. The County Government of Nyandarua under the NYANDAWAS will operate the Project once commissioned.

9 CHANCE FIND PROCEDURES

9.1 Purpose of the chance finds procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project design, construction, or operation. It is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

9.2 Responsibility

Nyandarua Water & Sanitation Company (NYANDAWAS) as the implementation institution is responsible for siting and designing the project to avoid significant damage to cultural heritage. When the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations, the client will implement chance find procedures established through the Social and Environmental Assessment. The client will not disturb any chance finds further until an Assessment by a competent specialist is made and actions consistent with the requirements of this Performance Standard are identified.

9.3. Scope of the chance finds procedure

This procedure will be applicable to all activities conducted by the personnel, including contractors for the project that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

9.4. Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

9.5. Details on chance find procedures

If any person/worker under the project discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

- Stop all works in the vicinity of the find, until a solution is found for the preservation of these artifacts, or advice from the relevant authorities is obtained from the National Museums of Kenya (NMK).
- Immediately notify the foreman. The foreman will then notify the Site engineer and the Environment Officer of the contractor.
- Record details in Incident Report and take photos of the find.
- Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over.
- Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find.
- Sites of minor significance (such as isolated or73 unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the NMK, once completed.
- In case of significant find the NMK, will be informed immediately and in writing within 7 days from the find.
- The onsite archaeologist provides NMK with photos, other information as relevant for identification and assessment of the significance of heritage items.
- The NMK will investigate the fact and provide response in writing.
- Decisions on how to handle the finding shall be taken by the responsible authorities which is NMK. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
- Construction works could resume only after permission is granted from the responsible authorities.
- In case no response received, this will be considered as authorization to proceed with suspended construction works.

Management options for archaeological site:

- **Site avoidance:** If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option).
- **Mitigation:** If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.).
- **Site Protection:** It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

10 GRIEVANCE REDRESS MECHANISM (GRM)

10.1 Introduction

A key principle of any development is to prevent or minimize grievances rather than going through a redress process. This can be achieved through commitment to full participation and consultation of the stakeholders and establishing extensive communication and coordination between the affected communities, and the envisioned development. However, this does not always preclude grievances from arising. This ESIA process provides opportunities for the likely to be affected parties to air and articulate their queries, concerns, issues, complaints, dissatisfaction or sense of injustice or unfairness, and seek to have these resolved amicably, and in the shortest time possible. Affected parties should be able to file a grievance for any disagreeable decision, practice or activity, arising from proposed development. Therefore, a Grievance Redress Mechanism (GRM) as a mechanism, or set of procedures and processes, or organizational systems and resources, has been established to be used as a means to hear, address and resolve issues and complaints related to the proposed project implementation. The stakeholder input handled through these systems and procedures may be called grievances, complaints, feedback, or any other functionally relevant terminology or concept.

10.2 Potential grievances

In practice, some of the possible grievances that can be anticipated or are most likely to occur during implementation of the project may include:

- Disagreement over opportunities offered to the community, for instance on job opportunities, loss of livelihoods, loss/decrease of business or income etc.
- Interruption of public, community, social or other services and infrastructure e.g., water.
- Damage to un-expropriated public / community assets such as roads

10.3 Objective of a grievances redress mechanism

Essentially, GRMs are designed as a conduit for soliciting inquiries, inviting suggestions, and increasing participation in developments. The proposed GRM has been established to:

- Generate public and stakeholder awareness about the proposed project and its objectives.
- Increase stakeholder involvement in the Project implementation.

- Improve proposed project outcomes through timely resolution of issues and problems. (The GRM will contribute to timely achievement of the project's objectives).
- Provide feedback to different levels of the project performance i.e., providing management with practical suggestions/feedback.
- Act as an early warning mechanism / effective risk management tool to identify and resolve implementation problems in a timely and cost-effective manner.
- Build community relations / legitimacy among stakeholders; through creating and maintaining trust with affected persons and the stakeholders.
- Allow the development management team to be more accountable, transparent and responsive to stakeholders.
- Deter or curb fraud and corruption.
- Assess the effectiveness of the proponent's processes but also improve the operational processes and performance.

10.4 Guiding principles for an effective grievance redress mechanism

There are several guiding principles that drive the design of an effective GRM. GRMs that involve these principles are more likely to provide effective resolution of grievances. Some of the key GRM principles are as follows: -.

- Start early in the project cycle: GRM (or at least the lowest Level institution at PAP level should be put in place as early as possible, and later modified as need arises.
- Simple and Accessible: Should be known to the intended users and accessible to diverse members of the community, with multiple points of entry and access.
- Legitimate: Enabling trust from the stakeholders intended to use it.
- Participatory and Inclusive: Should be developed in a participatory manner and include representatives from the main actors/categories relevant to the area.
- Contextualization and appropriateness (e.g., Cultural and Context Sensitive): Should be localized to ensure it's appropriate to the local context, keeping in line with local cultural or traditional structures for raising and resolving issues.
- Responsive, Timely, and Efficient: Should be responsive to the needs of all complainants, and resolutions should be reached in the soonest time possible to discourage lengthy suits that are time wasting.
- Transparency / fairness / impartiality: Users must be clearly informed on how they can access the mechanism and be given fair and impartial resolutions without fear of reprimand.
- Formalized: The mechanism needs to be formally established, predictable and well known, and not ad hoc. It needs rules for addressing grievances, holds regular meetings/deliberations on specific and well-known days to discuss the issues. Clearly laid out and expected timetable for key process milestones is essential.

- Appropriate Protection: The mechanism should prevent retribution and should not impede access to other remedies such as legal reprieve.

10.5 The proposed grievance structure

This ESIA proposes a four (4) - tier grievance redress mechanism:

- Community / Stakeholders Level
- Management Level – project Implementation Team
- Water Sector Trust Fund
- World Bank

Table 10.1: Grievance redress mechanism summary

	Institution	Membership	Functions
1	Grievance Redress Committee/ Community Stakeholders Level (community Liaison Officer - CLO).	- Established at the community / Stakeholders' level with membership from the project area. Consists of a 7 - 11member committee (exclusive of ex official members). - Membership should be drawn from a variety of factors including affected persons (all gender, elders' representatives, youth in cognizance of local dynamics). - A representation of the local government administration i.e., chief and assistant chief as Ex official default members with no voting rights.	- Assist community / stakeholders to file a complaint. - To address affected persons grievances as 1st, point of contact, within 15 days.
If no amicable solution or settlement is reached, the aggrieved person is not satisfied or does not hear from the GRC through CLO within the required time limits (15 days), they can escalate the grievance to the next level.			
2	Management Level – The project Implementation Team	- The proponent will consider grievance reports forwarded to it and make a determination. - Membership consists of the management team. - The CLO may be invited to the meeting to give a highlight and account of grievances.	- Escalation Mechanism to determine grievances unresolved by GRC within 15 days. - Responsible for monitoring the complaints. - Providing inputs into the monitoring and evaluation process i.e.,

			quarterly reports on grievances handled.
3	Water Sector Trust Fund	- Through the proponent, the grievances not concluded at the management level can be forwarded to WSTF for further review.	- Resolves matters forwarded from the implementation team. Should WSTF be unable to resolve, it will be escalated to World Bank
4	World Bank	- Grievances not resolved at WSTF level will be escalated to World Bank	- Review and attend to matters received from WSTF.

The aggrieved person can go Court as a last resort. Given the above mechanism it is not foreseen that many disputes will end up in court.

Court of Law

- The aggrieved party may seek legal deals specifically with land and redress and at their own cost.
- The legal option will act as a last resort and will be sort after all other redress medium have been exhausted unsuccessfully.

11 CONCLUSION AND RECOMMENDATIONS

11.1 Conclusion

Through the assessment and evaluation of all potential environmental and social impacts of the proposed construction of Amani pipeline extension and the solarisation of Kasuku Borehole project (the Project), it is concluded that the Project will have net ecological, economic, social and health benefits to residents of the target Project areas in Kasuku Township and its environs. The Project is expected to provide adequate reliable water to the target population. Project activities that are envisaged to have potential less significant negative impacts at different phases of the project implementation have been assessed in detail in this Report and appropriate Mitigation Measures proposed. To mitigate the potential negative impacts and to make the Project environmentally and socially sound, Environmental and Social Management and Monitoring Plans (ESMMPs) have been prepared for implementation. The ESMMPs include the Mitigation Plan, the Monitoring and Enforcement Requirements, and the Responsible Persons/Organizations. All the recommendations/ mitigations mentioned in the assessment will be financed and incorporated in the construction and supervision contracts. The main findings from the assessment described in the Report are as follows:

- The project will be constructed within existing public land for the solar power system while pipelines will be installed on the public road reserves and no therefore no private land will need to be acquired.
- The World Bank Operational Procedure 4.12 (Involuntary Resettlement) is not triggered since the proposed pipeline routes are in clear lands free from encroachment and is a reserve for the water pipelines.
- The Environmental and Social Screening undertaken for the project revealed that the investment is low impact on both social and biological environment; therefore, this project is categorized as a category B project. The level of ESIA assessment required is at Project Report Category, which should be approved by Nyandarua County NEMA office.
- The cost of implementation of the proposed environmental management and mitigation plan is estimated at **KES 860,000**

Recommendations

- The project is recommended for implementation provided that the mitigation measures identified in the study for the potential negative impacts are implemented, the recommendations will also form part of NEMA License that will be issued for the Project.
- The proponent needs to support the implementation of environmental and social management plan (including mitigation plan and monitoring) in order to protect the environment of the project area from the negative impacts of project implementation
- During the implementation of the Project, NYANDAWAS should hire an environmental & Social to assist in the supervisions, monitoring and reporting on the progress for the implementation of ESMP.
- The County Government of Nyandarua and NYANDAWAS should follow up and ensure that the documentation of land ownership for the site where the Kasuku Bore hole, pump house, water storage tanks and the proposed solar system are located. This will prevent loss of the land and the developed infrastructure in the future.
- Priority for employment should be given to the local community including women and
- youth. This will enhance social economic and capacity building.
- The proponent should adopt a participatory and collaborative approach during all the phases of the project. This will ensure active participation of all key stakeholders towards success and sustainability of the project.

REFERENCES

- Environment Management and Coordination EMCA Cap 387 and EIA/EA Regulations 2003)
- Kenya gazette supplement number 56. Environment Impact Assessment and Audit Regulations 2003. Government printer, Nairobi
- Kenya gazette supplement number 69. Environmental Management and Coordination (waste Management) Regulations 2006. Government Printer Nairobi.
- Kenya gazette supplement number 68. Environmental Management and Coordination (water quality) Regulations 2006. Government Printer.
- Kenya gazette supplement Acts 2000, Environmental Management and Coordination Act Number 8 of 1999.Government Printers, Nairobi.
- Kenya gazette supplement Acts Public Health Act (Cap. 242).
- World Bank Operational Safeguards Policies on Environment and Social Risks.
- Nyandarua County Integrated Development Plan (CIDP) 2017- 2022
- Nyandarua County Integrated Development Plan (CIDP) 2023 – 2027
- The Kenya National Population and Housing Census, 2019
- The WSDP Environmental and Social Management Framework (ESMF)
- The WSDP Resettlement Policy Framework (RPF)

ANNEXES

ANNEX I: SAMPLE QUESTIONNARE RESPONSES



NYANDAWAS ESIA QUESTIONNAIRE 1.p

ANNEX II: MINUTES OF PUBLIC CONSULTATION MEETING HELD ON 20/06/2024 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY

FOR THE PROPOSED construction of Amani pipeline Dn50 to Dn90, 1500m long and the solarisation of Kasuku Borehole Project - Nyandarua Water & Sanitation Company (NYANDAWAS)

Minutes of the public meeting on the ESIA held at Kasuku trading centre on 20th June 2024

MIN 1/20/06/2024: INTRODUCTION

The meeting was called to order at 11am by the area Assistant chief Mr. Boniface Mwangi, after which one of the attendants started off with a word of prayer. Mr. Mwangi then welcomed all the attendants and thanked them for creating time to attend the meeting. He further asked them to contribute freely towards the discussions noting that their views and comments will go a long way towards the success of project. He then invited the consultant's team to address the meeting. He then invited NYANDWAS staff, Mr. Aaron Muchiri (Water Technician in Charge of Ol'Joro Orok Sub-County) to introduce the ESIA Consultants and give a presentation on the meeting's purpose and a brief on the proposed project to those in attendance. Mr. Muchiri introduced the ESIA team and then gave a brief on the proposed project which involve the installation of solar power at the Kasuku Borehole water source and the extension of water pipeline to Amani area within the outskirts of Kasuku Township. He explained to the participants that before the works could start, an Environmental and Social Impact Assessment Study need to be undertaken and a Report be submit to WSTF, NEMA and the World Bank for review and approval. He further explained the role of the world Bank on this project as that of the financing Agency which is expected to provide the funds for the implementation of the project. He then,

welcomed the ESIA Consultant to explain to the participants in details on the Terms of Reference for the ESIA Study and the purpose of community consultations.

The ESIA Study Team Leader Eng. James Wainaina introduced the other members his team and thanked the participants for availing themselves for the meeting despite the short notice. The consultant then briefed the meeting about the proposed project which will be implemented by the Nyandarua Water and Sanitation Company with the funding from the World Bank. The project is being implemented under the Conditional Liquidity Support Grant (CLSG) II Program whose aim is to improve water supply and sanitation services and improve the financial performance of selected Water Service Providers (WSPs), NYANDAWAS being among them. He informed the meeting that NYANDAWAS intends to solarize the water pumping system at the Kasuku borehole water source to reduce power bills and improve on water supply services to the residents of Kasuku Township and its environs. The project will also involve the extension of a pipeline to Amani area so that more people can access water in their homesteads. NYANDAWAS will also install water meters to improve on billing and revenue collection so that the water supply system can be operated sustainably.

The implementation of the proposed project will generate positive socio-economic benefits, but also adverse impacts to human community and environment. The attendants were also informed that according to the laws of Kenya, Legal Notice 150 of the EMCA 1999 (amended 2015) the project is listed as one that should go through an environmental and Social Impact Assessment Study prior to its implementation. He explained that as part of the study, public consultation is key and that is the reason as to why the meeting was organized for the community to give their views on the project. He then welcomed the attendants to give their views, comments, and suggestions on the proposed project.

MIN 2/20/06/2024: QUESTIONS AND ANSWERS

1. Mr. Joseph Murigi

Comment:

Residents within the proposed project areas were aware of the project but they didn't know more details about it.

Response:

The representative from NYANDAWAS and the ESIA consultant explained to the residents the project's components, objectives, positive advantages, and adverse impacts to be mitigated, scope and implementation schedule.

2. Mr. William Njoroge

Q - Is there is likelihood of vegetation being cleared during the process of construction?

A – The pipeline will be constructed along the public road wayleave and there shall be minimum clearance of vegetation. However, if any tree will be affected during the excavations for the installation of pipeline, then it will be replaced by planting other trees at designated areas.

3. Mr. James Njue

Q – Will the Contractor use machines to avoid hiring of local labourers?

A - The contractor will be requested to use local work force as much as is practical and only use machine where necessary.

4. Ms. Esther Waceke

Q – What will happen to a few vegetables and secondhand clothes sellers with temporary structures along the proposed pipeline installation works?

A - Pipeline installations will be along the road reserves and interruptions if any for the small-scale traders will be minimal (not exceeding 1 day for a pipeline section of about 30m). Excavations of trenches for pipelines installations and backfilling for any section will be done on the same day.

5. Mr. Samuel Ngure

Q – Who will provide labour during the installation of pipelines?

A - Residents shall be given priorities during recruitment of workers.

6. Mr. Timothy Wanjohi

Q – He asked whether the new pipeline shall use the same reserve as the existing water supply and
distribution pipelines and whether there is an outlined plan for mitigation of incidences where existing pipelines are destroyed.

A- The existing road reserve measures 30 feet with an allowance of 20 feet for carriage way and drainage infrastructure. The remaining 10 feet is reserved for utilities including water supply works and thus there is sufficient allowance for installation of the project pipeline, Moreover, care will be taken not to disrupt the existing water infrastructure and that the water company and the contractor shall repair any destroyed pipes.

7. Ms. Jacinta Kariuki

Q – Will water now be available to all the residents?

A - All the residents along the proposed pipeline extensions are encouraged to apply for individual water connections to their homes and business premises. However, those without individual connections shall obtain water from the water kiosks.

8. Sebastian Mwangi

Q - Will NYANDAWAS consider a review of the exorbitant cost for new connections and monthly water bills?

A - The cost of new connections and monthly water bills will be as approved by WASREB.

9. Ms.Grace Nyambura

Q – Is there an assurance the Issue of water shortages and rationing will be addressed?

A - It is acknowledged that the available water sources are inadequate, and some level of rationing should be applied. Residents were advised to have some water storage capacity in their homes.

10. Ms. Margaret Wangari

Q - Which will be the benefits expected by the residents from the new project?

A - Project benefits include:

- Access to clean water which will enhance and promote hygiene and sanitation to the residents.
- The project is in areas with various institutions including public & private schools, a public Health Centre, religious institutions, and small-scale business premises which will benefit from the installed pipeline extensions.
- Improved wellbeing of households.

11. John Kamande

Q – Is the Company (NYANDAWAS) planning to bring down cost of water?

A - The technical manager's Representative informed the residents that the water tariff guidelines are provided by WASREB based on various factors. He explained that the company is incorporating climate proof and cost effective in its operations, for instance use of solar powered pumps. This will significantly reduce cost of pumping water which will lead to a reduction in water tariffs.

12. Ms Joyce Njoki

Q – Will the local youth get any employment opportunities during project implementation?

A - ESIA team informed residents that during construction phase, the contactor will source some skilled and semi-skilled labour from the community to supplement his staff when such opportunities are available. However, all the unskilled labour will be sourced locally. Residents were further advised to liaise with the office of the chief and present their request for jobs in an orderly manner for consideration once the construction activities commence.

13. Ms Ann Wangui

Q - When is the expected commencement date of the project?
A - Resident were informed that the project will commence immediately after all the necessary designs have been done and required licenses issued including the NEMA license. They were further informed that the project was urgent and should start this year (2024).

14. Ms. Jane Wanjiru
Q – Will additional water kiosks be constructed to serve those who shall not afford connection charges?
A - Residents were informed that 2 No. water kiosks have been incorporated in the Project. They were further informed that the primary objective of the company is to provide clean safe drinking water within homesteads and at the public water kiosks.

15. Mr. Julius Mwaniki
Q - How will all issues that may occur because of labour coming from outside and money circulating in the area be addressed?
A - Parents, local leaders, and Government officers including NYANDAWAS as well as the Contractor shall sensitize the local community on the importance of morality and bring the culprits to book. Use of local labour to avoid influx of workers that can spread immoral issues will be given high priority.

16. Mr Moses Gitau
Q - Where will the new pipeline get its water from considering the area does not get adequate flows?
A - With the solar power system, the borehole will be operating more hours and therefore, water production is expected to increase significantly.

17. Samuel Ngure
Q - Will the new project be designed with a better quality to reduce water leakage from bursts as is common with the existing line?
A - The consultant noted that the new pipeline is undergoing technical design which shall ensure that the pipe design is adequate to withstand high pressures.

18. Mr. Francis Njaramba
Q - He was curious on whether there will be social impacts of the project such as displacement of people.
A - He was informed that the proposed pipeline route would go through the road reserve and thus no people will be displaced. Moreover, there were no observable encroachments that would necessitate resettlement within the project area.

19. Fredrick Mbugua

Q - He wanted to know whether the community will benefit economically in terms of work contracts during the construction phase and operation. In addition, he wanted to know how the community will benefit from the new pipeline.

A - The consultant informed the meeting that both mechanical and manual trenching would be used in trenching works. The community within the project area will be employed to dig and backfilling the pipeline trench. Moreover, those with businesses along the project route would benefit by selling consumables to the site workers after being receiving their wages. The consultant also noted that increased water supply in the areas will spur the development of other social facilities and businesses.

20. Isack Muturi

Q - He wanted to know whether the water to be supplied could also be used for agricultural benefit. He also wanted to know whether the project proponent could extend to them trainings on water harvesting techniques for the purpose of obtaining water for irrigation.

A - The consultant note that the projects shall supply treated portable water which will not be ideal for agriculture. Moreover, he reiterated that NYANDAWAS is a water service provider charged with providing safe drinking water to the residents and thus may not be able to provide irrigation water.

21. Ms. Alice Wanjiru

Q – She lamented that women in the project area must walk long trips to the rivers to fetch water in areas that are not served by piped water thus wasting a lot of productive time and sought to know whether the proposed project will provide enough water to be distributed to the residents.

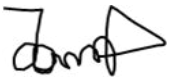
A – The consultant agreed with the attendant that fetching water from far places wastes a lot of time and degrades the quality of life for the affected residents. However, the increased supply within the area will also increase the opportunity of most residents to be connected to the water network. This would then lead to better productivity of the residents.

MIN 3/20/06/2023: CLOSING REMARKS

The consultant's team thanked the attendants for their active engagement in the meeting and reminded them that their views and comments will be incorporated in the ESIA report after which, a copy will be made available to them for review. The participants were then asked by the consultant to sign the attendance sheet and requested to share all they have learned about the project with other residents. The area sub-chief then closed the meeting by requesting one of the members to pray.

There being no other business the meeting ended at 2:10pm

MINUTES AUTHENTICATION
Area Chief
Name: Boniface Mwangi

Signature: 

Date: 24/06/2024

NYANDAWAS Representative
Name: Mr . Aaron Muchiri

Signature: 
Date: 24/06/2024

ESIA Consultant's Representative
Name: Eng. James Wainaina

Signature: 

Date: 24/06/2024

ANNEX III: LIST OF PARTICIPANTS IN THE PUBLIC CONSULTATIVE MEETING

NYANDAWAS ESIA PUBLIC MEETING LIST

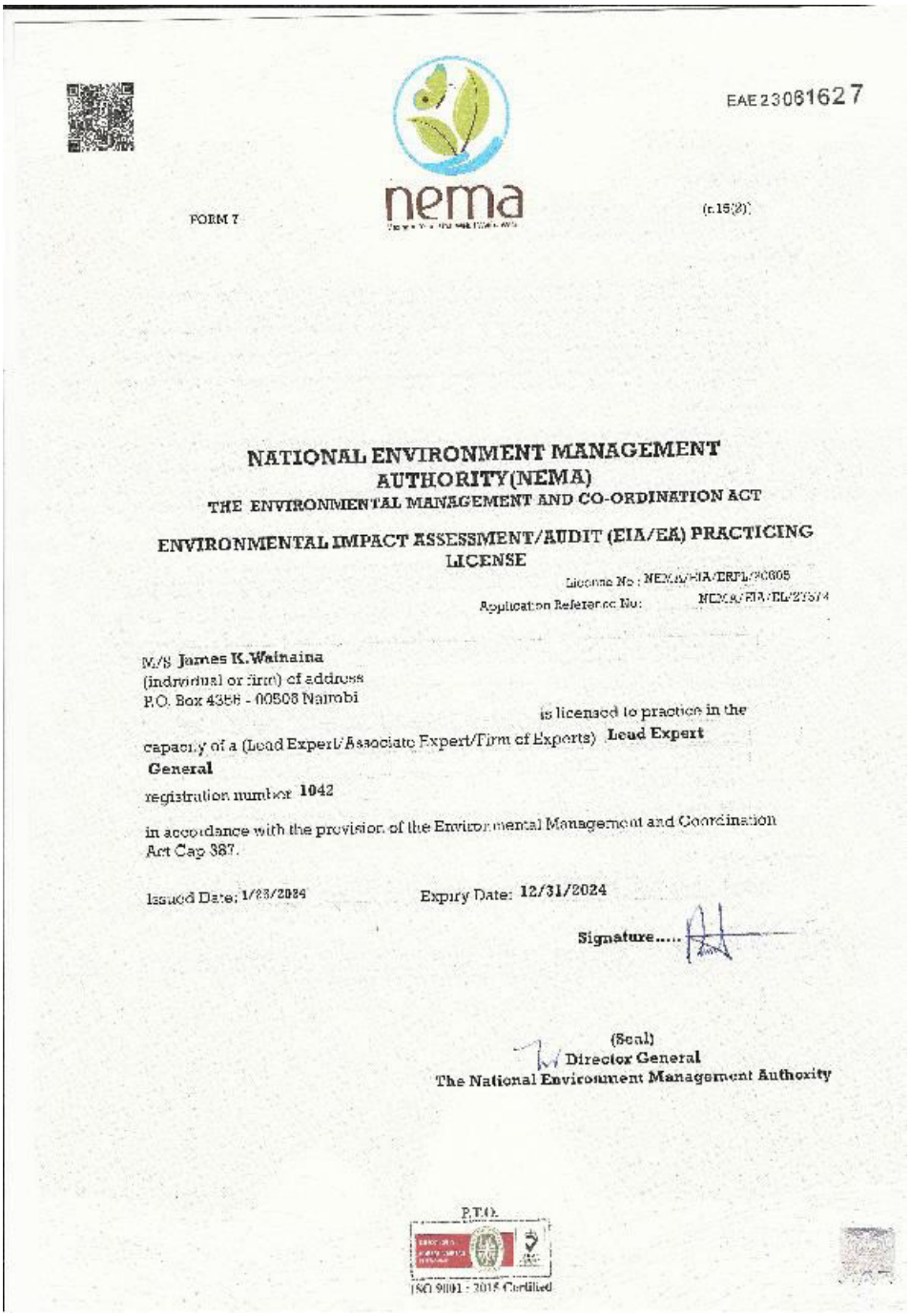
ANNEX 1V: LAYOUT ROUTE FOR THE PROPOSED AMANI PIPELINE

AMANI 3'' DIAMETER PIPELINE 2.pdf

ANNEX V: PROPOSED PROJECT BOQs AND COST ESTIMATE

NYANDAWAS BOQs AND COST ESTIMATE

ANNEX VI: ESIA STUDY Team Leader NEMA License – 2024



EAE23081627

FORM 7 (r.15(2))

nema

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/90805

Application Reference No: NEMA/EIA/EL/27574

M/S **James K.Wainaina**
(individual or firm) of address
P.O. Box 4358 - 00506 Nairobi

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

registration number **1042**

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

Issued Date: 1/23/2024 Expiry Date: **12/31/2024**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified