ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

SUMMARY PROJECT REPORT

PROPOSED DESILTING KATIKIT WATER PAN IN BARINGO COUNTY, IN KATIKIT VILLAGE, KATIKIT SUB LOCATION, BARTUM LOCATION, RIBKWO WARD, TIATY WEST; BARINGO COUNTY

GPS Coordinates: Latitude 0.945153° and Longitude 35.904299°, 1,064 m above sea level.

STATE DEPARTMENT OF AGRICULTURE (BREFONS)

Location: Katikit Village, Katikit Sub Location, Katikit Location, Ribkwo Ward, Tiaty West; Baringo County..

MARCH, 2026

PROPONENT:	FIRM OF EXPERTS
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FACT SHEET

Project Name	Proposed Desilting Katikit Water Pan in Baringo County, In Katikit Village, Katikit Sub Location, Bartum Location, Ribkwo Ward, Tiaty West; Baringo County.
Assignment Name	Environmental and Social Impact Assessment (ESIA)
ESIA Tool	Summary Project Report (SPR)
Location	County: Baringo Sub County: Tiaty West Ward: Ribkwo Location: Katikit Sub Location: Katikit Village: Katikit
GPS Coordinates	Latitude 0.945153° and Longitude 35.904299°, 1,064 m above sea level.
Project Description	• Excavation of the Water Pan, clearing of overburden materials and the top soil • Construction of the water pan, installation of toilet facilities. • Construction of cattle and shoat (sheep and goat) water troughs, and Fencing of the pan site to enhance safety and controlled access.
Pan Design Parameters	• Dam Type: Homogeneous earth-fill embankment • Dimensions: Crest Length ≈ 120 m, Crest Width = 4.0 m, Maximum Embankment Height = 5.5 m • Slopes: Upstream = 1:2.5, Downstream = 1:2.5 • Storage Capacity: 21,800 m³ at Full Supply Level (FSL) • Spillway Design: Open-channel trapezoidal earth spillway, designed for a 1-in-50-year flood (0.442 m³/s) • Freeboard: 1.5 m (gross, includes wave run-up and settlement allowance) • Design Period: 20 years (for population and demand projections)
Proponent	Ministry of Agriculture and Livestock Development (MoALD) State Department for Agriculture Program to Build Resilience for Food and Nutrition Security in the Horn of Africa (BREFONS)
Address of the Proponent	Hill Plaza 9th Floor, Ngong Road P.O. Box 30028 00100 Nairobi, Kenya E-mail: info@kilimo.go.ke. Telephone: +254-20-2718870.

CERTIFICATION

For and on Behalf of:
Ministry of Agriculture and Livestock Development (MoALD)
State Department for Agriculture
Program to Build Resilience for Food and Nutrition Security in the Horn of Africa (BREFONS)

This Environmental Impact Assessment (EIA) Summary Project Report was prepared in accordance with the Environmental Management and Coordination Act (EMCA) 1999 and the Environmental Impact Assessment and Audit Regulations 2003 (revised 2015 & 2019) and the **Africa Development Bank (AfDB)** Environmental and Social Safeguards in order to meet the statutory requirements for the implementation of projects under schedule ii. I, the undersigned, confirm that the contents of this report are a true representation of the ESIA process for the ***Proposed Desilting Katikit Water Pan in Baringo County, In Katikit Village, Katikit Sub Location, Bartum Location, Ribkwo Ward, Tiaty West; Baringo County.***

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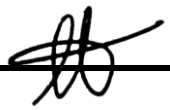

Date:
05TH MARCH, 2026

For and on behalf of: -
Ministry of Agriculture and Livestock Development (MoALD)
State Department for Agriculture
Program to Build Resilience for Food and Nutrition Security in the Horn of Africa (BREFONS)

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LIST OF ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AIDS	Acquired Immune Deficiency Syndrome
ASAL	Arid and Semi-Arid Land
BREFONS	Program to Build Resilience for Food and Nutrition Security
CAP	Crisis Action Plan
CBOs	Community Based Organizations
CDDC	Community Driven Development Committee
CIAP	Community Integrated Action Plan
CIDP	County Integrated Development Plan
CMS	Convention on Migratory Species
COC	Code of Conduct
CPCU	County Project Coordination Unit
CPP	Consultation, Public Involvement, and Participation
CPR	Comprehensive Project Report
CPs	Contracting Parties
CSR	Corporate Social Responsibility
EAP	Emergency Action Plan
EAs	Environmental Assessments
EMCA	Environmental Management and Coordination Act
ER	Emergency Response
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESIA/ EA	Environmental and Social Impact Assessment /Environmental Audit
ESMMP	Environment & Social Management Monitoring Plan
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FGD	Focused Group Discussion
FPIC	Free Prior and Informed Consultation
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GRM	Grievance Redress Mechanism
IAPs	Interested and Affected Parties

ISLM	Integrated Sustainable Land Management
IUCN	International Union for Conservation of Nature
Km	Kilometers
Km^2	Square Kilometers
m	Meters
M	Million
m^3	Cubic Meter
MEA	Multilateral Environmental Agreements
MEO	Monitoring & Evaluation Officer
mm	Millimeter
MoU	Memorandum of Understanding
MW&I	Ministry of Water and Irrigation
NEAP	National Environmental Action Plan
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
OHS	Occupational Health and Safety
PAPOLD	Participatory Analysis of Poverty and Livelihood Dynamics
PEPB	Pest Control Products Board
PICD	Participatory Integrated Community Development
PMC	Project Management Committee
PPE	Personal Protective Equipment
RCC	Reinforced Cement Concrete
SEA	Sexual Exploitation and Abuse
SESA	Strategic Environmental and Social Assessment
SH	Sexual Harassment
SLM	Sustainable Land management
SOP	Standard Operating Procedure
UG	Underground
UNFCCC	United Nations Framework Convention on Climate Change
WA2016	Water Act 2016
WHO	World Health Organization
WRA	Water Resource Authority
WUA	Water User Association

EXECUTIVE SUMMARY

Introduction

This Summary Project Report (SPR) presents the findings of the Environmental and Social Impact Assessment (ESIA) for the proposed Desilting of Katikit Water Pan in Baringo County, located in Katikit Village, Katikit Sub-Location, Bartum Location, Saimo–Soi Ward, Tiaty West Sub-County. The project is being implemented by the Ministry of Agriculture and Livestock Development (MOALD) under the State Department for Agriculture through the Program to Build Resilience for Food and Nutrition Security in the Horn of Africa (BREFONS). The assessment evaluates the potential environmental and social impacts associated with the proposed desilting works and outlines appropriate mitigation and management measures to ensure environmentally sustainable and socially responsible implementation of the project.

The report presents the assessment findings in accordance with the Environmental Management and Coordination act (EMCA) 1999, Environmental (Impact Assessment And Audit) regulations and the EIA and audit guidelines. Water Pans are listed under schedule 2 of EMCA, 1999 (Revised 2015) and in legal notice no. 31 of April 30, 2019, that categorized Water Pans as medium risks projects among projects requiring an ESIA. The EIA assessed the baseline environment condition and predicated the possible negative impacts and mitigation measures and an environmental management plan for the proposed project.

Project Justification

The proposed desilting of the Katikit Community Water Pan is necessary to restore the water storage capacity of the pan and improve water accessibility for the local community, considering that before its construction residents relied mainly on a seasonal river and limited rainfall, which forced them to travel long distances in search of water, a situation that placed significant strain on households, particularly women and children who are traditionally responsible for water collection.

Although the construction of the water pan initially improved water accessibility, its effectiveness has significantly reduced over time due to heavy siltation caused by soil erosion and human and livestock activities around the pan. As a result, the water storage capacity has been greatly diminished, and the quality of water has deteriorated. Despite these challenges, the water pan remains the closest and most reliable water source for the community, making its rehabilitation essential.

The desilting and restoration of the Katikit Water Pan under the Building Resilience for Food and Nutrition Security in the Horn of Africa (BREFONS) Programme will help restore the pan's storage capacity and improve water availability for domestic use, livestock watering, and small-scale irrigation activities. The project is also expected to enhance food security, support livestock productivity, reduce the burden of water collection, and strengthen the community's resilience to recurrent droughts and climate variability, which are common in the semi-arid areas of Tiaty West.

ESIA Methodology

Desk study and field investigations were conducted. The process included: collection of baseline data to describe the status of the project site before project implementation commences; data analysis and evaluation; public participation to the neighbouring communities and person that are likely to be affected by the proposed project; and preparation of an ESIA Comprehensive project report encompassing the details specified in the Environmental Impact Assessment/Audit Regulations (2003) revised in 2015 and its subsequent amendments in 2019 vide legal notice No. 30 and 31.

Policy, Legal and Regulatory Framework

The proposed rehabilitation of the Katikit Water Pan is anchored within Kenya's national environmental and development policy framework and complies with applicable legal and institutional requirements. The project is governed by the Environmental Management and Co-ordination Act (EMCA), 1999 (revised 2015), which regulates ESIA processes in Kenya. In accordance with the Second Schedule of EMCA (as amended by Legal Notice No. 31 of April 2019), the project is classified as a *Low-Risk Projects*, thus requiring the preparation of a Summary Project Report.

The proposed rehabilitation of the Katikit Water Pan is aligned with Kenya's national environmental and development policy framework and complies with the relevant legal and institutional requirements governing environmental management. The project is guided by the Environmental Management and Co-ordination Act (EMCA), 1999 (revised 2015), which regulates Environmental and Social Impact Assessment (ESIA) processes in Kenya. In accordance with the Second Schedule of EMCA (as amended by Legal Notice No. 31 of April 2019), the project falls under medium-risk activities requiring the preparation of a Comprehensive Project Report.

The project also aligns with the African Development Bank (AfDB) Integrated Safeguards System (ISS), which provides the environmental and social safeguard framework for AfDB-supported projects, ensuring that potential environmental and social risks are adequately assessed and managed. In addition, the project is consistent with relevant national policies and legislation, including the Water Act 2016, Water Resources Management Rules 2007,

Occupational Safety and Health Act 2007, Public Health Act, and the Physical and Land Use Planning Act 2019. Institutional oversight by the National Environment Management Authority (NEMA), the Water Resources Authority (WRA), and the Baringo County Government, together with the participation of the local Katikit Water Users Association, will ensure regulatory compliance, effective stakeholder engagement, and the long-term sustainability of the project.

Public Consultation and Participation

Consultation and public participation have been undertaken to gather environmental data, understand likely impacts, determine community and individual preferences, select project alternatives and design viable and sustainable impact mitigation measures. More so the study also collected views from the vulnerable groups within the project location, including women and youth.

The consultant conducted key informant interviews with various stakeholders from the both the County and National Government agencies as well as from the respective communities. Public consultations with local community was held in Katikit Village on 23rd February, 2026. A total of 31 community members (21 Female, 10 Male and 13 Youth) attended the ESIA public meeting. A total of 15 questionnaires were administered and completed during the public meetings. Members of the public were consulted through public participation meeting in order to gather their views on various aspects as well as creating awareness on the proposed project. The members in attendance were mainly Katikit Water Pan Community Members surrounding the Proposed Water Pan in Katikit Sub Location comprising elders, women, youth and the local administration.

Project Impacts and Mitigation Measures

The proposed **desilting of the Katikit Water Pan** is a key intervention aimed at mitigating the impacts of drought by improving water availability for both domestic use and livestock. By restoring the storage capacity of the water pan, the project will enhance water security for the surrounding communities and pastoral livelihoods, particularly during prolonged dry periods when alternative water sources are scarce.

The project is expected to generate significant socio-economic benefits by ensuring a more reliable and sustainable water source. Increased water availability will support livestock productivity and small-scale livelihood activities, thereby strengthening household incomes and food security. In addition, easier access to water will reduce the time and physical burden associated with water collection, particularly for women and youth, enabling them to engage in other productive and social activities. Overall, the project will contribute to improved community resilience to climate variability and recurring drought conditions.

To ensure that these benefits are realized sustainably, the project incorporates a comprehensive framework for mitigating potential environmental and social impacts. During the construction phase, mitigation measures such as controlled site clearance, dust suppression, proper waste management, and advance community notification will be implemented to minimize disturbances such as soil erosion, noise, and temporary disruption of water access.

For the operational phase, the project design includes the installation of silt traps, fencing of the water pan, and the implementation of catchment management practices to reduce siltation and protect water quality. Additionally, a Dam Safety and Crisis Action Plan will be developed to manage potential safety risks associated with the water pan structure. Social safeguards will also be integrated, including measures to prevent Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA), promotion of local employment opportunities, and community sensitization on child protection and responsible resource use.

Through this balanced approach of maximizing socio-economic benefits while proactively addressing potential environmental and social risks, the Katikit Water Pan project is expected to provide a sustainable and resilient water resource that will significantly improve the well-being and adaptive capacity of the Katikit community in the face of recurrent drought.

Environmental and Social Management Plan

The cost of implementing the Environmental and Social Management Plan (ESMP) will be **Ksh 2,185,000.00.** Implementation of the pre-construction and construction Phase of the ESMP will cost **Ksh. 1,280,000.00** and should be included as part of construction cost and loaded into the contract. For the annual operations a cost estimate of **Ksh. 1,675,000.00** should be set aside for monitoring and trainings, this should be spearheaded by the **Katikit Community Group** and the **Proponent** and an estimated cost of **Ksh. 230,000.00** for decommissioning phase is projected.

Conclusion and Recommendation

There was upmost acceptability and goodwill from the community living in the project area for the proposed project. Some of the positive impacts identified by the community included; access to clean water for domestic and irrigation purposes, Employment, increased development in the area, capacity building and awareness campaigns benefits, improved skills from local workers, Increased local incomes and Economic growth. Their key concerns were; opportunity for employment for local labourers, water borne diseases, accidents, Water Pan safety and associated social immorality. Mitigation measures have been proposed for every negative impact raised in construction, operation and

decommissioning under the environmental and social management plan (ESMP) for consideration in this various stage of the proposed project. The following are some of the recommendations for the proposed project.

a) The mitigation measures proposed should be followed by the proponent as it is highlighted in this summary project report.
b) The design, construction and operation should be carried out in accordance to the specific report for the proposed project.
c) A complete audit be undertaken by the proponent and submitted to NEMA every year after commissioning of the project to ensure that all the proposed mitigation measures have been complied with.
d) Local Employment: Prioritize hiring local community members for unskilled and semi-skilled jobs. Skilled workers can be sourced externally.
e) Worker Safety:
    - Provide appropriate Personal Protective Equipment (PPE) such as gloves and gumboots.
    - Insure all workers through the Work Injury Benefits Act (WIBA).
f) Site Safety: Install proper signage, control site access, and raise community awareness to prevent accidents involving children and livestock.
g) Environmental Restoration: Minimize vegetation clearance and rehabilitate disturbed areas after construction.

In conclusion, the positive impacts outweigh the negative impacts. The listed negative impacts can be corrected with the proposed mitigation measures and it is our recommendation that the proposed project be allowed to proceed.

1. INTRODUCTION

1.1 BREFONS Project Background

The BREFONS project, part of the Program to Build Resilience for Food and Nutrition Security in the Horn of Africa, represents a crucial initiative in Kenya's ongoing efforts to address food security challenges exacerbated by climate change. BREFONS, funded through a loan facility from the African Development Bank (AfDB), builds upon the successful groundwork laid by previous projects like the Drought Resilience and Sustainable Livelihoods Programme (DRSLP).

BREFONS marks the second phase of DRSLP in Kenya, aiming to enhance resilience and sustainable livelihoods further. Drawing on lessons learned from DRSLP-1, as well as projects like the Small-scale Irrigation and Value Addition Project (SIVAP) and Rural Livelihoods Adaptation to Climate Change (RLACC), BREFONS is uniquely positioned to leverage experience gained across different regions.

The overarching goal of BREFONS is to strengthen resilience against food and nutrition insecurity, climate change, and promote peace and security in the Horn of Africa. Key objectives include enhancing sustainable productivity and agropastoral production systems, increasing incomes from agropastoral value chains, and building adaptive capacity to climate change risks.

At the national level, the State Department for Crop Development under the Ministry of Agriculture & Livestock Development (MoALD) serves as the executing agency. Policy and implementation oversight are provided by a project steering committee chaired by the Principal Secretary of the State Department for Crop Development (PS-SDCD).

County Coordination Units (CCUs) oversee day-to-day project activities in the seven targeted counties: **Baringo,** Isiolo, Marsabit, Samburu, Turkana, West Pokot, and Garissa. These units play a critical role in ensuring effective implementation and coordination at the grassroots level.

The project comprises four major components, each designed to address specific challenges and deliver tangible outcomes:

1. **Strengthening Pastoral and Production Systems:** This component focuses on enhancing livestock and water infrastructure, including constructing/ rehabilitating **water pans,** livestock saleyards, boreholes, livestock markets, and irrigation schemes.

2. **Supporting Agribusiness Development:** Activities under this component aim to empower agro-pastoral communities through capacity building in livestock insurance, technology adoption, and crop campaigns.
3. **Enhancing Adaptive Capacity to Climate Change:** Measures include disseminating climate information, strengthening partnerships for climate risk insurance, and capacity building for early warning systems.
4. **Project Management and Coordination:** This component emphasizes capacity building at institutional levels to ensure efficient project execution and mainstreaming of cross-cutting issues like environmental safeguards and gender equality.
5. **Project Impact and Sustainability:** The expected outcomes of BREFONS are diverse, ranging from increased agricultural productivity and job creation to improved climate resilience among farmers and pastoralists. By targeting nearly 183,000 households across seven counties, the project seeks to create lasting impacts on food security and livelihoods in Kenya's vulnerable regions.

These objectives align with Kenya's commitment as a signatory to the United Nations Framework Convention on Climate Change (UNFCCC). Embracing climate-smart agriculture becomes instrumental in achieving national goals of food security, productivity, income generation, and reducing greenhouse gas emissions.

In complying with the Kenyan development regulations, the proponent commissioned the Experts to prepare this Environmental and Social Impact Assessment (ESIA) Summary Report for the ***Proposed Desilting Katikit Water Pan in Baringo County, In Katikit Village, Katikit Sub Location, Bartum Location, Ribkwo Ward, Tiaty West; Baringo County.*** The report provides the project background as well as an assessment of the associated beneficial and adverse environmental and social impacts of the development.

1.2 Background of the Katikit Water Water Pan Sub Project

The Proposed Desilting of Katikit Community Water Pan aims to enhance climate resilience, improve food and nutrition security, and strengthen sustainable livelihoods in arid and semi-arid regions.

The Katikit area lies within a semi-arid environment characterized by low and erratic rainfall, frequent droughts, and limited surface water sources. As a result, communities in the area have historically faced significant challenges in accessing reliable and safe water for domestic use, livestock watering, and small-scale agricultural activities. Prior to the construction of the Katikit Water Pan in 2010, the local community largely

depended on a seasonal river and limited rainfall, which forced residents to travel long distances in search of water, particularly during prolonged dry periods.

To address the persistent water shortages, the community voluntarily donated land for the construction of the Katikit Water Pan, which was established as a communal water harvesting structure intended to collect and store surface runoff during the rainy seasons. The water pan has since served as an important source of water for both the community and their livestock. However, over time the water pan has experienced significant siltation caused by soil erosion, runoff sediment deposition, and human and livestock activities within and around the pan. This has greatly reduced the pan's storage capacity and affected the quality of the stored water.

Despite these challenges, the water pan continues to be heavily relied upon as the nearest available water source for the community. The increasing sediment accumulation has therefore created an urgent need for desilting and rehabilitation of the water pan in order to restore its storage capacity and improve water accessibility.

The proposed desilting works will involve the removal of accumulated sediments, improvement of the embankments, and enhancement of the water harvesting capacity of the pan. Once rehabilitated, the water pan is expected to provide a more reliable water source for domestic use, livestock, and limited irrigation activities, thereby contributing to improved livelihoods, enhanced food security, and strengthened resilience to climate variability for the communities of Katikit and the surrounding areas.

1.3 Justification for the Environmental Summary Project Report

The preparation of an **Environmental and Social Impact Assessment (ESIA) Summary Project Report (SPR)** for the proposed **Katikit Water Pan Sub-Project** is necessary to ensure that the project is implemented in an environmentally sustainable and socially responsible manner. The proposed project involves the **desilting of an existing water pan**, activities that may generate both positive and negative environmental and social impacts during the construction and operational phases. Undertaking the ESIA study is therefore essential to identify potential environmental and social risks and impacts, and to propose appropriate mitigation and management measures to minimize adverse effects while enhancing the anticipated benefits of the project.

The requirement to undertake an environmental assessment is also guided by the **Government of Kenya's environmental policy and legal framework**, which requires that projects likely to have environmental and social implications undergo environmental assessment during the planning stages. This ensures that environmental considerations are integrated into the **design, construction, operation, and eventual decommissioning**

of the project. In this regard, the preparation of this Summary Project Report complies with the provisions of the **Environmental Management and Coordination Act (EMCA), No. 8 of 1999 as amended in 2019**, and its associated regulations. Specifically, projects falling under the **Second Schedule of EMCA**, including water resource development projects such as dams and water pans, require environmental assessment and approval by the **National Environment Management Authority (NEMA)** prior to implementation.

In addition, the preparation of this ESIA report is aligned with the **African Development Bank (AfDB) Integrated Safeguards System (ISS)**, which requires that all projects financed or supported by the Bank undergo appropriate environmental and social due diligence. In particular, the study has been undertaken in line with the relevant **AfDB Operational Safeguards**, including **Operational Safeguard 1 (Environmental and Social Assessment)**, **Operational Safeguard 2 (Involuntary Resettlement, Land Acquisition, Population Displacement and Compensation)**, **Operational Safeguard 3 (Biodiversity, Renewable Resources and Ecosystem Services)**, **Operational Safeguard 4 (Pollution Prevention and Control, Hazardous Materials and Resource Efficiency)**, and **Operational Safeguard 5 (Labour Conditions, Health and Safety)** where applicable to the sub-project. These safeguards aim to ensure that development interventions supported by the AfDB promote **environmental sustainability, social inclusion, and improved livelihoods for beneficiary communities**.

Furthermore, the preparation of this Summary Project Report was informed by the **environmental and social screening process** undertaken for the sub-project and the guidance provided by the **County Director of Environment (CDE)** and the ESIA consulting team. The screening exercise identified the project as one requiring a **Summary Project Report** in order to adequately assess the potential environmental and social impacts and recommend appropriate mitigation measures.

The ESIA process also facilitates **public participation and stakeholder engagement**, which are key requirements under both the **Kenyan environmental regulatory framework and the AfDB safeguards system**. Through this process, local communities, project affected persons, and other stakeholders are given an opportunity to provide their views, concerns, and recommendations regarding the proposed project. Their input helps to inform project planning and ensures that the project is implemented in a manner that is socially acceptable, environmentally responsible, and sustainable.

Overall, the preparation of this Environmental and Social Impact Assessment Summary Project Report is justified as a critical step toward ensuring **regulatory compliance, environmental protection, stakeholder inclusion, and alignment with AfDB**

environmental and social safeguard requirements, while supporting the long-term sustainability and resilience of the Katikit Water Pan Sub-Project.

1.4 ESIA SPR Scope, Objective and Methodology of the ESIA

1.4.1 Objectives of the ESIA

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

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

i. Describe the proposed project including the technology to be used.
ii. Collect, collate and present baseline information (Physical environment; Biological environment and Socioeconomic and cultural environment)
iii. Identify impacts, both positive and negative, the direct, indirect, cumulative, irreversible, short- term and long-term effects anticipated; and identify mitigation measures.
iv. Carry out stakeholders' participation and consultations to collect the concerns, expectations, and opinions of affected, concerned and interested stakeholders.
v. Prepare a comprehensive Environmental Management Plan (EMP)
vi. To present results of the ESIA in such a way that they can guide in informed decision-making.

1.5 Data Collection Procedures and Methodology

The Consultant first undertook environmental screening and scoping to avoid unnecessary data. The data collection was carried out through questionnaires (See sample, ***Appendix 3***), observations and photography, site visits, desktop environmental studies and scientific tests where necessary in the manner and criteria specified in Part V (section 31-41) of the Environmental (Impact Assessment and Audit) Regulations, 2003.

The report applied an inter alia approach incorporating environmental, social, cultural, economic, safety and health impacts of the project. The integrated nature of the impacts review ensured all possible negative impacts were identified and adequately mitigated.

Given that nature and magnitude of the ***Proposed Desilting of Katikit Water Pan Sub Project,*** a Comprehensive Environmental Impact Assessment Project Report, was opted for to ensure comprehensiveness and completeness of the assessment. The methodology followed during the assessment was as follows:

1.5.1 Environmental Screening

According to the 2nd schedule of Environmental Management and Coordination Act (EMCA Cap 387) – amendment via legal notice no. 31 – April 2019, the ***Proposed Desilting of Katikit Water Pan Sub Project*** lies within Category (2) ***Low Risk Projects.*** The screening process revealed that anticipated environmental issues would be minimal. Therefore, the proponent – **National Government of Kenya; Ministry of Agriculture & Livestock Development (MoAL&D) - Program to Build Resilience for Food and Nutrition Security in the Horn of Africa (BREFONS)** in collaboration with the County Government of Garissa - through an Environmental Consultants undertook an Environmental Impact Assessment to submit a **Summary Project Report (SPR)** pursuant to Regulation 7 (1) of the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019.

Further, the **African Development Bank (AfDB) environmental and social risk classification** was also considered in relation to the proposed **Desilting of the Katikit Water Pan Sub-Project**. Under the **AfDB Integrated Safeguards System (ISS)**, projects are classified into environmental and social risk categories (Category 1, Category 2, Category 3, and Category 4) based on the nature, scale, and potential magnitude of their environmental and social impacts.

Based on the environmental and social screening undertaken for the proposed sub-project, the **Katikit Water Pan desilting project is considered a low-risk intervention** involving rehabilitation of an existing water infrastructure with limited footprint and localized impacts. In line with the AfDB ISS screening criteria, the project would therefore fall under **Category 3**, which typically includes projects expected to have **minimal or negligible adverse environmental and social risks and impacts**.

1.5.2 Desktop Study

Desktop study included documents review on the nature of the proposed activities, project documents including designs, policy and legislative framework as well as the environmental setting of the area among others. Key documents reviewed included the following: Kenya policies, strategies and guidelines; National and County laws and regulations; applicable Multilateral Environmental Agreements (MEAs) and World Bank social and environmental safeguard policies.

1.5.3 Physical Inspection of the Site and Surrounding

Physical inspection of the proposed site which included field investigation at site and surrounding areas was done between **23rd February, 2026 and 28th February, 2026.** The field investigations were meant for physical inspections of the site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts from the project.

1.5.4 Public Participation

Public participation was undertaken through a combination of public consultation meetings, administration of questionnaires, and key stakeholder and informant interviews. These approaches were applied to ensure that the views, concerns, and suggestions of the affected communities and other interested parties were adequately captured during the Environmental and Social Impact Assessment (ESIA) process. Questionnaires were administered to project stakeholders, neighbouring households around the proposed Katikit Water Pan site, and other surrounding enterprises *(Appendix 3).* The information collected from these engagements was analyzed and incorporated into the ESIA Summary Project Report.

Considering the nature of the proposed project and its potential environmental and social impacts, a **major public consultation meeting** was conducted with members of the Katikit Water Pan community and neighbouring residents. The meeting was held on **23rd February 2026 at the proposed Katikit Water Pan site in Katikit Village**, beginning at **11:40 a.m.** The meeting commenced with a word of prayer led by a community member, after which the **County Project Coordinator (CPC), Mr. Elphas Rutto**, officially called the meeting to order. A total of **31 community members attended the meeting, comprising 9 females, 21 males, and 13 youth**, demonstrating strong community interest and participation in the proposed project. A community member also served as a **translator throughout the meeting** to ensure effective communication and participation of all attendees. Further, key informant interviews/consultations were conducted to incorporate views from key stakeholders as described in chapter 6.

1.6 Data Analysis, Documentation and Report Structure

The Environmental Impacts Assessment report was compiled from the findings in accordance with the EIA guidelines issued by NEMA for Summary Project Report. The Consultant ensured constant briefing of the proponent during the exercise.

The exercise culminated with the production and documentation of this Summary Project report designed to ensure that the proposed development complies with the

Environmental Management and Coordination Act (EMCA, Cap 387). The report structure is organized in 9 chapters as outlined below: -

- **Chapter 1: Introduction:** *Gives Background Information to the Study Describing the Objectives and the Terms of Reference.*
- **Chapter 2: Project Description:** *Description of Project Site.*
- **Chapter 3: Baseline Information:** *Outlines the Baseline Information of the Study Area.*
- **Chapter 4: National Policy, Legal and Institutional Framework:** *Describes the overarching government regulations, laws, policies, and institutions relevant to the project's environmental and social considerations.*
- **Chapter 5: Analysis of Project Alternatives:** *Evaluation of project alternatives (Design, location, materials and technology).*
- **Chapter 6: Public Participation and Stakeholder Consultation:** *Summarizes the outcome of the Stakeholder Engagement and Public Consultations process.*
- **Chapter 7: Anticipated Impacts and Mitigation Measures:** *Assessment of the issues likely to arise as a result of implementation of the proposed project*
- **Chapter 8: Environmental and Social Management & Monitoring Plan (ESM&MP)**
- **Chapter 9: Conclusion and Recommendation:** *Concludes the findings and recaps the main recommendations.*
- **References**
- **Appendices**

2. PROJECT DESCRIPTION

2.1 Overview

This chapter presents a comprehensive description of the proposed project, focusing on the engineering design, selected construction materials, and associated technical specifications. The project design is supported by scaled drawings and plans duly prepared and signed by a qualified engineer. The chapter further outlines the key project activities anticipated during the construction, operation, and decommissioning phases, with due consideration to environmental and social safeguards at each stage. It includes the project layout and design details, a description of proposed activities, and an estimated cost for implementing the project within the proposed area.

2.2 Project Scope

Based on the detailed engineering design and the Bill of Quantities (BoQ), the comprehensive scope of works for the Katikit Water Pan Rehabilitation Project is defined as follows:

1. **Civil and Earthworks**
    - Site clearance, grubbing, and topsoil stripping.
    - Excavation and desilting of the existing reservoir to achieve the designed storage capacity of **21,800 m³**.
    - Construction of the embankment, including foundation preparation, core trenching, and layer-wise compaction of fill material. The embankment will have a maximum depth of **5.5m**.
    - Excavation and shaping of the spillway, complete with a cattle ramp.
    - Construction of a reinforced concrete shallow well and intake tower.

2. **Hydromechanical and Water Abstraction System**
    - Supply and installation of the draw-off piping system, including the intake pipeline.
    - Construction of a draw-off outlet structure to facilitate controlled abstraction for domestic and irrigation use.
    - Installation of seepage control measures, including clay lining.
    - Construction of a water kiosk with tap stands for community water access.
    - Construction of a cattle trough for livestock watering.
    - Laying of distribution pipelines from the dam to the water kiosk and cattle trough as per the BoQ.
    - Provision of all necessary valves, fittings, and air vents to ensure a functional and safe water abstraction system.

3. **Ancillary Structures**
    - **Water Kiosk:** Construction of a masonry structure with a reinforced concrete roof, a PVC storage tank, and water taps.
    - **Cattle Trough:** Construction of a reinforced concrete watering trough with associated stone paving.
    - **Security Fencing:** Erection of a perimeter chain-link fence (**approx. 680 m**) with concrete posts (**150mm x 100mm reinforced concrete**) and steel gates. Fencing details include diagonal bracing at every **30m interval** and mass concrete footings, as per the provided fencing drawing.

4. **Professional Services & Compliance**
    - Water Kiosk: Construction of a masonry structure with a reinforced concrete roof, a PVC storage tank, and water taps.
    - Cattle Trough: Construction of a reinforced concrete watering trough with associated stone paving.
    - Security Fencing: Erection of a perimeter chain-link fence (approx. 680 m) with concrete posts (150mm x 100mm reinforced concrete) and steel gates. Fencing details include diagonal bracing at every 30m interval and mass concrete footings, as per the provided fencing drawing.

Detailed design drawings and specifications are provided in Appendix 11.

2.3 Detailed Project Activities

2.3.1 Pre-Construction Phase Activities

1. **Site Mobilization and Establishment**
    - Clearance of vegetation and topsoil stripping
    - Setting up contractor's camp, offices, and storage facilities
    - Installation of project signboard and safety signage
    - Establishment of erosion control measures

2. **Environmental and Social Safeguards Implementation**
    - Activation of Environmental and Social Management Plan (ESMP)
    - Dust suppression systems setup
    - Establishment of grievance redress mechanism
    - Community sensitization on construction activities

2.3.2 Construction Phase Activities

1. Earthworks and Embankment Construction

- **Reservoir Excavation**: Removal of silt and overburden to achieve a total capacity of 21,800 m³.
- **Embankment Construction:**
  - Foundation preparation and core trench excavation.
  - Layer-by-layer placement of fill material to a maximum depth of 5.5m.
  - Compaction to specified density.
  - Slope formation and trimming.
- **Spillway Construction:**
  - Excavation and shaping of the spillway channel, integrated with a cattle ramp.
- **Silt Trap Construction (Provisional):**
  - Excavation of 20m × 25m × 2m trap
  - Installation of stone pitching for erosion control

2. Hydromechanical Works

- **Intake System Installation:**
  - Construction of the reinforced concrete intake tower and shallow well.
  - Installation of the intake pipeline.

3. Ancillary Structures Construction

- **Water Kiosk:** Foundation works, masonry construction, and installation of PVC storage tank and taps.
- **Cattle Trough:** Construction of reinforced concrete trough with associated stone pitching.
- **Security Infrastructure:**
  - Erection of **680 m** perimeter fencing with **4.5mm galvanized high tensile chain-link** wire.
  - Installation of steel gates (main and pedestrian) with **50mm bush hinges**.
  - Concrete post (**150mmx100mm**) foundations and bracing at corners and every **30m interval**.

2.4 Dam Capacity

The desilting Katikit Water Pan is designed with a total storage capacity of **21,800 cubic meters (m³)** at Full Supply Level (FSL). This capacity was determined through detailed topographic surveying and hydrological analysis. The reservoir will have a maximum water depth of **5.5 meters**. This capacity is designed to meet the projected multi-purpose

water demands of the beneficiary community, supporting domestic use, livestock watering, and small-scale irrigation.

2.5 Material and Equipment

The inputs to implementing the proposed project are human labour, plant and machinery, fuel, solar water pump, concrete, self-regulatory water valves, chain link, steel sections, and paints.

- A. Construction Materials
    - **Earthworks:** Sandy clay (on-site and borrowed as needed), stone for pitching and masonry works.
    - **Concrete:** Cement, sand, aggregate, and reinforcement steel for structural elements (water kiosk, cattle trough, fencing posts). Concrete mix ratios for mass concrete footings are specified as **(1:2:4)** on the fencing drawings.
    - **Steel Sections: 100mmx100mmx4mm RHS poles**, **50mmX25mmX1.5mm RHS frames**, and **25mmX25mmX1.5mm SHS** for gates as per the structural details.
    - **Piping & Fittings:** Galvanized Iron (GI) pipes, valves, jointing materials, and protective sleeves.
    - **Fencing: 4.5mm galvanized high tensile chain-link wire**, **150mmx100mm reinforced concrete posts**, steel gate components, and mass concrete for footings as per fencing drawings.
    - **Finishes:** Cement plaster, paint, and damp-proof materials where specified.
- B. Plant and Equipment: The construction will require, but is not limited to, the following equipment:
    - **Earth Moving:** Excavators, bulldozers, graders, and dump trucks.
    - **Compaction:** Sheepsfoot rollers and smooth drum rollers for embankment compaction.
    - **Concrete Works:** Concrete mixers, vibrators, and bar-bending/cutting tools.
    - **General:** Water bowsers, generators, welding machines, and hand tools.
- C. Operational Equipment
    - Cattle trough with associated fittings, water kiosk components, and the solar-powered pumping system.

All materials will be sourced from certified suppliers and must meet the specifications outlined in the design report and relevant Kenyan standards.

2.6 Project Activities Categories

The activities associated with the proposed project have been categorized under four phases: planning, construction, operation, and closure/decommissioning.

- **Planning Phase Activities:** Community mobilization, tendering services, site handover, and handover of drawings and plans.
- **Construction Phase Activities:** Mobilization, setting out works, site clearance and topsoil stripping, earthworks, excavations, construction of all structures (including fencing with diagonal and corner bracing), drainage works, and final handover.
- **Operation Phase Activities:** Operationalizing the water trough, draw-off system, community water point, and water kiosk.
- **Decommissioning Phase Activities:** Demolition of structures, removal of materials, and site landscaping and re-vegetation.

2.7 Proposed Project Cost

The costs of ***Desilting of Katikit Water Pan*** are estimated at **Kenya Shillings, Twenty-One Million Two Hundred Eighteen Thousand Six Hundred Fifty-Seven Shillings and Forty-Six Cents Only. (KSh. 21,218,657.46)** which includes the cost of preliminaries, excavation of the reservoir, spillway and established of ancillary facilities.

3. BASELINE INTRODUCTION

3.1 Preamble

This section describes a brief of the project location including the map area of the specific site location with land ownership details, possibility of environmentally sensible areas, supportive environmental infrastructures with a validation to land conformity in accordance with the existing land use plan in the area.

3.2 Project Location

The **Proposed Desilting of Katikit Water Pan Project** is located in **Baringo County** within the Rift Valley region of Kenya. Baringo County borders **Turkana County** to the north, **West Pokot County** to the northwest, **Samburu County** to the northeast, **Laikipia County** to the east, **Nakuru County** to the south, and **Kericho County** to the southwest. The county covers an approximate area of **10,976 km²** and experiences predominantly semi-arid climatic conditions in many parts, characterized by low and erratic rainfall. Water pans therefore play a crucial role in harvesting and storing runoff during rainy seasons for use by communities and livestock during dry periods.

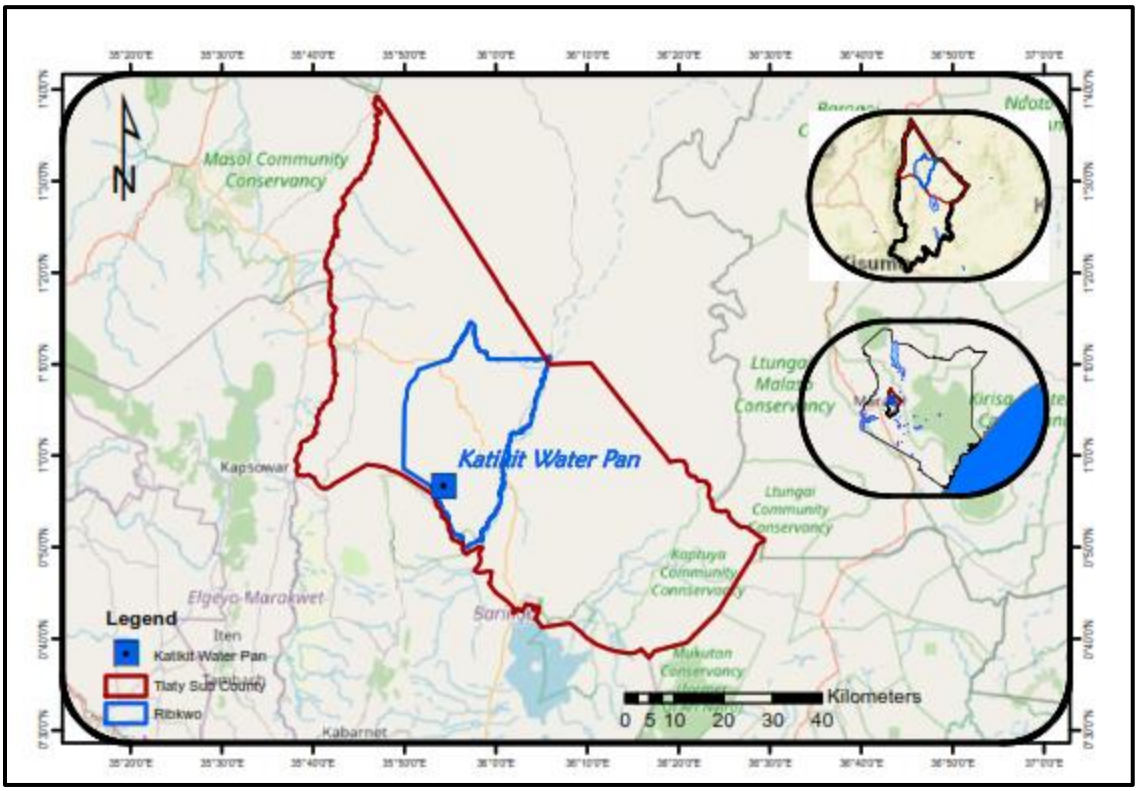

Figure 3:1: Administrative Location

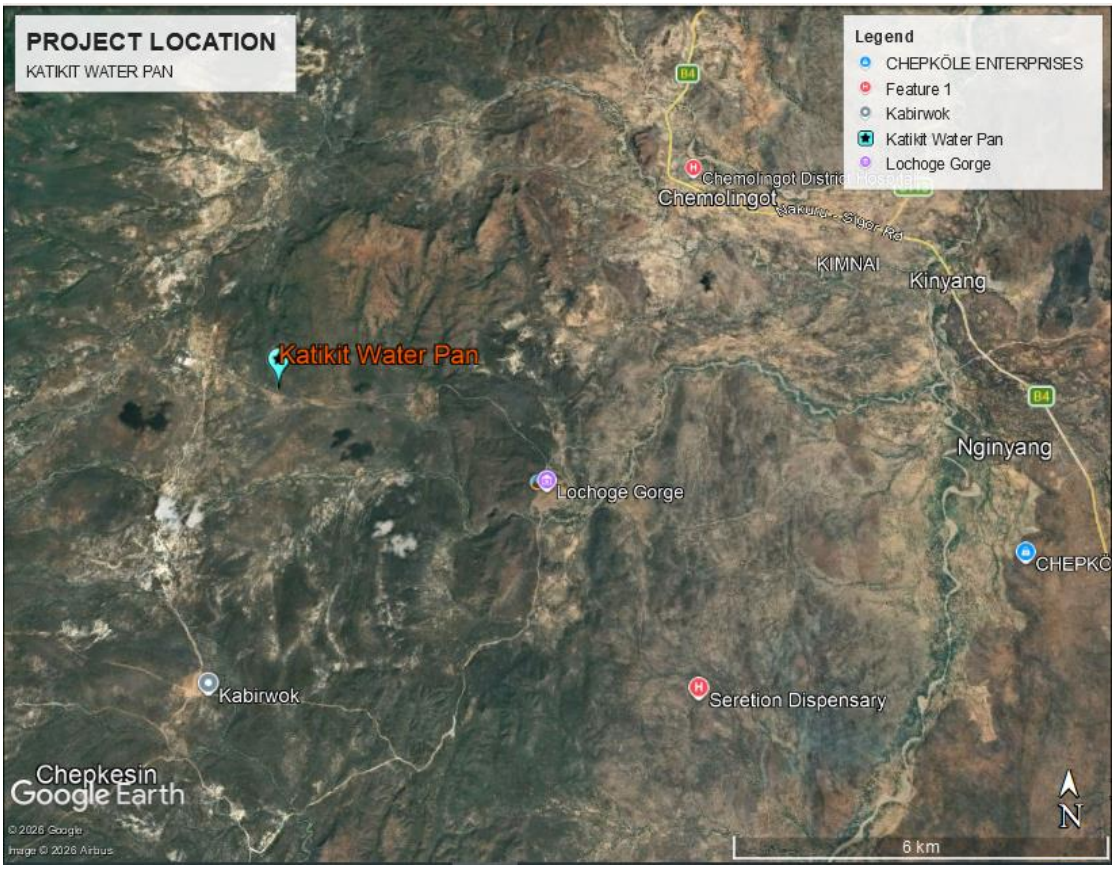

Figure 3:2: Location Map of the project area

The proposed project involves the **desilting of Katikit Water Pan**, which is located in **Katikit Village**, within **Katikit Sub-location**, **Katikit Location**, **Ribkwo Ward**, **Tiaty West Sub-County**, in **Baringo County**. The project site lies at geographical coordinates **Latitude 0.945153° and Longitude 35.904299°**, at an elevation of approximately **1,064 meters above sea level**. The site is accessible through the **Kabarnet–Tiaty road network** and other local access roads serving the surrounding settlements. The desilting works are intended to remove accumulated sediments from the water pan, thereby restoring and increasing its water storage capacity and improving water availability for domestic use, livestock watering, and other community livelihood activities.

3.3 Physiographic and Natural Conditions

3.3.1 Physical & Topographic Features

The project area is characterized by relatively varied topography with elevations ranging between approximately **726 meters and 1,825 meters above sea level** within the broader surrounding landscape. The terrain generally consists of gently undulating plains interspersed with slightly elevated sections and seasonal drainage channels that influence surface runoff patterns. The proposed water pan itself is situated at an elevation of

approximately **1,064 meters above sea level**, within a natural catchment area that facilitates the collection and storage of runoff during rainfall events. This topographic setting is favorable for water harvesting as it allows surface water from the surrounding higher grounds to drain towards the pan location, enhancing its capacity to capture and retain water for community and livestock use.

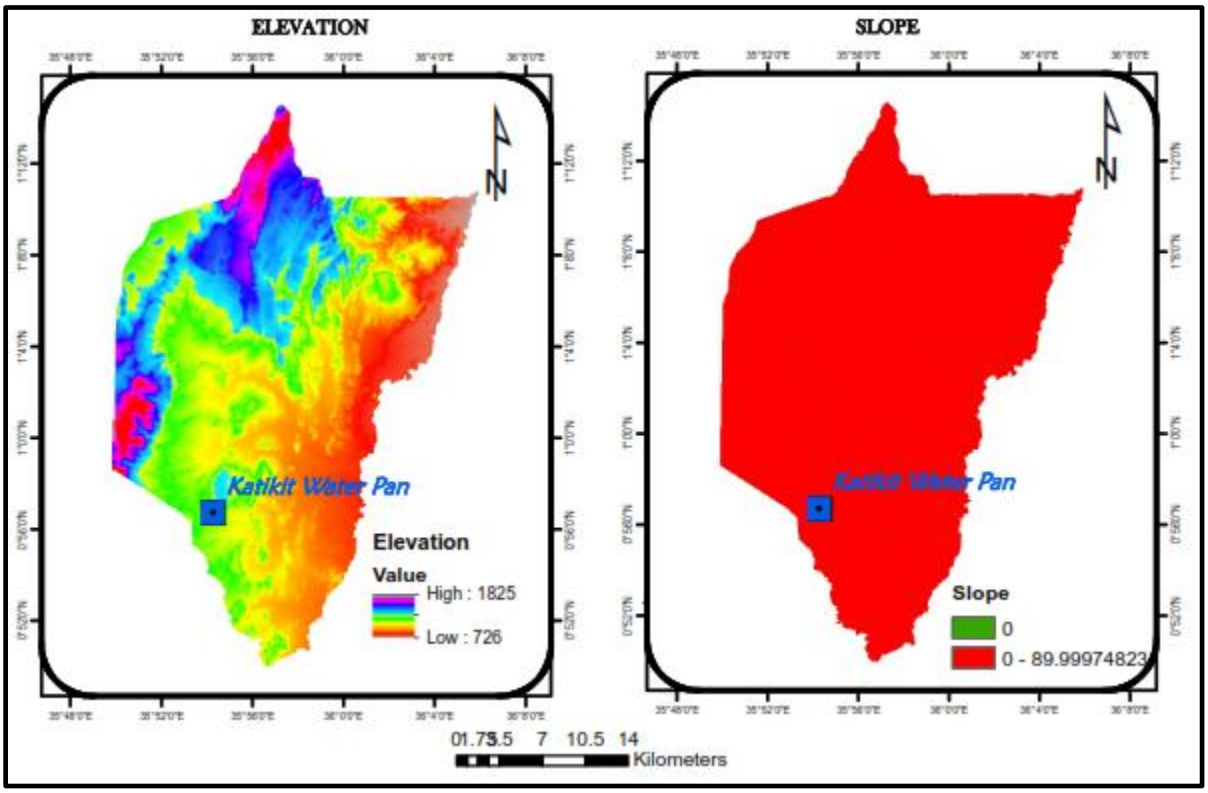

Figure 3:3:Topography of the project area

3.3.2 Geology and Soils

The Proposed Katikit Water Pan Project, lies within an area whose geology is typical of the semi-arid rangelands of northern Baringo. The geological formations in the area mainly consist of weathered sedimentary materials and superficial deposits that influence the development of the local soils.

The dominant soil type at the proposed water pan site is **very clayey soil**, characterized by a high clay content and fine texture. The **clay distribution is largely monotonic (uniform)** across the site, indicating that the soil profile is predominantly composed of clay with minimal variation in texture within the immediate project area. These soils generally exhibit **low permeability and high-water retention capacity**, which makes them suitable for water harvesting structures such as water pans since seepage losses are naturally minimized.

However, the soils may become **sticky and difficult to handle during wet conditions** and may **develop cracks during prolonged dry periods** due to shrink–swell characteristics typical of clayey soils. Despite these characteristics, the presence of very clayey soils at the proposed site provides a **favorable natural sealing condition**, enhancing the ability of the Katikit Water Pan to retain stored surface runoff for community and livestock use.

Figure 3:4: Soils in the project area

Environmentally, the clayey soils are susceptible to surface erosion when exposed, especially on sloping ground during heavy rainfall. Therefore, temporary erosion control measures such as controlled excavation, timely backfilling, surface stabilization, and proper drainage will be necessary during the construction phase.

Overall, the geological setting and kaolinitic soil characteristics of the project area are favorable for the proposed desilting and rehabilitation works. With appropriate engineering design and environmental management measures, potential soil-related risks can be effectively mitigated, ensuring structural stability and environmental sustainability of the project.

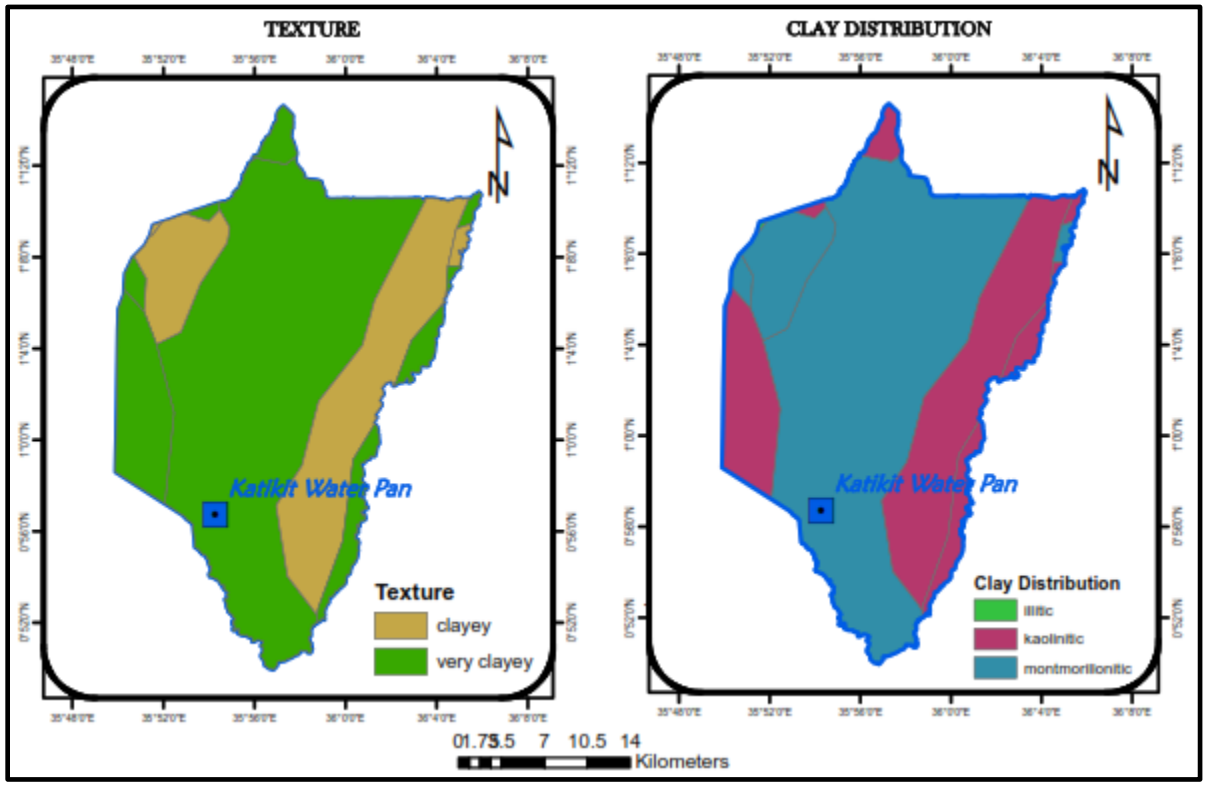

Figure 3:5: Soil Texture and Clay Distribution

3.3.3 Biodiversity

The area falls within the semi-arid ecological zone characterized by sparse vegetation adapted to dry climatic conditions. The natural vegetation in the project area mainly consists of scattered shrubs, drought-resistant grasses, and acacia species typical of the rangeland ecosystems found in Tiaty West. Common plant species include Acacia trees, shrubs, and seasonal grasses that provide grazing resources for livestock such as cattle, goats, sheep, and camels which are widely kept by the local pastoral communities.

Wildlife in the area is generally limited and mainly consists of small mammals, reptiles, birds, and insects that are adapted to semi-arid environments. Occasional wildlife species such as hares, small antelopes, and various bird species may also be present within the wider landscape. The project site itself is largely utilized as grazing land, and no protected forests, critical habitats, or endangered species were observed within the immediate project area during the assessment.

Overall, the biodiversity of the area is typical of dryland rangeland ecosystems, and the proposed water pan is expected to have a positive ecological contribution by providing a seasonal water source that can support vegetation growth, livestock, and local wildlife during dry periods.

Flora (Plant Life)

The vegetation within the project area is predominantly savanna grassland and scrubland, with plant species exhibiting adaptations to drought conditions. The floral composition includes:

Grass Species: Various perennial and annual grasses suitable for grazing, such as Cynodon dactylon (Star grass), Chloris gayana (Rhodes grass), and Themeda triandra (Red oat grass) where soil conditions permit.

Shrubs and Trees: Scattered drought-resistant trees and shrubs, including Acacia species (e.g., Acacia tortilis, Acacia mellifera), Balanites aegyptiaca (Desert date), and various Commiphora species. These provide browse for livestock and wildlife, as well as shade and habitat.

Riparian/Depression Vegetation: Around the existing water pan and along drainage lines, a slightly denser assemblage of vegetation may be present, including species tolerant of seasonal waterlogging.

The project activities will require the clearance of vegetation within the defined footprint of the reservoir, embankment, and ancillary structures. This clearance will be minimized to the extent possible, with a focus on retaining mature trees and vegetation outside the immediate works area. The stripped topsoil, containing native seed banks, will be stockpiled for use in post-construction revegetation and landscaping.

Fauna (Animal Life)

The fauna in the area is typical of semi-arid ecosystems and includes both domestic and wild species.

Domestic Animals: The primary fauna in the area are livestock, including cattle, goats, sheep, camels, and donkeys. The existing water pan serves as a critical watering point for these animals, and the project design specifically includes a cattle trough to manage their access to water in a controlled manner, reducing conflict and protecting the embankment.

Wildlife: Native wildlife species present may include: Mammals: Small to medium-sized mammals such as hares (Lepus capensis), various rodent species, mongooses, and occasionally larger mammals like warthogs (Phacochoerus africanus) or dik-diks (Madoqua spp.) that venture from nearby conservation areas or wild lands.

Birds: The avian population is diverse, including granivorous birds (quelea, doves), raptors (eagles, hawks, kestrels), and water-dependent species. The water pan itself

attracts both resident and migratory bird species, making it a local hotspot for avian biodiversity. Species may include herons, egrets, sandpipers, and various passerines.

Reptiles and Amphibians: Lizards, geckos, snakes, and frogs (during wet periods) are common.

Figure 3:6: Area diversity of Katikik Area

Aquatic Biodiversity

The existing water pan, being a man-made and seasonally fluctuating water body, supports a limited aquatic community. This includes phytoplankton, zooplankton, and aquatic insects, which in turn provide a food source for birds and bats. The desilting and rehabilitation will temporarily disrupt this habitat. However, the rapid refilling of the pan post-construction is expected to lead to a swift recolonization of aquatic life from refugia within the catchment.

Habitat and Ecological Function

The project site forms part of a larger landscape that provides forage, water, and passage routes for both livestock and wildlife. The Katikit Water Pan, in particular, provides a critical ecological function as a dry-season water source. The proposed rehabilitation aims to enhance this function by securing a more reliable and higher-quality water supply, thereby supporting both the human population and the biodiversity that depends on these resources.

Sensitive Habitats and Key Species

A preliminary screening indicates the absence of formally protected areas, critical habitats, or confirmed presence of globally threatened species (as per IUCN Red List) within the immediate project footprint. However, the ecological role of the pan as a dry-season refuge for birds and mammals is recognized. The project ESMP will include

measures to minimize disturbance to wildlife during construction, control erosion to protect downstream habitats, and prevent pollution of the water body.

Therefore, the project area supports a modest level of biodiversity characteristic of semi-arid lands, its key ecological value lies in its function as a water source. The project is designed to reinforce this function while minimizing direct impacts through careful siting, controlled access for livestock, and the implementation of standard environmental protection measures during construction.

3.3.4 Climatic Conditions

The Proposed Katikit Water Pan Project, lies within a semi-arid climatic zone typical of the northern parts of Baringo County. The area experiences high temperatures, low and erratic rainfall, and high evaporation rates, which significantly influence water availability and livelihood activities.

Rainfall in the area is generally low and unreliable, with an annual average ranging between 300 mm and 600 mm, mostly occurring during the long rains (March to May) and the short rains (October to December). However, rainfall distribution is often uneven and unpredictable, which frequently results in prolonged dry spells and periodic droughts.

Temperatures in the area are typically high throughout the year, with average temperatures ranging between 24°C and 35°C, sometimes exceeding these levels during particularly hot periods. The combination of high temperatures and strong solar radiation contributes to high evaporation rates, which reduces surface water availability and affects pasture conditions.

Due to these climatic conditions, communities in the area largely depend on rain-fed water harvesting systems, seasonal rivers, and water pans to meet domestic and livestock water needs. The construction of the proposed Katikit Water Pan is therefore important in enhancing water storage during rainy seasons and improving water availability during dry periods.

3.4 Socio-economic Environment

3.4.1 Population

According to the 2019 Kenya Population and Housing Census (KPHC) conducted by the Kenya National Bureau of Statistics (KNBS), Baringo County had a total population of approximately 666,763 people, comprising 336,322 males and 330,428 females, with a population density of about 50 persons per square kilometre. The population is distributed across several sub-counties including Tiaty West Sub-County, where the proposed project area is located.

The Proposed Katikit Water Pan Project is situated in Katikit Village, Katikit Sub-Location, Katikit Location, Ribkwo Ward in Tiaty West Sub-County. The area is predominantly inhabited by pastoral and agro-pastoral communities, with settlements generally scattered due to the pastoral nature of livelihoods and the need for access to grazing land and water sources.

Population growth in the area, coupled with increasing pressure on water resources, pasture, and other natural resources, has increased the demand for sustainable water supply systems. The development of the Katikit Water Pan is therefore expected to support the local population by improving access to water for domestic use, livestock, and small-scale livelihood activities, thereby enhancing community resilience in this semi-arid environment.

3.5 Infrastructure and Access

The Proposed Katikit Water Pan Project is situated within a rural setting where infrastructure development is generally limited. The existing infrastructure mainly supports pastoral and small-scale agro-pastoral livelihoods. Access to basic services such as roads, water supply, electricity, and communication is still developing, with communities relying on a combination of government facilities and traditional systems.

3.5.1 Road Network and Accessibility

The project area is mainly accessed through earth and gravel roads that connect Katikit Village to nearby trading centres and administrative centres within Ribkwo Ward and Tiaty West Sub-County. These roads are generally passable during dry seasons but may become difficult to navigate during the rainy season due to poor drainage and surface conditions. Despite these challenges, the existing road network provides reasonable access for community members, project personnel, and transportation of construction materials to the proposed water pan site.

3.5.2 Water Infrastructure

Water infrastructure within the project area is limited. Communities largely depend on seasonal rivers, traditional water pans, boreholes, and shallow wells for their domestic and livestock water needs. During prolonged dry periods, many of these sources dry up, forcing residents to travel long distances in search of water. The proposed Katikit Water Pan is therefore expected to improve water storage and accessibility within the area.

3.5.3 Energy and Communication

Access to modern energy sources in the project area is limited. Most households rely on firewood and charcoal for cooking and other domestic uses. Electricity coverage from the national grid is minimal, with only a few institutions or trading centres having access

to electricity where available. However, mobile network coverage is present in most parts of the area, enabling residents to access communication services through mobile phones.

3.5.4 Social Infrastructure

The area has basic social infrastructure including primary schools, health facilities, religious institutions, and small trading centres that serve the local population. These facilities provide essential services such as education, healthcare, and social interaction for the community. However, due to the scattered nature of settlements, some residents travel relatively long distances to access these services.

3.5.5 Water Supply

Water supply in the area is mainly dependent on rainwater harvesting, seasonal water pans, boreholes, and shallow wells. Water scarcity is common during dry seasons due to the limited number of reliable water sources and the increasing demand from both people and livestock. The construction of the proposed water pan will help enhance water availability and reduce the distance traveled by community members in search of water.

3.5.6 Electricity Supply

Electricity coverage within Katikit Village and the surrounding areas is limited. A few public institutions and trading centres may have access to grid electricity or solar power systems, but most households rely on solar lamps, dry cells, or other small-scale renewable energy sources for lighting and charging mobile devices.

3.5.7 Sanitation and Waste Management

Sanitation facilities in the area mainly consist of pit latrines at household and institutional levels. Waste management practices are generally informal, with most solid waste being disposed of through burning, burial, or open dumping. Due to the low population density and rural nature of the area, large-scale waste management systems are not present.

3.5.8 Communication and Social Infrastructure

Communication within the area is primarily facilitated through mobile phone networks, which are widely used for personal communication, financial transactions, and access to information. Social interaction within the community also occurs through community meetings, markets, schools, religious gatherings, and local administrative forums.

3.5.9 Overall Access

Overall, the project area has moderate accessibility through existing rural road networks and basic infrastructure systems. Although some services remain limited due to the

remote and semi-arid nature of the region, the presence of roads, mobile communication, and social institutions provides a functional environment for community activities and development initiatives such as the proposed Katikit Water Pan Project.

4. NATIONAL POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 General Overview

This chapter looks at the policy, legal and institutional framework that governs environmental and social management of the proposed Katikit Water Pan project.

4.2 Policy Framework

4.2.1 Kenya Constitution 2010

Article 42 states "every person has the right to a clean and healthy environment, which includes the right a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69, and b) to have obligations relating to the environment fulfilled under Article 70". Chapter 5 provides the main pillars on which the 77 environmental statutes are hinged and covers "Land and Environment" and includes the aforementioned articles 69 and 70. The Chapter seeks to eliminate processes & activities likely to endanger the environment.

In this ESIA SPR and the ESMMP the proponent has taken prior measures in ensuring the project contributes to a clean and healthy environment for the community in Ribkwo Ward. Through the ESMMP proponent has captured all the concerns raised through the public participation and consultations for redress.

4.2.2 Vision 2030

Vision 2030 is being implemented through a series of five-year Medium-Term Plans (MTP). The MTP identifies the key policy actions and programmes for each Ministry Department and Agency (MDA). The overall goal of the Environment, Water and Sanitation Sector as outlined in the Vision is to attain a "clean, secure and sustainable environment" by 2030. Kenya vison 2030 includes equity as a recurrent principle in economic, social and political programmes. Special attention has been given to investment in arid and semi-arid (ASAL) counties, communities with high incidence of poverty, unemployed youth, women, and all vulnerable groups.

The construction and maintenance of Water Pans align with the Vision's goals by providing essential water storage solutions that ensure a reliable supply of water for domestic consumption, particularly in ASAL regions. This supports the Vision's objectives of promoting sustainable development, improving living standards, and addressing the needs of vulnerable populations. By investing in water infrastructure like Water Pans, Vision 2030 aims to enhance water security, reduce the burden of water scarcity, and contribute to the overall socio-economic development of communities.

4.2.3 Agricultural Sector Transformation and Growth Strategy (ASTGS 2019–2029)

The Agricultural Sector Transformation and Growth Strategy (ASTGS 2019–2029) aims to enhance food security, nutrition, and farmer incomes through climate-smart agriculture, improved water management, and strengthened agricultural value chains, particularly in arid and semi-arid areas.

In summary, the Katikit Water Pan rehabilitation is a practical implementation of the ASTGS at the community level. It integrates climate resilience, improved water management, and support for key agricultural value chains to deliver tangible food security and economic benefits to the people of Katikit Village.

4.2.4 National Gender and Development Policy, 2000

The policy outlines the national agenda for gender equality and how Kenya intends to realize these ideals. The National Gender and Development Policy, 2000 purposes to promote the constitution national values and principles of governance.

This Policy will be applied in project implementation especially during hiring of staff to be involved in the project, procuring of suppliers, sub consultants and sub-contractors. The project will strive to achieve equality of opportunity and outcomes with respect to access to and control of national and county resources and services; and equality of treatment that meets the specific and distinct needs of different categories of women and men.

4.2.5 Policy on Gender and Sexual Based Violence 2017

The purpose of this policy is to put in place a framework to accelerate implementation of laws, policies and programmes for prevention and response to SGBV. The overall objective of the policy is to progressively eliminate sexual and gender-based violence through the development of a preventive, protective, supportive and transformative environment.

The project proponent has put in place plans through the ESMMP to develop and implement a SGBV action plan with an Accountability and Response Framework as part of the Contractor-ESMP (C-ESMP) and administration of the whole project cycle.

4.2.6 The National Environmental Sanitation and Hygiene Policy-2016-2030

The Policy is devoted to environmental sanitation and hygiene in Kenya as a basic right, public service and an economic good with major contribution to the dignity, health, welfare, social well-being and prosperity of all Kenyan residents. It demands the scaling up of access to improved rural and urban sanitation facilities by county governments as sanitation is a devolved function.

The implementation of the Policy will greatly increase the demand for sanitation, hygiene, food safety, improved housing, use of safe drinking water, waste management, vector control at the household level and encourage communities to take responsibility for improving the sanitary conditions of their immediate environment.

Under Policy Strategy # 2: assuring clean and healthy environment free from public nuisances, it demands adequate systems for managing wastewater treatment and seeks the protection of wetlands and water courses under threat from indiscriminate disposal of waste through provision of adequate targeted services in areas close.
The proposed project already covers this through the initiative to construct new sanitation facilities at the Water Pan to avoid contamination of the water source. The Water Pan also contributes towards achievement of this policy through provision of safe water to area residents for livestock and domestic consumption.

4.2.7 National Food and Nutrition Security Policy (NFSP)

It is the policy of the Government that all Kenyans should enjoy at all times safe food and water in sufficient quantity and quality to satisfy their nutritional needs for optimal health. Access to food and safe water is linked to national security, development and contributor to rural income. The lack thereof water is seen as prohibitive to food security, thus government pledge to promote and support sustainable water management systems and investment in infrastructure, including water storage facilities.

By increasing the capacity and functionality of the Katikit Water Pan, the project will help support livestock production, small-scale farming, and domestic water use, which are key components of local food systems. Improved water availability contributes to better livestock health, increased agricultural productivity, and enhanced household food security, thereby aligning with the policy's goal of ensuring sustainable access to food and water resources.

4.2.8 The BETA Agenda

The BETA Agenda, as espoused in the Kenya Kwanza manifesto, was meant to provide inclusive growth so that even the mama mboga and bodaboda can feel the growth. A hustler fund was launched to rehabilitate the majority of these individuals so that their credit scores can be worthy before financial institutions.

Water system as an enabler for this and driver of economic growth and food security.

4.2.9 National Environment Policy (NEP) 2013

The policy sets out important provisions relating to the management of ecosystems and the sustainable use of natural resources, recognizing fresh waters are part of the country's critical ecosystems due to their capacity to store water for various uses.

Under water and sanitation as a key aspect of environmental quality and health, the policy notes that Seasonal and regional water scarcity exacerbates the difficulty to improve water supply. The government therefore pledges to improve the management and conservation of water supply sources.

It also requires infrastructural projects to undergo Environmental and Social Impact Assessment. In addition, public participation in the planning and approval of the proposed project is mandatory.

Further the proposed project helps assist the government meet its obligation towards improve the management and conservation of water supply sources. The project will also fully comply with this policy through optimal utilization of resources in improving the quality of human environment.

4.2.10 The National Land Use Policy (NLUP) - Sessional Paper, No. 1 of 2017

The National Land Use Policy guides Kenya towards an environmentally and socially responsible use of land and allied resources for socio-economic transformation of the people of Kenya. Its mission is to promote best land use practices for optimal utilization of the land resource in a productive, efficient, equitable and sustainable manner. The principal objective of the NLUP is to provide legal, administrative, institutional and technological framework for optimal utilization and productivity of land and land related resources in a sustainable and desirable manner at National, County and Sub-county and other local levels.

The proposed project will contribute to achievement of this policy's mission through implementation of sustainable land management practices such as tree planting, terracing and storm water harvesting.

4.2.11 Kenya National Youth Policy 2006

This Policy aims at ensuring that the youth play their role alongside adults in the development of the Country. The National Youth Policy visualizes a society where youth have an equal opportunity as other citizens to realize their fullest potential.

The proposed Water Pan development Project will provide direct employment to the youth as required by the Policy. The Youth Employment Programme will be used in the implementation of the ISLMP in the Katikit watershed.

4.2.12 National Policy on Water Resources Management and Development - Sessional Paper Number 1 of 1999.

The National Water Policy of Kenya was developed in 1999 as the National Policy on Water Resources Management and Development (NWP 1999) and was amended in 2012 (draft still). The NWP 1999 aims to achieve sustainable development and management of the water sector by providing a framework and policy direction for the

sector: Treat water as a social and economic good; Preserve, conserve and protect all available water resources and allocate it in a sustainable, rational and economical way; Supply of water of good quality and in sufficient quantities to meet the various water needs including poverty alleviation, while ensuring safe disposal of wastewater and environmental protection etc.

Desilting of Katikit Water Pan is an initiative towards Water Resources conservation and meeting government's obligation towards supply of water of good quality and quantities to its citizens for poverty alleviation.

4.2.13 The National Occupational Safety and Health Policy, 2012

The main objective of this policy is to establish National occupational safety and health systems and programmes geared towards the improvement of the work environment. The Policy seeks to reduce the number of work-related accidents and diseases, and equitably provide compensation and rehabilitation to those injured at work or who contract occupational diseases. It thus requires employers to ensure safety and health at workplace, establishment of safety and health committees at workplaces, conduct training on occupational safety and health and report accidents, diseases and other dangerous occurrences to relevant authorities.

The contractor will be given a copy of the ESMP to develop contractor-ESMP for compliance during construction including provision of PPE, erection of signages at critical points, sealing the Dam construction area to avoid unauthorized entry and accidents

4.2.14 National Land Policy

The Policy designates all land in Kenya as Public, Community or Private. Through the policy, the government will ensure that all land is put into productive use on a sustainable basis by facilitating the implementation of key principles on land use, productivity targets and guidelines as well as conservation.

The land in use is classified as community (public land) and reserved for purposes of the Water Pan. Rehabilitation of the Pan ensures the land is put into productive use.

4.2.15 Baringo County HIV and AIDS Strategic Plan 2016/2019

The Baringo County HIV and AIDS Strategic Plan 2016–2019 was developed to guide the county's multisectoral response to HIV in alignment with national frameworks. Its objectives include reducing new HIV infections, improving health outcomes for people living with HIV, reducing HIV-related stigma and discrimination, strengthening integrated services and systems, enhancing data use, increasing domestic financing, and promoting accountable leadership in the HIV response. The strategy also guides

collaborations among government, partners, and communities to deliver accessible and quality HIV services.

The proponent will refer to this strategic plan in planning and implementing HIV/AIDS measures in this SPR and ESMP, including identifying relevant stakeholders for engagement and aligning project interventions with the strategic objectives.

4.3 Relevant Legislative Framework

4.3.1 Environmental Management and Coordination Act (EMCA) 1999

According to legal Notice No. 31 & 32 of 2019, the Environmental Management and Coordination Act 1999 (NO. 8 of 1999) Amendments of the second schedule the proposed rehabilitation of the Katikit Water Pan is categorized a community project and low risk project. The new regulation provides for preparation and submission **of Summary Project reports (SPR)** for low-risk projects. Section 58 (1) of the act requires that the proponent of the low-risk project shall before commencement of the project prepare and submit to the Authority an environmental impact assessment through an EIA expert of the likely environmental impacts of the project for approval.

In carrying out the ESIA and preparing this SPR the requirements of these regulations and those of the World Bank Environmental and Social Safeguards have been integrated and followed throughout the process. The proponent did the screening and scoping then as advised by the NEMA office commissioned this SPR. The proponent will observe the guidelines as set out in the ESMMP laid out in this SPR in the avoidance of adverse impacts arising from the project activities.

4.3.1.1 EMCA (Waste Management Regulations 2006)

This regulation gives guidelines on both operational and administrative activities that are used in handling, packaging, treatment, condition, storage, and disposal of waste and is implemented by NEMA. It prohibits anyone from disposing of any waste on any part of the environment except in designated waste receptacle or facility provided by the relevant authority which may be legitimate dumpsites or landfills. Since the proposed project will generate waste in form of waste soils and other solid wastes this act provides for the waste generator to be responsible for the collection, segregation at source and proper disposal of their wastes.

In this SPR and the ESMMP the proponent has provided measures for managing waste generated through the proposed project. Measures to be undertaken for proper waste disposal include clearance of non-reusable and recyclable waste and disposing off in designated disposal site. Reusing excavated soil for Water Pan embarkment.

4.3.1.2 EMCA (Noise & Excessive Vibration Pollution Control Regulations, 2009) Legal Notice 61

This regulation prohibits any person from causing unreasonable, unnecessary, or unusual noise which annoys, disturbs, injures, or endangers the comfort, repose, health or safety of others and the environment. Part 11 section 6 (1) provides that no person shall cause noise from any source which exceeds any sound level as set out in the First Schedule of the regulations. It gives standards for maximum permissible noise levels for construction sites, mines, and quarries.

The proponent through this SPR has established all the sources of noise and vibrations and has provided appropriate mitigation measures for compliance with outlined maximum levels provided for in this regulation. The chosen contractor will implement the measures provided for in the ESMMP (such as provision of ear muffles to workers and switching off engines or machinery when not in use)

4.3.1.3 EMCA (Water Quality) Regulations, 2006

These Regulations apply to drinking water, water used for industrial purposes, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife, and water used for any other purposes. Section 4 of the regulation which focusses on the protection of sources of water by preventing any form of pollution. Section 6 (1) of the regulation states that no person shall abstract groundwater or carry out any activity near any lakes, rivers, streams, springs and wells that is likely to have any adverse impact on the quantity and quality of the water, without an EIA license issued in accordance with the provisions of the Act.

The Proponent has adhered to the provisions of this regulation to protect the proposed water resource from all possible sources of pollution during the construction and operation phase by carrying out this ESIA. The proponent has outlined water quality control measures in this SPR including proper waste disposal measures for oil spills and other wastes, proposed fencing of Water Pan area, and provision of livestock troughs and communal water drawing point.

4.3.1.4 EMCA (Air Quality) Regulations, 2008.

The objective of these regulations is to provide for prevention, control, and abatement of air pollution to ensure clean and healthy ambient air. The regulations provide for compliance with emission standards for various sources of air pollution including mobile sources (e.g. motor vehicles) and stationary sources (e.g. industries) as outlined in the Environmental Management and Coordination Act of 1999.

The proponent by this SPR and the ESMMP will ensure compliance with air quality regulations by enforcing all the proposed preventive and mitigation measures in the ESMMP e.g. proposed water sprays and mists to suppress dust, regular maintenance of vehicles and avoiding unnecessary vehicle and machinery movement.

4.3.1.5 Environmental Management and Co-Ordination (Fossil Fuel Emission Control) Regulations, 2006

These Regulations set out emission standards for internal combustion engines and provide for the licensing of persons who treat fuel and for the appointment of environmental inspectors for purposes of emission inspection.

It states that any person who operates or owns an internal combustion engine and permits it to be operated upon any road, street, public highway or any premises, which emits smoke or other air contaminants in excess of emission standards set out in the First Schedule makes an offence

All vehicles on site will be regularly serviced and maintained to ensure the set standards/limits for emissions are not exceeded.

4.3.2 The Water Act, 2016 (The National and Storage Regulations, 2019)

This Act provides for the regulation, management and development of water resources and water and sewerage services in line with the Constitution.

The ACT establishes the Water Resources Authority ("Authority") among other institutions.

According to the regulations under this **ACT,** prior to constructing the waterworks, the owner or developer or other person charged with the mandate of developing, managing and or maintaining waterworks shall – **(a)** *Apply for and obtain a water use permit under the Water Resources Regulations 2019, and (b) Apply for and obtain an environmental impact assessment license under the Environmental (Impact Assessment and Audit) Regulations 2003 made under Environmental Management and Coordination Act 2015.* Works to be designed by Qualified Water Resources Professional. Works to be constructed by the appropriate category of contractors.

A monitoring and evaluation system for optimal use of the works to be put in place for safety, health, and environmental conservation. The developer to implement any other measures necessary for the safe operation management of the waterworks according to the provisions of this regulation.

The Proponent has undertaken the ESIA and developed this SPR as required by the provisions of the water act 2016. The proponent has undertaken hydrological assessment of the proposed Katikit Water Pan during project design. This SPR has advised the proponent to obtain a written authorization/permit for the construction work. The Proponent will apply for the water use permit after the completion of the Dam and once filled with water.

4.3.2.1 Water Resources Management (Water) Rules 2006

Requires persons intending to or currently undertaking any of the water use activities including construction of works to obtain approval from the Authority to undertake the activity

The project shall apply and receive an authorization to construct works. Once construction commences supervision, management, and monitoring of the Water Pan shall be in line with the regulation classification of the Water Pan as low risk. After the successful implementation and operationalization of the project observations, surveillance, inspections, and continuing evaluation are required to assure the satisfactory performance of the water reservoir.

4.3.3 The Public Health Act (Cap. 242)

Section 115 of the Act states that no person/institution shall cause a nuisance or condition liable to be injurious or dangerous to human health. The law requires that all lawful, necessary, and reasonably practicable measures be taken to maintain areas under jurisdiction clean and sanitary to prevent the occurrence of nuisance or condition liable for injurious or dangerous to human health.

The proponent through this SPR and the ESMMP has defined the necessary measures to prevent the occurrence of conditions liable for injurious or dangerous to human health during the construction and the operation phase of the project. Proposed measures include ensuring OHS during construction; dust management through watering of ground; proper disposal of non-recyclable or non-reusable waste; and in operation, safe use of agricultural chemicals and water pollution control.

4.3.4 The Physical Planning and Land Use Planning Act, 2019

The objectives of the Act are to provide the principles, procedures, and standards for the preparation and implementation of physical development plans at the national, regional, county, urban, and rural and cities level and provision of the procedures and standards for development control and the regulation of physical planning and land use.

The proposed project is located in Katikit watershed and is in harmony with existing land uses. By this SPR and the ESMMP the proponent has taken adequate measures such as waste water management, SLM such as terracing among others to ensure sustainable use of the land and water resource.

4.3.5 Penal Code (Cap. 63)

This act addresses commission of offenses that are punishable by law. Section 191 of the Penal Code provides that any person or institution that voluntarily corrupts or fouls water for public springs or reservoirs, rendering it less fit for its ordinary use shall be guilty of an offense.

The proponent in this SPR has identified all the relevant legislations in the proposed Water Pan upgrading project and demonstrated compliance and on how further compliance will be attained.

4.3.6 The Occupational Health and Safety Act, 2007

This requires that workplaces be kept safe for workers therein. Workers who are exposed to wet or any injurious or offensive substances are required under Section 101 of the Act to be provided with suitable protective clothing. The Act also generally provides for safety and health policies and programmes, workplace safety health and welfare conditions, occupational health and hygiene and welfare conditions.

In this SPR in the ESMMP the proponent has put in place measures to be observed by the contractor during the construction and operation phase of the project to ensure the health and safety of workers and the community. The proponent will share the ESMMP with the contractor to enable the latter to develop a C-ESMMP which will be strictly followed during construction. A comprehensive occupational health and safety audits will be carried out periodically to ensure compliance with this Act.

4.3.6.1 Fire Risk Reduction Rules, 2007

The rules require installation of electrical equipment in accordance with the respective hazardous area classification system. All flammable materials are stored in appropriately designed receptacles, electrical equipment is inspected after six months by a competent person and the Proponent is required to keep records of such inspections, installation and maintenance of firefighting systems in workplaces, fire drills at least once a year, assembly points be marked, undertake annual fire safety audits etc.

The contractor will be required to store all flammable materials and liquids safely to avoid risk of fire.

4.3.6.2 Medical Examination Rules of 2005

It requires workers on site to undergo regular medical examination to identify the symptoms of hazardous exposures on the body, especially those who handle food or food products. This is with a sole purpose of monitoring exposure for remedial action.

The contractor will institute and implement regular medical examinations for its staff at the facility.

4.3.7 Employment Act, 2007

Section.3. (1) States that this Act shall apply to all employees employed during the project implementation under a contract of service. Section 5 (3) demand that no employer shall discriminate directly or indirectly, against an employee or prospective employee or harass an employee or prospective employee on grounds of race, colour, sex, language, religion, political or other opinions, nationality, ethnic or social origin, disability, pregnancy, mental status or HIV status.

The Proponent through the contractor will make sure that fairness and gender equity are followed during the recruitment of the labour force to be used during the construction phase. Preference will be given to the local community for both skilled and unskilled labour.

4.3.8 Work injury benefits Act, 2007

Section.7. (1) Require that the proponent to obtain and maintain an insurance policy, in respect of any liability that the employer may incur under this Act to any of his employees.

The proponent will ensure the engaged contractor is qualified, registered and licensed for the excavation of the Water Pan; and should ensure that those employed are well insured. The contractor will also provide requisite PPEs to the workers and the latter will always be required to wear these.

4.3.9 National Construction Authority Act (2011)

The National Construction Authority Act, Number 41 of 2011 streamlines, overhauls and regulates the construction industry in Kenya. The Act contains provisions on the quality and safety standards of any construction work.

The Proponent will ensure the engagement of a registered and qualified contractor as required under the water act for the construction of the project. The proponent will ensure that regular site meetings by all the relevant stakeholders are held to oversight the work. The work site will be registered with Director of Occupational Safety and

Health (DOSH)

4.3.10 National legal provisions on Gender, HIV/AIDS and Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)

4.3.10.1 The Sexual Offences Act of 2006 (The Sexual Offences (Amendment) Bill, 2016)

This is an Act of Parliament to make provision about sexual offences, their definition, prevention and the protection of all persons from harm from unlawful sexual acts, and for connected purposes. Makes provision about sexual offences aims at prevention and the protection of all persons from harm from unlawful sexual acts and for connected purposes. Section 15, 17 and 18 focuses mainly on sexual offences on minor (children).

The Proponent will develop and implement a SEA action plan with an Accountability and Response Framework (ARF) as part of the Construction-ESMP (C-ESMP). The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018) and National policies and regulations on SEA.

4.3.10.2HIV and AIDS Prevention and Control Act No. 14 of 2006

This legislation provides measures for the prevention, management and control of HIV and AIDS, to provide for the protection and promotion of public health and for the appropriate treatment, counselling, support and care of persons infected or at risk of HIV and AIDS infection, and for connected purposes.

Among the purposes of this Act as outlined in section 3 (a) is to promote public awareness about the causes, modes of transmission, consequences, means of prevention and control of HIV and AIDS; and (d) to positively address and seek to eradicate conditions that aggravate the spread of HIV infection. Section 7 makes provision for HIV and AIDS education in the workplace in this case even the informal workplace is included.

This proponent in this ESIA SPR has captured HIV/AIDS as a risk in the proposed project and through the ESMMP provided adequate measures. The HIV Policy will be complied with during implementation of the Project; the Contract will incorporate in Bid Document and implement HIV awareness initiatives during construction of the Project.

4.3.11 The National Museums and Heritage Act 2006

This is an Act of Parliament to consolidate the law relating to national museums and heritage; to provide for the establishment, control, management and development of national museums and the identification, protection, conservation and transmission of

the cultural and natural heritage of Kenya; to repeal the Antiquities and Monuments Act (Cap. 215) and the National Museums Act; and for connected purposes.

This Act aligns with the African Development Bank's **Integrated Safeguards System (ISS)**, particularly **Operational Safeguard 3 (OS3): Biodiversity, Renewable Resources and Ecosystem Services**. OS3 recognizes that the preservation of cultural heritage, including sites, landscapes, and practices with historical, archaeological, or traditional significance, is often closely linked to the conservation of biodiversity and the sustainable management of natural resources. The safeguard requires that projects financed by the AfDB avoid or minimize impacts on natural habitats and associated cultural values, and where avoidance is not possible, implement appropriate mitigation measures.

In accordance with both the National Museums and Heritage Act and AfDB OS3 requirements, the project will implement the following measures:

- **Chance Find Procedures:** The Contractor will adhere to the standard chance find procedures outlined in **Appendix 7** should any previously unknown heritage resource be accidentally encountered during project construction. These procedures ensure that any discovery of archaeological, paleontological, or cultural heritage sites is reported to the relevant authorities (National Museums of Kenya) and that appropriate measures are taken to protect and manage the find before any further work proceeds in the affected area.
- **Cultural Heritage Screening:** During the pre-construction phase, the project site will be screened for any visible or known cultural heritage features that could be affected by project activities, in line with both national law and AfDB requirements for due diligence on cultural heritage.

The Contractor will follow the chance find procedures outlined if previously unknown heritage resource is accidentally encountered during the project construction period. (See Appendix 7 for the chance find procedure in Kenya).

4.3.12 Malaria Prevention Act (CAP 246)

Article **23.** (1) of the Act states unless with the written consent of a health authority, a person shall not, within an area subject to the control of a health authority— *(a)* build or maintain a dam or other construction so as to obstruct the flow of water into or out of a drain under the control of the health authority; *(b)* alter the level of water so as to reduce the flow of water; or *(c)* construct a step, bridge or platform over a drain under the control of a health authority. 24. (1) A person shall not, within an area subject to the control of a health authority, plant trees or cultivate land in such a manner as is

likely, in the opinion of a health authority, to obstruct the flow of water in, into or out of a drain or culvert under the control of a health authority.

The Proponent has adequately provided measures (such as sensitize the community on use of treated mosquito nets, local spraying and bush clearing near households) for the prevention and control of malaria.

4.3.13 County Government Act No. 17 of 2012

The Act provides for county governments' powers, functions and responsibilities to deliver services and for connected purposes. It covers matters of planning, placing the responsibility of planning within counties and mandating them to coordinate integrated development planning. One of the objectives of county planning is to ensure productive use of scarce land, water and other resources for economic, social, ecological and other functions across a county.

PART VIII of the Act provides for a wide variety of matters relating to public administration at local level including Citizen Participation principles such as timely access to information, data, documents, and other information relevant or related to policy formulation and implementation among others.

The proposed project is taking place on land planned and set aside for water resources purposes by the county.

The Proponent has complied with the principle of citizen participation as the identification of this project is through a community Participatory Integrated Community Development (PICD) process. Further the community was involved through the planning, screening, designing and ESIA process. The proponent will continue to engage the community throughout the project cycle.

4.3.14 Land Act 2012

It is the substantive law governing land in Kenya and provides legal regime over administration of public and private lands. It also provides for the acquisition of land for public benefit. The government has the powers under this Act to acquire land for projects, which are intended to benefit the general public.

This Act provides for the procedure to be followed during compulsory acquisition of land by the Government and the just compensation which should be paid promptly and in full to all persons whose interest in land has been affected.

The Water Pan is constructed located on a land parcel that is categorized as community land held in trust by the County Government of Baringo and therefore no land acquisition is anticipated.

4.3.15 Energy Act 2019

PART VIII provides for energy efficiency and Conservation of energy resources. The Act advocates for project owners to develop, promote and manage in collaboration with other agencies, the use of renewable energy and technologies.

The project complies through an inbuilt solar system for the shallow well- comprising of a solar pump delivering water to elevated plastic water tanks complete with all its accessories, pipes and controllers.

4.3.16 The Standards Act CAP 496

This Act promotes the standardization of the specification of commodities, and provides for the standardization of commodities and codes of practice to ensure public health and safety. It establishes the Kenya Bureau of Standards (KEBS) and defines its functions as related to:

- promotion of standardization in industry and commerce; and
- Making arrangements or provision of facilities for the testing and calibration of precision instruments, gauges and scientific apparatus, for the determination of their degree of accuracy by comparison with standards approved by the Minister on the recommendation of the Council, and for the issue of certificates in regard thereto.

This means that the contractor under the supervision of the county engineer will ensure that all materials used on site adheres to the highest standards and do not pose any human health and safety risk.

4.3.17 Climate Change Act number 11 of 2016

An act for the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development. It requires national and county governments to mainstream climate change responses into development planning, decision making and implementation and to build resilience and enhance adaptive capacity to the impacts of climate change. In this it pushes for mainstream intergenerational and gender equity in all aspects of climate change responses.

The rehabilitation of the Water Pan is in response to the national and government obligation to enhance community adaptation to climate change and enhance resilience to droughts through provision of water for livestock purposes.

4.3.18 HIV and AIDS Prevention and Control Act 2011

The objective and purpose of this Act is to promote public awareness about HIV and AIDS as well as protect the human rights and civil liberties of any person suspected or known to be infected with the virus.

Section 31 prohibits any form of discrimination against qualified employees, on the basis of actual, perceived or suspected HIV status unless the employer can prove to a tribunal that the job requires a particular state of health or medical or clinical condition.

The contractor will sensitize workers/community on HIV/AIDs as well as other measures such as provision of condoms on site during construction.

Voluntary Counselling and Testing (VCT) services will be provided by the contractor. The results will be private and not disclosed to any third party. Fair employment practices will be followed.

4.4 Institutional Framework

4.4.1 Ministry of Agriculture and Livestock Development (MoALD)

The Ministry of Agriculture and Livestock Development (MoALD) is the principal government institution responsible for overseeing the agricultural and livestock sectors in Kenya. The ministry operates at both the national and county levels, with the national government providing policy guidance, technical support, and large-scale development programs, while the county governments are responsible for implementation, extension services, and localized agricultural development

The project is being implemented under initiatives supported by the African Development Bank through the Building Resilience for Food and Nutrition Security in the Horn of Africa Project, which aims to strengthen the resilience of communities in arid and semi-arid lands through improved water resource infrastructure. Through this framework, the Ministry collaborates with the County Government of Baringo, local administration, and community members to support the planning and implementation of water infrastructure projects such as water pans. The programme further promotes community participation in monitoring and evaluation, ensuring that the water pan projects respond to local needs, enhance community ownership, and contribute to improved livelihoods, water security, and resilience to drought and climate variability.

4.4.2 County Government of Baringo

Water is a devolved function as per the Constitution of Kenya, 2010. The Fourth Schedule of the Constitution outlines the distribution of functions between the national and county governments. Specifically county governments are responsible for water and

sanitation services, including the implementation of specific national government policies on natural resources and environmental conservation, including soil and water conservation.

The County Government will be responsible for approving the designs of the proposed Water Pan extension and rehabilitation project and supervision of the construction works to ensure the ESMP is adhered to. Its various departments will inspect the site on regular basis to ensure provisions e.g., on public health are adhered to by the contractor and proponent.

4.4.3 Water Resources Authority (WRA)

The objective of WRA is to protect, conserve, control and regulate the use of water resources through the establishment of a national water resource strategy. In addition, the WRA is responsible for: formulation and enforcement of standards, procedures and regulations for the management and use of water resources; policy development; planning and issuing of water abstraction permits; and setting and collecting permits and water use fees.

The proponent has engaged WRA in undertaking hydrology assessment for the proposed project. As per the requirement of the WATER ACT (No. 43 of 2016)-The National and Storage Regulations, 2019 the proponent has applied for the water use and works permit from WRA.

4.4.4 Water Resource Users Association (WRUA)

WRUAs are local community institutions established under the Water Act, which work with the Water Resources Authority (WRA) to manage water resources at the grassroots level. The county, in partnership with WRA, will support the establishment and capacity building of the Katikit Water Users Association (WUA) Committee to effectively manage water resources in the project area.

The proponent will collaborate with the established Katikit WUA Committee for the effective and successful implementation of the proposed water project and efficient utilization of water resources, including activities such as tree planting in the Katikit watershed. The WRA will undertake capacity building for the Katikit WUA Committee and the Katikit Water Pan Management Committee to enhance the sustainable management of the project and the catchment area of the Water Pan.

4.4.5 National Environment Management Authority NEMA

The National Environment Management Authority (NEMA) exercises general supervision and co-ordination over all matters relating to the environment and is the principal instrument of Government of Kenya (GoK) in the implementation of all policies relating to the environment. Specific NEMA roles related to this project are:

- Review (in collaboration with other lead agencies) and prove approval or issuance of improvement comments on the project ESIA report.
- Issue ESIA license and the associated conditions
- Routinely monitor the ESMP, ESIA license conditions compliance and issuance of compliance note or stoppage or improvement orders to the project.

4.4.6 Department of Occupational Health and safety (DOSH)

Directorate of Occupational Safety & Health Services (DOSHS) is an Institution established under OSHA Act 2007 with a mandate of ensuring compliance with the provisions of the Occupational safety and health Act 2007 and promote safety and health of workers. The project contractor will register the site as a work place with DOSHS and also engage the directorate in handling work related accidents if any.

4.4.7 National Environmental Tribunal

Its principal function is to receive, hear and determine appeals on environmental matters. These mostly arise from decisions of the NEMA on issuance, denial or revocation of environmental impact assessment (EIA) licenses, among other decisions. Any disputes that may arise from licensing of this project will be heard by the tribunal.

4.4.8 Land and Environment Court

Established as a court of the same standing as the High Court, this will handle all environment disputes brought to it by any aggrieved party. The court is also however expected to advocate for application of alternative dispute resolution mechanisms

4.5 African Development Bank (AfDB) Environmental and Social Framework

The **African Development Bank Environmental and Social Framework (ESF)** provides a comprehensive system for managing environmental and social risks associated with projects financed by the Bank. The framework ensures that development interventions are implemented in a manner that promotes **environmental sustainability, social inclusion, and protection of communities and natural resources**. It requires that all AfDB-funded projects integrate environmental and social considerations throughout the project cycle, including **project identification, preparation, appraisal, implementation, monitoring, and evaluation**. Through this framework, project proponents are required to conduct appropriate environmental and social assessments such as **Environmental**

and Social Impact Assessments (ESIAs) to identify potential impacts and develop mitigation measures.

The AfDB ESF is implemented through the **Integrated Safeguards System (ISS)**, which consists of a set of **Operational Safeguards (OS)** designed to address key environmental and social risks. These includes;

4.5.1 Operational Safeguard 1 (OS1): Environmental and Social Assessment

OS1 requires projects financed by AfDB to undergo an **Environmental and Social Assessment (ESA)** to identify potential environmental and social risks and impacts. For the Katikit Water Pan desilting project in **Tiaty West Sub-County**, this ESIA process ensures that potential impacts such as **soil erosion, dust generation, disturbance of vegetation, and safety risks to nearby communities** are identified and mitigated. The assessment also ensures that an **Environmental and Social Management Plan (ESMP)** is prepared and implemented throughout the project lifecycle.

4.5.2 Operational Safeguard 2 (OS2): Involuntary Resettlement, Land Acquisition, Population Displacement and Compensation

OS2 addresses issues related to **land acquisition, displacement of people, and loss of livelihoods** that may occur as a result of project implementation. In the case of the Katikit Water Pan project, the desilting works are being undertaken within an **existing water pan footprint**, which significantly minimizes the likelihood of displacement or land acquisition. However, the safeguard remains relevant to ensure that **any potential impacts on land use, grazing areas, or community access are addressed through consultation and appropriate compensation measures where necessary**.

4.5.3 Operational Safeguard 3 (OS3): Biodiversity and Ecosystem Services

OS3 focuses on the protection and conservation of **biodiversity, natural habitats, and ecosystem services**. Desilting activities may temporarily disturb **local vegetation, soil structure, and small wildlife habitats** around the water pan. This safeguard requires the project to implement measures that **minimize habitat disturbance, avoid unnecessary vegetation clearing, and promote rehabilitation of disturbed areas after construction**. Proper management will also help ensure that the water pan continues to support **livestock, wildlife, and ecosystem functions** within the semi-arid environment.

4.5.4 Operational Safeguard 4 (OS4): Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency

OS4 addresses issues related to **pollution prevention, waste management, and efficient use of natural resources**. During the desilting works, there is potential for **dust emissions, fuel spills from machinery, noise, and improper disposal of excavated materials**. The safeguard requires the project to adopt measures such as **proper waste management, controlled fuel handling, dust suppression, and safe disposal or reuse of desilted materials** to prevent environmental contamination and ensure efficient resource use.

4.5.5 Operational Safeguard 5 (OS5): Labour Conditions, Health and Safety

OS5 focuses on ensuring **safe and fair labour practices**, including protection of workers' health and safety during project implementation. Construction activities such as excavation and movement of heavy machinery present potential **occupational health and safety risks**. The safeguard requires the contractor to provide **personal protective equipment (PPE), enforce safety procedures, prevent child labour, and ensure safe working conditions** for all workers involved in the project. It also emphasizes **community health and safety**, particularly for nearby residents and livestock owners who may access the water pan during construction.

The application of these **AfDB Operational Safeguards** ensures that the **Katikit Water Pan desilting project** is implemented responsibly by minimizing environmental impacts, protecting community interests, and promoting sustainable water resource management in **Ribkwo Ward** and the surrounding areas. Compliance with these safeguards strengthens the project's contribution to **water security, livestock production, and climate resilience** for local communities.

4.6 International Conventions and Treaties

Kenya has ratified or acceded to numerous international treaties and conventions. Those that have implications on Project are described below.

4.6.1 Conservation of Biological Diversity (CBD) Regulations 2006

These regulations are described in Legal Notice No. 160 of the Kenya Gazette Supplement No. 84 of December 2006. These Regulations apply to the conservation of biodiversity which includes Conservation of threatened species, Inventory, and monitoring of BD and protection of environmentally significant areas, access to genetic resources, benefit-sharing and offenses and penalties.

The proposed project site is not habitat to any threatened or endangered species of flora or fauna. Therefore, it does not pose any threat to any plant or animal life in the project context. Through the ESMMP provided mitigation measures such planting of indigenous trees, establishment of community tree nurseries and catchment protection through community SLM practices the Proponent will contribute to flora and fauna conservation in the project area.

4.6.2 United Nations Convention to Combat Desertification, 1994

The convention addresses the problem of the degradation of land by desertification and the impact of drought, particularly in arid, semi-arid and dry semi-humid areas. This convention is domesticated in EMCA CAP 387.

The proposed SLM practices in the Katikit watershed, tree nursery establishment and revegetation in this SPR by the proponent will contribute to the goal of this Convention.

4.6.3 Sustainable Development Goals (SDGs)

The goals relevant to the implementation of this project are; **Goal 2:** End hunger, achieve food security and improved nutrition and promote sustainable agriculture. **Goal 5:** Achieve gender equality and empower all women and girls. **Goal 6:** Ensure availability and sustainable management of water and sanitation for all.

Through this SPR the Proponent has shown that Katikit Water Pan water project will contribute to improvement in food and nutrition security, ensure readily availability of fresh water and improvement in sanitation through the proposed construction of latrines in the project site.

5. ANALYSIS OF PROPOSED SUB-PROJECT ALTERNATIVES

5.1 Introduction

The environmental management plans proposed for the entire project cycle are considered adequate to mitigate the identified potential negative environmental and social impacts. However, it is important to analyze the possible alternatives to the project to inform decision making by relevant government agencies and improve the environmental performance of the project. For the proposed project, four alternatives are feasible as follows;

- The 'No Project' alternative
- The 'Yes Project' alternative
- Alternative Location and Source of water
- Alternative Design and Technology

5.2 The 'No Project' alternative

The **'No Project' alternative** refers to the option of not implementing the proposed Katikit Water Pan Project. Under this scenario, the current situation would remain unchanged, and the local community would continue to rely on the existing limited water sources such as seasonal rivers, traditional water pans, and shallow wells.

Although the 'No Project' alternative would avoid potential environmental disturbances associated with construction activities, it would also mean that the **existing water scarcity challenges** experienced by the community would persist. Residents and livestock would continue to travel long distances in search of water, especially during dry seasons, leading to increased pressure on the few available water sources. Furthermore, the lack of adequate water storage infrastructure would reduce the community's resilience to drought and climate variability.

Therefore, the 'No Project' alternative is considered **undesirable**, as it would not address the current and future water needs of the community.

5.3 The 'Yes Project' alternative

The **'Yes Project' alternative** involves the implementation of the proposed Katikit Water Pan as planned. This option provides a sustainable solution to the water challenges faced by the local community by harvesting and storing surface runoff during the rainy season for use during dry periods.

The implementation of the project is expected to **improve water accessibility for domestic use and livestock**, reduce the distance traveled by community members in search of water, and enhance livelihood activities such as small-scale agriculture and livestock keeping. Additionally, the water pan will contribute to improved resilience to climate variability and prolonged dry spells commonly experienced in the semi-arid regions of Baringo County.

Although some temporary environmental and social impacts may occur during the construction phase, these impacts can be effectively **mitigated through the implementation of the Environmental and Social Management Plan (ESMP)**. Therefore, the 'Yes Project' alternative is considered the **most viable and beneficial option**.

5.4 Alternative Location

During the planning stage, the possibility of locating the water pan at alternative sites within the area was considered. However, the selected project site was found to be the **most suitable location** based on several factors including the natural topography, drainage patterns, catchment potential, and proximity to the beneficiary community.

The site is located within a **natural catchment area** that facilitates the collection of surface runoff during rainfall events. In addition, the soils in the area are predominantly **clayey**, which enhances water retention and reduces seepage losses. Locating the water pan in other areas could result in reduced runoff collection efficiency, higher construction costs, or limited accessibility to the intended beneficiaries.

Therefore, the current site was considered the **most technically and environmentally suitable location** for the project.

5.5 Alternative Water Sources

Alternative water supply options were also considered during the assessment process to determine whether other water sources could adequately meet the water needs of the community. These alternatives include groundwater development, sourcing water from external areas, and rainwater harvesting.

5.5.1 Exploitation of Groundwater

Groundwater development through borehole drilling was considered as a possible alternative. However, this option may require extensive hydrogeological investigations and may involve significant costs related to drilling, pump installation, and maintenance. In addition, groundwater availability in some parts of Tiaty West may be limited or

characterized by salinity and poor water quality, which could affect its suitability for domestic and livestock use.

Consequently, although groundwater exploitation may complement other water supply systems, it may not provide a cost-effective and reliable standalone solution for the entire community.

5.5.2 Source Water from Elsewhere

Another alternative considered was sourcing water from other locations or distant water supply systems and transporting it to the community. This option would require the construction of pipelines or transportation of water by tankers, which would significantly increase the capital and operational costs. Additionally, such systems may face logistical challenges and maintenance constraints in remote rural areas.

Therefore, sourcing water from elsewhere was considered less feasible and less sustainable compared to harvesting locally available surface runoff.

5.5.3 Roof Water Catchment

Rainwater harvesting from roof catchment systems at household or institutional levels was also considered. While this method can provide supplementary water during the rainy season, it is generally limited by the size of roof surfaces and storage capacity. As a result, roof water harvesting alone may not generate sufficient water to meet the needs of the community and livestock, particularly during extended dry periods.

However, roof catchment systems can still be encouraged as complementary water sources to support household water supply.

Overall, after evaluating the available alternatives, the construction of the Katikit Water Pan remains the most practical, sustainable, and cost-effective option for improving water availability for the local community.

5.6 Alternative Design and Technology

The proponent would also have opted to adopt alternative quarrying methods and technology. Quarrying methods are classified differently. There are various alternatives to Water Pans that were considered to include but not limited to concrete dams, rock-fill dams, sand dams and sub-surface dams. The table 5-1 below shows some of the criteria employed in selecting the proposed option.

Table 5:1: Dam selection criteria

Selection criteria	Water Pan	Concrete dam	Sand dam	Sub-surface dams
Availability of local materials	+++	+	+	+
Handling of construction material	+++	+	+	+
Foundation condition	+++	++	++	+
Cost of construction	+++	+	++	+
Total	12	5	6	4

Key; + is a comparative score where; each + is a positive core.

From the selection criteria in Table 5.1, the best alternative appeared to be the Water Pan for the proposed project site owing to its comparably lower cost, ease of obtaining construction material and its ability to be applied on non-rocky foundation.

6. PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

6.1 Overview

Public consultation is not only one of the most effective means of encouraging and obtaining community input and feedback, it also serves to inform the community members and key stakeholders on the proposed projects. One main public participation meeting was held around proposed project area and its environs to discuss the proposed project *(see **Appendices 1,2 and 3** for consultation minutes and attendance list).* Key stakeholders were also consulted through key informant interviews**.** The aim of the consultation was to ensure that the views of stakeholders and the interests of the communities were identified and taken into account at the earliest during the ESIA study. Local communities were mobilised with the help of the National, County and local administration. The public meetings brought together representatives from the larger community including women and youth (see appendices 1 and 2 for minutes and list of stakeholders consulted respectively) This chapter summarizes the feedback on the consultations undertaken with other governmental and non-governmental organizations including the Ministry of Agriculture, Livestock & Development, National Environment Management Authority (NEMA), Water Resources Authority (WRA) and the local Administration.

6.2 Objectives of Public Consultation

The objective of the public consultation was to ensure that stakeholder and community interests were identified during the ESIA process and that stakeholder and community views were taken into account. The key objectives of such consultations were to.

- Inform the community members and key stakeholders on the proposed project activities.
- Receive community and key stakeholders' comments/ feedbacks/ questions about the proposed project.

- Solicit their views and inputs on the possible adverse environmental and social impacts, and possible mitigation measures. Additionally, it also aims to identify community concerns and provide a forum to discuss and address these.

6.3 Methodology

Public participation for the proposed project was conducted through the public consultative meetings and admission of questionnaires to allow for systematic understanding and interaction of the project beneficiaries, neighbours, local community members/surrounding enterprises and any other would be affected/interested parties.

6.3.1 Public consultation questionnaires

ESIA questionnaires were administered, to gather information from key stakeholders and the members of the public. This was done using structured questionnaires to assess the environmental and socio-economic views of the respondents. A total of 15 questionnaires were administered in the project area. Filled questionnaires administered in the project area are appended to this report (**Appendix 3**).

6.3.2 Public consultation meetings

In seeking the views of the key stakeholders, and any other would be affected/interested parties the consultant organized a consultative meeting targeting mainly Katikit Members and community members surrounding the Proposed Water Pan in Katikit Sub Location comprising elders, women, youth, people with special needs and the local administration. The Environmental Lead Experts, Sub County Agricultural Officer (SCAO) and the Ward Agricultural Officer (WAO) were in attendance during the meetings that took place on **23rd February 2026.** The meeting was used to publicize the proposed Katikit Water Pan project and the anticipated effects and benefits. Prior to the meeting, a stakeholder mapping was carried out to identify key stakeholders to be invited for the meeting. Stakeholders that were directly affected by the proposed project were critically analysed in consultation with the proponent.

The table 6-1 below presents a summary of the participants of the public consultative meetings. The list of participants is appended to this report (***Appendix 2)***.

Table 6:1: Summary of the participants

Date	Female	Male	Youth
23rd February 2026	21	10	13
Total	**31**		

Presentation of the project scope was outlined, after which an open discussion forum followed during which all pertinent issues were raised and agreed upon with all stakeholders. During the public participation meeting, stakeholders had a chance to interact with the proponent represented by the EIA expert and ministry of agriculture officials at county and sub-county level. The findings are incorporated into this report and captures the issues, suggestions, concerns and recommendations from public meetings on site. The meetings were well attendend and the attendees participated actively during the meetings (Figure 6-1 and 6-2).

Figure 6:1: ESIA experts filling questionnaires are Katikit Water Pan site.

Figure 6:2: ESIA experts filling questionnaires are Katikit Water Pan site

6.3.3 Consultation and Disclosure Outputs

The Appendices present the information on the public consultations undertaken under the environmental impact assessment for the proposed pigeon peas value addition project. This information includes selected responses as detailed in the minutes (***Appendix 3***). It was noted that members lauded the project and were eager to see the start of the project. However, there were a few areas that the members sought clarity. A summary of the key concerns raised by the participants is provided in table 6-2 below:

Table 6:2: Stakeholder Consultative meeting key concerns

Key Issue	Stakeholder concerns	Technical Team Response
Increased soil erosion and sedimentation	Community members raised concerns regarding further soil degradation as they claimed that excavation and earthworks with heavy machines may loosen soil which leads to further erosion and sediments deposition.	The ESIA Consultant acknowledged the concern and assured that sit traps and sedimentation basins are considered to be constructed. The ESIA expert also promised to recommend that grassing and bioengineering can also be used to stabilize embarkments. Installation of diversion channels was also tabled as a possible mitigation measures and finally revegetation immediately after works are completed.

Key Issue	Stakeholder concerns	Technical Team Response
Disturbance to terrestrial and aquatic wildlife	Members expressed fear that the desilting and expansion process will eradicate the existing terrestrial and aquatic wildlife like tortoise, fish and birds	The Consultant explained that the desilting and expansion process will be keen on the wildlife available and around, and from his/her side recommend maintenance of buffer zones, a probable gradual desilting rather than complete draining of the pan and also possible restoration of the natural shoreline contours.
Water contamination during construction	Community members raised concerns water being contaminated during the construction process from fuel leaks from the heavy machinery used due to possible poorly maintained machinery, fueling or possible machinery servicing while on site.	The ESIA Consultant acknowledged the concern and assured that the site will have designated fueling areas away from the pan, the construction team will have spill kits on site, machinery will be regularly serviced an inspected and servicing will be prohibited within 50m of the pan.
Occupational health and safety risks	Community members raised concerns in exposure to hazardous materials such as fumes from the machines during operations that could lead to long term health issues	The ESIA consultant was in agreement with the issue raised but assured strong recommendations that involved the construction team to provide the needed PPEs, install warning signages, fencing of deep excavations, conduct toolbox safety talks also have trained personnel on Fire safety, first aid and occupational health and safety while on site.

Key Issue	Stakeholder concerns	Technical Team Response
Increased risk of conflicts	Concerns were raised about possible conflicts over water use for domestic, livestock, and irrigation purposes.	The Client emphasized that a community-based water management committee should be formed after the project has been handed over to the community to help oversee equitable water allocation and develop simple water- use rules to minimize conflicts.
Land Encroachment	Some members sought clarification on land encroachment and whether the desilting works would affect private land nearby	It was clarified that the dam is located on voluntarily donated land and no additional land acquisition is anticipated.
Construction Impacts (Dust, Noise, Access)	Members expressed concern about dust, noise, andtemporary disruptionduring construction.	The Contractor will implement mitigation measures including controlled working hours, watering of access roads to suppress dust, and adherence to occupational health and safety standards.
Employment Opportunities	Youth and women asked whether they would be given priority for employment during construction.	The Consultant promised to recommend that priority be given to the locals for unskilled and semi-skilled labor opportunities.
Environmental Degradation	Participants raised concerns about destruction of vegetation and disturbance to wildlife.	The Consultant explained that vegetation clearance will be minimized, disturbed areas Rehabilitated after construction, and no protected or endangered species will be affected.

Key Issue	Stakeholder concerns	Technical Team Response
Operation and Maintenance	Members asked who would be responsible for maintainingthe water panafter desilting and expansion.	It was explained that the community, through a registered management committee, will be trained on operation and maintenance, with support from the County Government and project partners.
Project Timeline	Community member asked how long the desilting works would take.	The Project coordinator stated that they are yet to get clarification on the project timelines and will give feedback as soon as possible. However, he stated that the usual timeline is 4 months

6.4 Suggestion made by the Participants

- Community members recommended that unskilled and semi-skilled labour required during construction be sourced locally in order to enhance local employment and livelihoods. However, skilled personnel may be engaged from outside the project area where specialized expertise is required.
- It was suggested that the Environmental and Social Management Plan (ESMP) should explicitly provide for the use of appropriate Personal Protective Equipment (PPE), including gloves, gumboots, helmets, and reflective jackets, to minimize occupational injuries and accidents.
- The community recommended the installation of clear safety signage, controlled access to the construction site, and community sensitization, particularly to safeguard children and livestock from potential construction-related hazards.
- It was further suggested that priority be given to local community members for unskilled and semi-skilled job opportunities during the construction phase as a deliberate effort to support household incomes and community ownership of the project.
- Members advised that vegetation clearance be kept to the minimum necessary, and that all disturbed areas be rehabilitated after construction to restore the natural environment and reduce long-term ecological impacts.

6.5 Community and Stakeholder Engagement

While this ESIA reports on the consultation and disclosure undertaken as part of the ESIA, it is acknowledged that consultation is an ongoing process and forms part of the life cycle of the project and social corporate governance of the sponsor. Environmental

Management Plan (EMP) will therefore, ensure that the people in the community and stakeholders continue to be informed during construction and, where appropriate, during operation of the dam. Community and Stakeholder Engagement are covered in the Environmental Management Plan section.

7. ANTICIPATED IMPACTS AND MITIGATION MEASURES

7.1 Preamble

This chapter identifies both positive and negative environmental impacts likely to be occasioned by the project's construction/ installation, operation and decommissioning phases.

7.2 Positive Environmental and Social Impacts during construction

7.2.1 Employment Opportunities

Construction activities will create short-term employment opportunities for local residents, particularly youth and women in Katikit **Village**, through unskilled and semi-skilled labor during excavation, fencing, and other project activities.

7.2.2 Local Economic Stimulation

The presence of construction workers and contractors will increase demand for locally available goods and services such as food supplies, water, and basic materials, thereby supporting small businesses within the community.

7.2.3 Skills Transfer

Local workers engaged in the project may gain practical experience in activities such as earthworks, site management, and environmental protection measures, which can enhance their skills for future employment opportunities.

7.2.4 Improved Community Infrastructure Awareness

The construction process will raise awareness among community members on the importance of maintaining water infrastructure and protecting the environment around water pans.

7.2.5 Strengthened Community Engagement

The involvement of local stakeholders during construction will strengthen collaboration between the community, project implementers, and local authorities, promoting ownership and support for the project.

7.3 Negative Environmental Impacts and Mitigation during the Construction Phase

7.3.1 Temporal Restriction Access

During the rehabilitation and expansion works on the Water Pan the community will not have access to the water resource. While this effect is temporary it could be significant especially if there is a delay in the works. The restriction access to the

Water Pan may bring about community resentment if not prepared and information on the restrictions relayed in advance.

The proposed **mitigation measure** will include;

- Prior notice be given to community members through the local administration on the restriction access before commencing the work.
- The proponent and the contractor to consider alternative ways of executing the works to allow continued use of water in the Water Pan such as draining of the water to temporal storage area.
- Consider an alternative source of water to the community for livestock use during the construction period such as water trucking.

7.3.2 Disturbance of Vegetation and biodiversity

Site clearance will result in the removal of vegetation, pasture and biodiversity losses. The rehabilitation of the Water Pan will increase irrigated land in acres.

Mitigation measures

- Site clearance to be limited to the project demarcated area and selective removal of vegetation or trimming of trees to be exercised where possible.
- Local community to be allowed to harvest areas of natural vegetation that are to be cleared prior to clearing.
- The proponent to support establishment of a community tree nursery for indigenous trees
- Compensatory planting of trees or other appropriate vegetation after construction works
- Construction workforce to be sensitized on environmental and ecological conservation

7.3.3 Soil erosion

Activities undertaken during the preparation and the construction stage of the Water Pan such as clearance/disturbance of vegetation, excavation and tramping by people and machineries/vehicles may result in soil erosion.

Mitigation measure

- Contractor to avoid construction during the wet season.
- Contractor to limit excavation to the marked boundaries of the project site.
- Contractor to ensure proper compaction at recommended soil moisture where required.
- Contractor to provide designated routes for vehicles.

- Where possible the contractor to exercise selective removal of mature, indigenous trees.
- Compensatory planting of trees or other appropriate vegetation after construction
- Sensitization of construction workforce on environmental and ecological conservation and protection.

7.3.4 Noise and Vibration Generation

Continuous exposure to noise levels above 85 dB may cause hearing problems leading to occupational deafness. Noise and vibration produced during construction may have some temporary negative impacts to the immediate residents. Sources of noise pollution include excavation and earth moving machines and during mobilization of the construction materials to the site. The impact is low risk as the nearest dwelling units are over 3km away.

Proposed mitigation and management measures.

- Avoid idling of machinery or engine when not in use.
- Restrict activities that create noise to daytime only.
- Workers to be provided with ear muffles.
- Contractor to ensure the use of well-maintained machineries and vehicles.

7.3.5 Air pollution (Motor vehicle emissions and dust generation)

The potential sources of air pollution include traffic, emission from excavator and material supply vehicles. This is a short-term negative impact and will last within the actual excavation period and ferrying of materials. This impact is considered low risk as there are no residential units nearby.

Mitigation measures

- Ensure that maintenance on all machinery is done regularly to avoid the emission of noxious gases.
- Drivers and machine operator to avoid unnecessary running of motor vehicle engines and machinery when not in use.
- Provision of dust masks to workers and ensure their use.
- Locating haul roads, tips, and stockpiles away from sensitive receptors, considering prevailing wind directions.
- Contractor to instruct the drivers to avoid unnecessary speeding near settlements in the project areas

- Contractor to make sure water sprays and mist are applied as dust suppression measures on loose soils and stockpiles.

7.3.6 Oil spills

Oils and grease spillage on the ground may cause contamination to the soil and surface water making the water to be unsuitable for use by both people and livestock.

Mitigation measures

- Proper maintenance of vehicles and other equipment (using petroleum products) to avoid fuels and lubricants spills at the project site.
- The contractor should properly handle, store, and dispose off oils and greases and their wastes during construction by ensuring that servicing is strictly done at designated servicing yard or external petroleum stations.
- Site staff to be sensitized on safety procedures for fuel storage and re-fueling should be well understood and implemented by site staff.

7.3.7 Solid waste generation and accumulation

The volume of solid waste generated from the construction of water troughs, latrines and any other masonry structure and packaging materials such as cement bags will be small with low impact.

Mitigation measures

- The contractor to exercise waste segregation and to ensure waste not reusable or recyclable is cleared from the project site and disposed off as per NEMA and County Government regulations
- Contractor to provide temporal waste disposal receptacles in site
- Contractor to liaise with licensed waste collector to routinely collect and dispose the waste

7.3.8 Earth Excavated material & desilted silt

The debris from excavation and desiltation is expected to be of a large volume and would be washed back in to water channels and surface water storage structures if not handled well.

Mitigation measures

- Contractor to dump unused excavated materials and debris in designated places as directed by the supervising engineer.

- Contractor to use excavated soil for the Water Pan wall/embankment.
- Excavated silt can be incorporated with compost for use as potting media in the tree nursery.

7.4 Negative Socio-economic impacts in the construction phase.

7.4.1 Occupational Health and Safety (OHS)

During the excavation and construction stage of the Water Pan accidents may result caused by the moving part of the excavator. Accidents may also occur in the construction of the auxiliary structures (latrine, livestock troughs) and other masonry structures caused by falls in excavated sites or injuries by wrongly placed equipment, tools or other construction materials.

Mitigation measures

- The sites to be protected or fenced off from unauthorized intrusions and warning signs; barricades should be properly displayed and strictly adhered to.
- All workers to be provided with full protective gear (PPEs) and trained on appropriate use
- Workers to be trained on first aid & a fully equipped First Aid Kit provided at site.
- The contractor to have Incident and Accident Registers on site for recording of injuries or any OHS incidence.
- Contractor to prepare an emergency management and preparedness plan for accident response & avail Emergency contacts for police, ambulance, etc.
- Contractor to appoint a qualified health and safety person to manage OSH issues.
- Tools and equipment to be placed in a safe place when not in use.

7.4.2 Risk of Accidents to the community

Hauling of equipment (plant and machinery) and other materials and supply to the project site may pose a potential risk of accidents to animals, people, especially children.

Mitigation measures

- Contractor to sensitize the community on the project and the project period and what caution to be taken by the community. Restricted access to the construction site for community members unless where necessary.
- Contractor to employ qualified drivers.
- Drivers to be instructed to observe required speed limits.

- Installation of warning sign boards at the construction site and identified risk areas.

7.4.3 Increased exposure to transmissible diseases including HIV/AIDS

The rehabilitation and expansion of the Katikit Water Pan in Baringo County brings with it concerns about potential increases in HIV/AIDS and STIs. Such projects often attract a transient workforce and disrupt local social dynamics, increasing vulnerability to risky behaviours like unprotected sex and substance abuse. To mitigate these risks, robust health education programs, access to HIV/AIDS and STI prevention services, and community involvement in project planning are essential. Strengthening local health systems and promoting safe practices are critical steps to ensure that development efforts enhance community well-being without compromising public health.

Mitigation measures

- Contractor to sensitize workers and community members on HIV/AIDS and other communicable diseases.
- Contractor's Health and Safety Management Plan (CHSMP) to be enforced through the Directorate of Occupational Health & Safety (DOSH)
- Controlled access to Contractor's Workforce Camps by outsiders.
- Contractor to provide standard quality condoms at the construction site during the construction period.

7.4.4 Labour risks including labour influx

The excavation work will be mechanical and the labour required for the construction of auxiliary structures (water troughs, fencing, latrines) will mostly use the local labour force. Influx of labour from nearby towns such as Moyale may cause an increase in illicit behaviour and crime and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse and prostitution.

Mitigation measures

- The proponent adherence to national labour code and WB policies through incorporating the same in the Procurement and Contract Agreement document for implementation by the contractor.
- All workers engaged in the project to be sensitized on the national code of conduct and the World Bank policies
- Local community members will be given priority in employment opportunities, in casual and unskilled labour.
- Train the community on the project requirements and product.

- The Contractor to ensure that comprehensive data on all workers involved in the project during construction is kept (register of all workers kept on site).
- Training of PMC and community policing of the project

7.4.5 Risk of Social Conflict

Conflicts may arise between the local community and the construction workers, which may be related to cultural, or ethnic differences, or based on competition for local resources. Tensions may also arise between different groups within the labor force, and pre-existing conflicts in the local community may be exacerbated.

Mitigation measures

- The proponent adherence to national labour code and WB policies through incorporating the same in the Procurement and Contract Agreement document for implementation by the contractor.
- Contractor to sensitize the workers on code of conduct (COC)
- Develop and implement local hiring rules in consultation and partnership with the local community.
- Train workers and the project management committee and rank members on conflict management and resolution

7.4.6 Child Labor and School Dropout

The proposed project may result in increased opportunities for the sale of goods and services to the incoming workers, which can lead to child labor to produce and deliver these goods and services, which in turn can lead to enhanced school dropout.

Mitigation measures

- The proponent to sensitize the community on national children welfare policies, children laws and World Bank policies on the protection of children and the importance of children being educated.
- The Proponent to ensure the Contractor complies with national and WB policies and rules on welfare of children.
- Control to ensure there is no child labour at the construction. This can be done by using Identification Cards to verify the age of the workers and casuals.

7.4.7 Gender Based Violence (GBV)

This impact is triggered during Project Construction Phase when the Contractor fails to comply with gender inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule. Failure

to protect Human Risk Areas Associated with, Disadvantaged Groups, interfering with Participation Rights, and interfering with Labour Rights may also result in GBV.

Mitigation Measures of Human Rights and Gender Requirements are.

- The contractor will implement provisions that ensure that GBV at the community level is not triggered by the Project, including:
    a) Effective and on-going community engagement and consultation, particularly with women and girls.
- Review of specific project components that are known to heighten GBV risk at the community level e.g. hiring procedures and renumeration.
- The contractor shall develop specific plan for mitigating these known risks, e.g., sensitization employment.
- The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.

7.4.8 Sexual Exploitation and Abuse (SEA) by project workers against community members

This impact refers to sexual exploitation and abuse committed by Project staff against communities and represents a risk at all stages of the Project, especially when employees and community members are not clear about prohibitions against SEA in the Project. Such risks also occur where project workers with some level of authority abuse this power e.g., through promise of jobs in return for sexual favours.

Mitigation Measures to Risk of SEA include.

- Proponent to develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP.
- The SEA action plan will include how the project will ensure necessary steps are in place for:
    a) Prevention of SEA through including Code of Conduct (CoC) and ongoing sensitization of staff on responsibilities related to the COC.
    b) Response to SEA by including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures.
    c) Engagement with the community & development of confidential community-based complaints mechanisms discrete from the standard GRM.
    d) Integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA.

7.5 Positive Environmental and Social Impacts during operation phase

7.5.1 Improved Water Security

Restoration of the Katikit Water Pan will improve the availability of water for domestic use, livestock watering, and small-scale irrigation, particularly during prolonged dry seasons commonly experienced in **Tiaty West Sub-County**.

7.5.2 Enhanced Agricultural Productivity

Improved access to water will support small-scale irrigation activities, enabling community members to grow vegetables and other crops, thereby contributing to improved household food security and nutrition.

7.5.3 Improved Livelihoods and Income

Increased agricultural production and improved livestock productivity are expected to enhance household incomes and reduce the community's vulnerability to climate-related shocks.

7.5.4 Reduced Water Collection Burden

The project will reduce the distance and time spent fetching water, particularly for women and children, allowing them more time to engage in productive economic activities and education.

7.5.5 Improved Livestock Health

Reliable water supply will improve livestock health and reduce animal mortality during dry seasons, thereby supporting pastoral and agro-pastoral livelihoods.

7.5.6 Strengthened Climate Resilience

The increased water storage capacity of the rehabilitated pan will enhance the community's ability to cope with recurrent droughts and erratic rainfall patterns.

7.5.7 Community Empowerment and Ownership

Active participation of the local community in the management and maintenance of the water pan will strengthen local capacity, promote ownership, and support long-term sustainability.

7.5.8 Environmental Improvement

Proper management of runoff and controlled water use will help reduce soil erosion and environmental degradation around the water pan area.

7.5.9 Support to Vulnerable Groups

Improved access to water and enhanced agricultural production will particularly benefit vulnerable households, including women-headed households and youth, by improving livelihoods and food security.

7.6 Negative Environmental and Mitigation Measures during the Operation phase

7.6.1 Surface and Ground Water Pollution

Water pollution may be from several sources. Pollution of the water could make the water unsuitable for the proposed use in the project. This could be from: watering of animals directly from the Water Pan, unattended oil spillage during the construction period, poor farming technologies upstream, use of agrochemicals and destruction of catchment. Leaching of agrochemicals would result to ground water pollution.

Mitigation measures include the following.

- The Water Pan should be fenced as indicated in the BQ and having only one controlled entrance.
- The users should draw off water from the designated sites only.
- The Contractor to clear the site of all solid wastes, construction materials and any spills after completion of the construction works.
- The Proponent to ensure the construction of pit latrines in the site as provided in the BOQ at a safe distance from water sources.
- The Proponent to develop and implement (through sensitization of farmers) an *Integrated Pest Management Plan* (IPMP)
- Proponent to ensure regular monitoring of water quality.

7.6.2 Soil Erosion and Siltation of the Water Pan

Concentration of many livestock in the project area as they come for watering and poor farming practices will result in soil erosion. Overstocking of livestock in the project area will also result in overgrazing and soil erosion. The erosion of the inlet water course and the degradation of the Water Pan catchment will result in the siltation of the Water Pan resulting in increased water turbidity and reduced volume of the Water Pan.

Mitigation measures

- Construction of silt traps along the inlet water course as will be guided by the supervising engineer
- Regular maintenance of the check dam/silt traps by the community
- The embankment to be grown with suitable grass as outlined in the design plan.
- The proponent to ensure the implementation of the developed ***integrated sustainable land management (ISLM)*** plan.
- The catchment community to be sensitized on the ISLM & to be trained on farm SLM practices e.g. terracing, minimal tillage, agroforestry crop rotation, intercropping.

- Regular desilting should be undertaken (removal of silt from the reservoir using manual labour can be periodically organized during the dry season).
- The proponent to consider piping water to other sites in future to avoid animal concentration and overgrazing in the project area.
- Sensitize the community on appropriate stock rate.

7.6.3 Water Pan Breaking Its Walls and Associated Risks

Above normal rains over a longer period, damage of the Water Pan walls and lack of maintenance could result in the Water Pan walls breaking and suddenly discharging its water. The outcome may be destruction of property, land degradation and risk to the people living downstream.

Mitigation measures

- The Proponent should develop the Katikit Water Pan Crisis Action Plan (CAP). The CAP should contain the details for Water Pan CAP as shown under Appendix 12.
- A qualified Water Resource Professional should inspect the site every year and at least at the end of every rainy season.
- Undertake regular (continuous) monitoring and assessment of the Water Pan and project site especially with the current climate change, before and after the rainy season.
- Proper inspection should be done once in 3 years to a maximum of once in 5 years by a qualified professional
- The inspection forms (see on annex 8) should be properly filled, maintained and action recommended.
- Train the project management committee and the local administration (local technical team) on scouting which will lead to early detection and responding to any risk situation.
- An Emergency Action Plan (EAP) should always be maintained by the operation and maintenance team and this should be done during the routine preventive maintenance by the local technical team (see the plan on annex 13).
- Undertake Environmental Audit for the Katikit Water Pan annually as required by NEMA.

7.6.4 Solid Waste Generation

Due to the farming activities, there would be generation and accumulation of wastes including wrapping and packaging materials and containers. Some of the packaging/wrapping and containers will be from agrochemicals which if not properly disposed off would result in toxicity in the environment.

Mitigation measures

- Sensitization of the farmers on the disposal of used agrochemical wrappings, containers and packages.
- Proponent to ensure wastes from farming activities are sorted before disposal
- Proponent to provide litter/waste bins in the project area for temporal storage of waste.
- Use of a NEMA registered waste collector, transporter and disposer.

7.6.5 Risk of Drowning

The Water Pan filled with water presents the risk of drowning to people or animals that may stray into the perimeter fence of the Katikit Water Pan or can be used in self-suicide.

Mitigation measures

- The risk has been significantly reduced through the proposed fencing and installation of a gate.
- The gate to be always locked with a padlock.
- The community be sensitized on the potential risk of drowning.
- Involvement of the whole community members in ensuring that the perimeter fence is maintained and not destroyed (encourage community policing).
- Employ a person to guard the Water Pan/through the water users' association (WUA) ensure regular monitoring.

7.6.6 Impacts on River Regime and Downstream Users

The unnamed natural drainage, like all the drainage channels in the 3MB sub basin is ephemeral and only flows during the rains and a shortly thereafter. The construction of the Water Pan will enable the harvesting of the flood water which would otherwise be lost, and use it for economic activity within the area. The development of the storage facility is therefore not expected to have an adverse impact on the river flow and the downstream community.

7.7 Negative Social and Economic Impacts

7.7.1 Outbreak of Livestock Diseases

Livestock converging in one watering point from different sites/regions increase the chance for the spread of livestock pest and diseases. If unchecked will lead to poor animal health, reduced livestock productivity and even livestock loss.

Mitigation measures

- Regular disease surveillance by the veterinary department and community.
- Sensitization of the community on disease spread, monitoring and control.
- A livestock disease management plan be put in place by the veterinary department to ensure disease incidences are promptly responded to and addressed.

7.7.2 Human health impacts e.g., Malaria and schistosomiasis, water borne diseases.

The presence of standing water provides good breeding ground for disease vectors especially with malaria and increase in schistosomiasis. Further, due to water scarcity in the area, the community may be tempted to use the Water Pan water for drinking purposes without treatment. The two scenarios carries possibility of increasing diseases given malaria prevalence is at 46.9% in the county while diarrhoea and typhoid are at 7.6% (KNBS, 2018).

Mitigation measures

- Sensitize the community on malaria prevention through use of mosquito nets, local and indoor residual spraying and bush clearing near households.
- Malaria surveillance programme to be maintained.
- Establish community-based health education committee that facilitate malaria control programme facilitated and coordinated through public health department
- Sensitize the community on water purification methods.

7.7.3 Occupational Health and Safety Concerns

Various occupational health and safety concerns are likely to arise particularly in relation to the use of pesticides and agrochemicals in farming.

Proposed mitigation

Development of Integrated Pesticide Management Plan (IPMP) and to include;

- Train the farmers on agrochemical management and environmentally sound chemical management, pesticides and fertilizers.
- Training farmers on application of residues, waste from cleaning and proper irrigation practices.
- Management of agricultural chemicals and fertilizers as per material safety data sheet and avoid environmental safety risks.
- Provision of an environmental programme to monitor agriculture chemicals through the field.

- Emphasize on the use of organic manure by the farmers.

7.7.4 Water use related conflict

Low rainfall or failure may result in inadequate water supply to the Water Pan. Unprecedented increase in land acreage under irrigation would also mean increase water demand for irrigation. Dependency on the Katikit dam for domestic; irrigation and livestock may result on water use related conflicts.

Mitigation measures

- Develop and implement a community users' development plan in consultation and partnership with the local community and existing WRUAs
- Formulation of local by-laws to guide the use of water in the project area
- Sensitize the community/beneficiaries on efficient water use to avoid wastage.
- Raise community awareness on the benefits of the project for more cooperation.

7.7.5 Poor leadership and management problems

Poor leadership, lack of transparency and accountability would result in the mismanagement of the will result into the project not meeting its intended goals.

Mitigation includes;

- Training of PMC on water project management, financial management and promotion of accountability & accountability.
- Sensitization of project beneficiaries/community members on project management.

7.7.6 Child labour and school drop out

The irrigation project may attract to children to engage in the sale of crops produced in the area such as tomatoes. The children may engage in vending of the crops harvested interfering with their educations and their welfare and children rights beside exposing them to other social evils.

Mitigation measure

- Train village volunteer child monitors to work closely with the office of the chief and the department of children on issues of child protection
- Sensitize the community on child protection issues relating to the project.

7.8 Decommissioning phase

The proposed Katikit Water Pan project is expected to operate for 20 years. After this period depending on the prevailing situation of the time, decommissioning of

the project could be undertaken. This could be due to various reasons such as a new bigger source of water being developed in the area therefore, the Water Pan being abandoned, or the Water Pan becoming completely silted or creating a risk to the community.

7.8.1 Positive Environmental and Social Impacts

The positive impacts associated with the decommissioning of the Water Pan are direct employment for those involved in the demolition work, restoration of the land for other productive purposes and reduction in the risk associated with the Water Pan.

7.8.2 Negative Environmental and Social Impacts

The main negative impacts of decommissioning are reduction in crop and livestock productivity, reduction in indirect employment opportunities, reduction in household income, the community and livestock to continue to walk for long distances in such of water and pasture, increased soil erosion and land degradation from the excessive run off and increased burden for the women to get water for households, increased in water borne diseases due to inadequate source of fresh water and increased poverty and reduced community adaptive capacity to climate change effects.

7.8.3 Mitigation Measures for the Decommissioning of the Water Pan

Depending on the reason for the decommissioning the report recommends that an environment and social impacts assessment be undertaken with the terms based on the prevailing scenario and baseline conditions and the nature of the decommissioning. However, if the decommissioning will be because of the complete abandonment of the Water Pan the land should be restored to its original state.

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

8.1 Introduction

The project proponent acknowledges that the proposed project activities will have some impacts on the biophysical environment, health and safety, and socio-economic well-being of Katikit Water Pan Community and other community stakeholders. Thus, the main focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities for continuous improvement. An environmental and social management plan has been developed to assist the proponent in mitigating and managing environmental and social impacts associated with the life cycle of the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the ESM&MP. As such, the ESM&MP should be subjected to periodic review for improvement purposes.

Tables 8-1 form the core of this ESM&MP for the construction, operational and decommissioning phases of the proposed Construction of Katikit Water Pan. In general, the tables outline the potential environmental, socio-economic, health and safety risks associated with the project and details all the necessary mitigation measures, their financial costs, as well as the persons responsible for their implementation and monitoring. The ESM&MP should be used as checklist in the initial environmental audit of the project.

It worth noting that the key responsibilities regarding compliance to the proposed ESM&MP during the construction period rest on the Contractor whereas those in operation stage will be the responsibility of the proponent. **The ESM&MP should be shared with the selected contractor(C-ESM&MP) for implementation.** It is important that the project proponent ensures adequate monitoring and evaluation for the Contractor for non-conformances and adequate resources are allocated for operational stage.

Table 8:1: Environment and Social Management and Monitoring Plan4

Environment/ Social Impact	Proposed Mitigation Measure	Indicator	Responsibility	Means of Verification	Time Frame	Estimated cost (Kshs)
NEGATIVE ENVIRONMETAL IMPACTS IN THE CONSTRUCTION PHASE						
Temporal Restriction Access	• Prior notice be given to community members through the local administration on the restriction access before commencing the work. • The proponent and the contractor to consider alternative ways of executing the works to allow continued use of water in the Water Pan such as draining of the water to temporal storage area. • Consider an alternative source of water to the community for livestock use during the construction period such as water trucking.	• NO. of community members informed on restriction access • NO. of water sources available to the community • NO. of community members benefitting from water trucking	Contractor Proponent Department of water (Director) CPCU	Reports Attendance register	4 months	**200,000 water trucking**
Disturbance of vegetation	• Site clearance to be limited to the project demarcated area and selective removal of vegetation or trimming of trees to be exercised where possible. • Local community to be allowed to harvest areas of natural vegetation that are to be cleared prior to clearing. • The proponent to support establishment of a community tree nursery for indigenous trees • Compensatory planting of trees or other appropriate vegetation after construction works • Construction workforce to be sensitized on environmental and ecological conservation	• Area cleared of vegetation • Number of tree nursery established. • Number sensitization meetings for workers held	Proponent Supervising engineer/Contractor PMC	M & E reports Engineer's report Photographs	4 months	**150,000** Tree nursery establishment
Soil Erosion	• Contractor to avoid construction during the wet season. • Contractor to limit excavation to the marked boundaries of the project site. • Contractor to ensure proper compaction where required. • Contractor to provide designated routes for vehicles. • Where possible the contractor to exercise selective removal of mature, indigenous trees. • Compensatory planting of trees or other appropriate vegetation after construction • Sensitization of construction workforce on environmental and ecological conservation and protection.	• Time of excavation • Area of land excavated • Designated site for stock pile available • Number of compactions runs made • Marked routes for vehicles available • Number of sensitization meetings held	Contractor/supervising engineer Proponent Dept. of Agriculture Dept. of Environment Community	Engineers' reports Photographs Attendance register Sectoral Field reports	8 months	**Factored above**

Noise and vibration generation	• Avoid idling of machinery or engine when not in use. • Restrict activities that create noise to daytime only. • Workers to be provided with ear muffles. • Contractor to ensure the use of well-maintained machineries and vehicles.	• Number of PPEs purchased. • Number of workers using PPEs. • Number of vehicles and machinery not on idling when not in use. • Time of operation	Contractor/Supervising engineer/work manager	Local purchase orders Reports Receipts Available servicing cards/receipts	4 months	**10,000** **Ear muffs**
Air Pollution (Dust & Machinery and motor vehicle emissions)	• Ensure that maintenance on all machinery is done regularly to avoid the emission of noxious gases. • Drivers and machine operator to avoid unnecessary running of motor vehicle engines and machinery when not in use. • Provision of dust masks to workers and ensure their use. • Locating haul roads, tips, and stockpiles away from sensitive receptors, considering prevailing wind directions. • Contractor to instruct the drivers to avoid unnecessary speeding near settlements in the project areas • Contractor to make sure water sprays and mist are applied as dust suppression measures on loose soils and stockpiles.	• Frequency of machinery/ vehicle maintenance • No / frequency of water sprays and mists • No. of designated hauling/stockpiles areas • No of PPEs procured/ Proportion of workers with requisite PPEs • No of drivers trained/advised due diligence on machine/vehicle operation	Contractor/Supervising engineer/work foreman NEMA	LPOs Reports Signed contracts between Contractor & employees	4 months	**100,000** **Water sprays**
Oil spills	• Proper maintenance of vehicles and other equipment (using petroleum products) to avoid fuels and lubricants spills at the project site. • The contractor should properly handle, store, and dispose off oils and greases and their wastes during construction by ensuring that servicing is strictly done at designated servicing yard or external petroleum stations. • Site staff to be sensitized on safety procedures for fuel storage and re-fueling should be well understood and implemented by site staff.	• Designated site for disposal of contaminated materials available • Number of sensitization meetings held • Number of motor vehicle servicing undertaken • Number of vehicles serviced	Contractor/supervising engineer	Servicing receipts/cards Reports Attendance registers	8 months	**30,000**
Solid waste generation & accumulation	• The contractor to exercise waste segregation and to ensure waste not reusable or recyclable is cleared from the project site and disposed off as per NEMA and County Government regulations • Contractor to provide temporal waste disposal receptacles in site. • Contractor to liaise with licensed waste collector to routinely collect and dispose the waste	• No of litter bins installed • Licensed waste handler in place • No of trainings on waste management • NO. of bins for handling solid waste	Contractor/Project Manager	Receipts Attendance Register Photos	4 months	**5,000** **For bins**
Excavated earth materials & desilted silt	• Contractor to dump unused excavated materials and debris in designated places as directed by the supervising engineer.	• Presence of designated site for unreusable earth materials.	Contractor/Supervising engineer	Engineers report Photos	4 months	**10,000**

	• Contractor to use excavated soil for the Water Pan wall/embankment. • Excavated silt can be incorporated with compost for use as potting media in the tree nursery.	• Volume of reused earth materials • Volume of silt to be used in tree nursery				
NEGATIVE SOCIO-ECONOMIC IMPACTS IN THE CONSTRUCTION PHASE						
Occupational Health and Safety (OHS)	• The sites to be protected or fenced off from unauthorized intrusions and warning signs; barricades should be properly displayed and strictly adhered to. • All workers to be provided with full protective gear (PPEs) and to use them • Workers to be trained on first aid & a fully equipped First Aid Kit provided at site. • The contractor to have Incident and Accident Registers on site for recording of injuries or any OHS incidence. • Contractor to prepare an emergency management and preparedness plan for accident response & avail Emergency contacts for police, ambulance, etc. • Contractor to appoint a qualified health and safety person to manage OSH issues. • Tools and equipment to be placed in a safe place when not in use. • Workers on contract to be insured	• No of Labels and warning signs installed • No of workers using PPEs on use by those involved at the site • No of staff/ workers trained on first-aid • No of First-aid Kits installed No of incidences/ accidents reported • NO. of emergency plan for accident response in place • Emergency contacts at the site • No of persons insured	Contractor/Supervising engineer/work foreman Work foreman Directorate of Occupational Health and Safety (DOSH)	Purchase receipts Reports Attendance register Records of testimonials of drivers	4 months	**50,000**
Risk of Accidents to the community	• Contractor to sensitize the community on the project and the project period and what caution to be taken by the community. • Contractor to employ qualified drivers. • Drivers to be instructed to observe required speed limits. • Installation of warning sign boards at the construction site and identified risk areas.	• Number of drivers instructed • No. of signage in identified risk areas • No. of community sensitizations on project implementation, risks and safety measures	Contractor/Supervising engineer	Photographs Attendance register Site visits	4 months	**15,000**
Increase in incidences of HIV/AIDS and STIs	• Contractor to sensitize workers and community members on HIV/AIDS and other communicable diseases. • Contractor's Health and Safety Management Plan (CHSMP) to be enforced through the Directorate of Occupational Health & Safety (DOSH) • Controlled access to Contractor's Workforce Camps by outsiders. • Contractor to provide standard quality condoms at the construction site during the construction period.	• Number of worker and community sensitized • No of condom dispensing equipment installed • Number of meetings held for workers and community	Contractor Proponent Public Health	Attendance registers Site visits	8 months	**40,000**
Labor risks including labor influx	• Local community members will be given priority in employment opportunities, in casual and unskilled labour. • Train the community on the project requirements and product.	• Number of trainings for PMC and Community policing of the project • NO. of community members trained on project requirements	Contractor/ CPCU/	Training reports Workers register local administration report on GBV incidences	1 month	**50,000**

	• Training of PMC and Community policing of the project			monitoring, assessment		
Risk of social conflict	• The proponent adherence to national labour code and WB policies through incorporating the same in the Procurement and Contract Agreement document for implementation by the contractor. • Contractor to sensitize the workers on code of conduct (COC) • Develop and implement local hiring rules in consultation and partnership with the local community. • Train workers and the project management committee and rank members on conflict management and resolution	• No of tenders with specific clause on WB policies such as equality in employment • No of signed code of conduct by the workers • Community user's development plan developed • NO. of PM administration trained on GBV	Contractor/Works foreman CPCU Local Project management committee	Minutes Reports Attendance registers	1 months	**10,000**
Child labor and school dropout	• The proponent to sensitize the community on national children welfare policies, children laws and World Bank policies on the protection of children and the importance of children being educated. • The Proponent to ensure the Contractor complies with national and WB policies and rules on welfare of children. • Control to ensure there is no child labour at the construction. This can be done by using Identification Cards to verify the age of the workers and casuals.	• No. of sensitizations on children welfare • No of registered workers • No of workers who have signed the code of conduct	CPCU	Signed agreements attendance registers copies of ID. Card No. of workers	Construction phase	**10,000**
Gender-based Violence (GBV) at the community level	• The contractor will implement provisions that ensure that GBV at the community level is not triggered by the Project, including: • Effective and on-going community engagement and consultation, particularly with women and girls. • Review of specific project components that are known to heighten GBV risk at the community level. • The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization employment. • The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.	• Number of engagements with women & girls • Code of conduct prepared • NO. of GBV risk factor identified • NO. of plans to mitigate risks developed. • NO. of Referral mechanisms in place.	Supervision Consultant GBV Expert Local NGO/CBO	GBV plans Attendance registers GBV action plans	1 year	**100,000**
Sexual Exploitation and Abuse by project workers against community members	• Proponent to develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. • The SEA action plan will include how the project will ensure necessary steps are in place for: • Prevention of SEA through including Code of Conduct (CoC) and ongoing sensitization of staff on responsibilities related to the COC.	• NO. of SEA Action Plans • NO. of workers signed COC • Number of community members engaged on developing community-based complaint mechanism.	Supervision Consultant GBV Expert	SEA action plan Attendance registers	1 year	**150,000**

	• Response to SEA by including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures. • Engagement with the community & development of confidential community-based complaints mechanisms discrete from the standard GRM. • Integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA.					
NEGATIVE ENVIRONMETAL IMPACTS IN THE OPERATION PHASE						
Surface & Ground water pollution	• The Water Pan should be fenced as indicated in the BQ and having only one controlled entrance. • The users should draw off water from the designated sites only. • The Contractor to clear the site of all solid wastes, construction materials and any spills after completion of the construction works. • The Proponent to ensure the construction of pit latrines in the site as provided in the BOQ at a safe distance from water sources. • The Proponent to develop and implement (through sensitization of farmers) an ***Integrated Pest Management Plan*** (IPMP) • Proponent to ensure regular monitoring of water quality.	• No of animals drinking from water troughs • No of community members drawing water from communal drawing points constructed • Acreage fenced • NO. of pit latrines constructed • NO. of IPMP developed & implemented • NO. of farmers sensitized on IPMP • Frequency of water quality testing.	Proponent Dept. of Livestock and agricultural officers Proponent Community in catchment area	Designs & BQs Reports Photographs Attendance Registers Training manuals	6 months	**150,000 IPMP development & implementation.**
Soil erosion & Siltation	• Construction of silt traps along the inlet water course as will be guided by the supervising engineer • Regular maintenance of the check dam/silt traps by the community • The embankment to be grown with suitable grass as outlined in the design plan. • The proponent to ensure the implementation of the developed ***integrated sustainable land management (ISLM)*** plan. • The catchment community to be sensitized on the ISLM & to be trained on farm SLM practices e.g. terracing, minimal tillage, agroforestry crop rotation, intercropping. • Regular desilting should be undertaken (removal of silt from the reservoir using manual labour can be periodically organized during the dry season). • The proponent to consider piping water to other sites in future to avoid animal concentration and overgrazing in the project area. • Sensitize the community on appropriate stock rate.	• No of silt traps constructed along the inlet water course • Acreage of land under catchment management and conservation through SLM • No of trainings on SLM • Area of embankment planted with grass. • NO. of additional cattle troughs. • NO. of community members sensitized on stock rate. • NO. of gabions constructed • Frequency of desiltation.	PMC Proponent Community Director Department of agriculture	Designs & BQs Training manuals Attendance Registers Photographs	8 months	**75,000 sensitization**

Water Pan breaking its walls and associated risks	• The Proponent should develop the Katikit Water Pan Crisis Action Plan (CAP). The CAP should contain the details for Water Pan CAP as shown under Annex 9. • A qualified Water Resource Professional should inspect the site every year and at least at the end of every rainy season. • Undertake regular (continuous) monitoring and assessment of the Water Pan and project site especially with the current climate change, before and after the rainy season. • Proper inspection should be done once in 3 years to a maximum of once in 5 years by a qualified professional • The inspection forms (see on annex 8) should be properly filled, maintained and action recommended. • Train the project management committee and the local administration (local technical team) on scouting which will lead to early detection and responding to any risk situation. • An Emergency Action Plan (EAP) should always be maintained by the operation and maintenance team and this should be done during the routine preventive maintenance by the local technical team (see the plan on annex 10). • Undertake Environmental Audit for the Water Pan annually as required by NEMA.	• CAP in place • number of inspections conducted/ frequency of inspection. • No of trainings for PMC • No of annual inspections conducted by engineers • Number of seasonal monitoring and assessment of the Water Pan • No of Environmental Audit for the Water Pan annually • Presence of Emergence Response Plan (ERP)	Local project management committee Chief/Village Administrator CPCU/County Government	Inspection reports CAP Training manuals Attendance Registers Audit Reports ERP Periodical M & E reports Photographs	1 year	**250,000**
Solid waste generation	• Sensitization of the farmers on the disposal of used agrochemical wrappings, containers and packages. • Proponent to ensure wastes from farming activities are sorted before disposal • Proponent to provide litter/waste bins in the project area for temporal storage of waste. • Use of a NEMA registered waste collector, transporter and disposer.	• NO. of famers sensitized on agrochemical waste disposal • NO. of waste bins provided. • NO. of registered waste collectors engaged	Proponent Director agriculture & livestock CPCU	Attendance register Training manuals Reports	once	**40,000 training & waste bins**
Drowning Risk	• The risk has been significantly reduced through the proposed fencing and installation of a gate. • The gate to be always locked with a padlock. • The community be sensitized on the potential risk of drowning. • Involvement of the whole community members in ensuring that the perimeter fence is maintained and not destroyed (encourage community policing). • Employ a person to guard the Water Pan/through the water users' association (WUA) ensure regular monitoring.	• Length of perimeter fence constructed • No. of sensitized • No. of entrances • No. of persons responsible for policing	PMC	BQs Reports Photographs Signed agreements with community policing team	1 year	**60,000**

NEGATIVE SOCIO-ECONOMIC IMPACTS IN OPERATION PHASE						
Outbreak of livestock diseases	• Regular disease surveillance by the veterinary department and community. • Sensitization of the community on disease spread, monitoring and control. • A livestock disease management plan be put in place by the veterinary department to ensure disease incidences are promptly responded to and addressed.	• Number of disease surveillance • No of Sensitization meetings held on disease control • A livestock disease management plan put in place	CPCU	Surveillance reports Training reports Attendance Registers Disease Management Plan	1 year	**100,000**
Human health impacts e.g. Malaria and schistosomiasis	• Sensitize the community on malaria prevention through use of mosquito nets, local and indoor residual spraying and bush clearing near households. • Malaria surveillance programme to be maintained. • Establish community-based health education committee that facilitate malaria control programme facilitated and coordinated through public health department • Sensitize the community on water purification methods.	• No/ Proportion of households with mosquito nets • No of people trained on malaria & water borne diseases control • Record of disease incidence • No of households practicing safety rules	CPCU Department of Public Health	Photographs Attendance Registers	2 weeks	**50,000**
Occupational Health and Safety to use of agricultural chemicals	• Development & implementation of Integrated Pesticide Management Plan (IPMP)	NO. of IPMP developed & implemented	CPCU Proponent Department of Agriculture	Reports	Quarterly	**150,000**
Water use related conflict	• Develop and implement a community users' development plan in consultation and partnership with the local community and existing WRUAs • Formulation of local by-laws to guide the use of water in the project area • Sensitize the community/beneficiaries on efficient water use to avoid wastage. • Raise community awareness on the benefits of the project for more cooperation.	NO. of community water users plan developed & implemented NO. of bylaws developed and implemented NO. of community members educated on water conservation	CPCU Proponent WRA Department of Water	Attendance register Training manual Reports	Quarterly	**75,000**
Poor leadership and management problems	• Training of PMC on water project management, financial management and promotion of accountability & accountability. • Sensitization of project beneficiaries/community members on project management.	NO. of PMC trained NO. of trainings NO. of community members trained on project management.	CPCU Proponent	Attendance register Reports	Quarterly	**50,000**
Child labour and school drop out	• Train village volunteer child monitors to work closely with the office of the chief and the department of children on issues of child protection • Sensitize the community on child protection issues relating to the project.	• NO. of village volunteer's child monitors trained. • NO. of community members trained on child protection.	CPCU Proponent Chief	Attendance register Reports	Quarterly	**25,000**

DECOMMISSIONING PHASE						
Decommissioning Impacts	• Proponent to undertake environmental and social impacts of the proposed decommissioning	Duration of investigation NO. of Decommissioning Plans ESMP developed	Proponent	Decommissioning report Decommissioning Plan ESMP	1 months	**200,000**
conflict Management	• Proponent to notify all the Project Affected Persons (PAP)	NO. of methods of notification NO. of PAPs notified	Proponent	Notification notice	1 week	**30,000**
TOTAL						**2,185,000**

NOTE:

This ESMP should be shared with the chosen Contractor to enable the development of the Contractor ESMP for easy follow up and monitoring of the proposed mitigation measures and response to other issue that might arise during the construction phase.

8.2 Water Pan Crisis Action Plan (CAP)

A crisis action plan for Katikit Water Pan should be developed and would consist of:

- Contact names and telephone numbers (owner of the dam, authorities downstream, police and emergency services and others) to call if the dam is damaged, develops problems or is considered unstable.
- Information on possible areas likely to be affected downstream (estimated area of inundation) should the dam fail or significant amounts of water require immediate release from gates, drains or outlets. A map to illustrate various levels of inundation (with estimates of timings for any flood wave) should be prepared and be available.
- A list of names, addresses and telephone numbers (keep this up to date) of inhabitants living immediately downstream of the dam and within the estimated area of inundation.
- The CAP should be periodically updated to consider changes in land use downstream and any changes to the catchment upstream.
- Plans for warning and emergency evacuation, including the provision of safe routes to follow in case of flooding/ dam failure. Immediate evacuation should take priority over any other action should the stability of the Water Pan be threatened.
- Information on resources to use and procedures to follow for emergency repairs. This should include a list of civil engineering contractors, equipment and materials' suppliers and engineers available locally.

8.2.1 Emergency Action Plan (EAP)

An Emergency Action Plan should always be maintained by the operation and maintenance team and this should be done during the routine preventive maintenance by the local technical team (see the EAP on appendix 13).

8.2.2 Community Training

As the Water Pan will be owned by the community at least two members of the Water Pan committee should receive basic training in operation and maintenance aspects of the Water Pan. This training should concentrate on the following issues:

- Attending to minor problems which can be taken care of by the community itself, e.g., rain erosion on embankment slopes, repair of fences etc.;
- Identification of problems which require more specialized attention, e.g., erosion in spillway channel; and
- Establishment of communication channels between the representatives of the community (Water Pan committee) and the responsible organization or administration at county level.

8.3 Risk Assessment

Water Pans are considered to be a hazard as it may cause inundation, physical and environmental damage and loss of life. As such, classifying water structures into different hazard classes helps to define design speculations and acceptable risk associated with different scale of hazard. Based on table 8.3 below, this type of Water Pan is a low to medium risk hence a crisis action plan is very necessary.

Table 8:2: Class of Water Structures

Class of water structure/dam/Water Pan	Maximum Depth of Water at NWL (m)	Impoundment and NWL (m3)	Catchment Area (km²)
A (Low Hazard)	0-4.99	<100,000	<100
B (Medium Hazard)	5.00-14.99	100,000 to 1,000,000	100 to 1,000
C (high Hazard)	>15.00	>1,000,000	>1,000

Source (Practice Manual for Small Dams, Pans and Other Water Conservation Structures in Kenya)

Based on the above criterion, Katikit water structure falls in the Low hazard category since it has a depth of above 4 meters with a catchment area of less than 100 square kilometers.

8.4 Water Pan Inspection

To ensure the safety of Katikit Water Pan regular inspection will be undertaken. A qualified Water Resource Professional should inspect the site every year and at least at the end of every rainy season. The dam should also be continuously monitored especially with the current climate change, before and after the rainy season. However, Proper inspection should be done once in 3 years to a maximum of once in 5 years by a qualified professional.

The inspection forms (see on appendix 11 on inspection form) should be properly filled, maintained and action recommended. An emergency Action Plan should always be maintained by the operation and maintenance team and this should be done during the routine preventive maintenance by the local technical team (see plan on appendix 11).

9. CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

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

The ESIA and preparation of this summary project report was carried out to fulfil legal requirements, as outlined in the Environmental Management and Co-ordination Act (1999), and the Environmental (Impact Assessment and Audit) Regulations (2003) revised in 2015&2019. Mitigation measures for the potentially significant and/or adverse environmental and social impacts and safety risks have been provided as an integral part of this ESIA report.

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

The proposed ESMP should be followed fully by the contractor with the supervision from the proponent and environmental and social monitoring progress report be submitted quarterly. This will help to ensure success of EMP and that the recommended mitigation is implemented throughout construction, operational and decommissioning phases in order to avert any negative impacts.

9.2 Recommendations

The following are some of the recommendations made in order to minimize or mitigate for the adverse environmental and social impacts from the proposed Water Pan.

a) **Implementation of Prescribed Mitigation and Community Measures:** The proponent and contractor are legally obligated to implement all mitigation measures detailed within this Summary Project Report and its Environmental and

Social Management Plan (ESMP). This includes, but is not limited to, the specific measures derived from community consultation, such as:

- **Local Economic Inclusion:** Prioritizing the hiring of qualified individuals from the Katikit community for unskilled and semi-skilled labor positions, sourcing skilled labor externally only when local expertise is unavailable.
- **Workforce Safeguards:** Supplying all personnel with certified Personal Protective Equipment (PPE) and ensuring mandatory registration and insurance for all workers under the Work Injury Benefits Act (WIBA).
- **Site and Community Safety:** Erecting secure perimeter fencing with controlled access, installing clear safety signage, and conducting community sensitization on construction hazards.
- **Resource Governance:** Developing transparent, enforceable water-use guidelines in partnership with the Water Users Association (WUA) to ensure equitable allocation for domestic, livestock, and irrigation needs.
- **Environmental Management:** Limiting vegetation clearance to the demarcated project footprint and implementing a post-construction revegetation plan for disturbed areas.

b) **Adherence to Approved Project Design and Ancillary Assessments:** All project activities, including design, construction, and operation, must be carried out in strict accordance with the specific engineering designs, specifications, and methodologies approved in this report. No deviations are permitted without prior review and authorization from the relevant authorities (NEMA, WRA, County Government). Furthermore, the proponent must undertake and obtain approval for separate, site-specific Environmental Impact Assessment studies for all proposed ancillary sites, such as borrow pits and areas for sourcing construction materials, before any related activities commence. It is recommended that the feasibility of installing a small upstream weir or check structure be assessed to help regulate inflow and reduce sediment entering the water pan. Where a full weir is not practical, silt traps or gabion check dams within the upstream channel should be considered as cost-effective alternatives for controlling siltation and prolonging the lifespan of the water pan.

c) **Mandatory Annual Compliance Audit:** A complete Environmental and Social Compliance Audit must be undertaken by the proponent and submitted to the National Environment Management Authority (NEMA) every year after the project's commissioning. This annual audit must independently verify that all proposed mitigation measures within the ESMP have been fully complied with and are effective.

d) **Addressing Social Impacts from Community Participation:** The proponent must ensure that the social impacts and concerns raised during community participation are actively followed, addressed, and documented. The annual audit stipulated in point (c) must include an evaluation of the management of these social impacts, confirming that community-raised issues have been resolved and that ongoing engagement mechanisms are functional and effective

In conclusion, the positive impacts outweigh the negative impacts. The listed negative impacts can be corrected with the proposed mitigation measures and it is also economically viable therefore the **project should be allowed to proceed.**

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APPENDICES

Appendix 1: Minutes of Public Participation

MINUTES OF THE PUBLIC PARTICIPATION FOR THE PROPOSED DESILTING OF KATIKIT COMMUNITY WATER AT KATIKIT VILLAGE, IN KATIKIT LOCATION, TIATY WEST SUB COUNTY, BARINGO COUNTY HELD ON 23rd FEBRUARY, 2026.

MEMBERS PRESENT

See Attached:

AGENDA

1. Introductions and opening remarks
2. Purpose of the meeting
3. Katikit water pan Project Brief and Background
4. Concerns, Questions and Responses
5. A.O.B. & adjournment

PRELIMINARY

The meeting commenced with a word of prayer at 11:40 a.m. led by one of the community members, after which the County Project Coordinator (CPC) Mr. Elphas Rutto called the meeting to order. The meeting was held at the proposed Katikit water pan location in Katikit Village on 23rd February, 2026. A total of 31 community members (9 Female, 21 Male and 13 Youth) attended the ESIA public meeting. The meeting started at 11:40hrs with a translator (community member) available throughout the meeting.

MIN. 1 – 23/02/2026: INTRODUCTION & OPENING REMARKS

The NEMA County Director opened the session by highlighting the critical role of Environmental and Social Impact Assessments (ESIAs) in sustainable development. He urged the community to speak freely, emphasizing that their local insights are vital to shaping an accurate and summary final report.

The ESIA Consultant further reminded the participants of the primary objective of the meeting, stating that, it was to facilitate formal public participation for the proposed desilting of the Katikit water pan. He went ahead to explain the tender process and gave details on

what will be expected of the contractor and the works. He assured the community that their views, concerns, and suggestions would be incorporated into the ESIA study.

MIN. 2 - 23/02/2026: PURPOSE OF THE MEETING

The consultant explained to the participants that consultation and public participation process is a requirement under Kenyan Constitution and a mandatory procedure stipulated in the Environmental Management and Coordination Act (EMCA) CAP 387 Section 58. According to section 59, and the second schedule of EMCA (Amendments 2019) new projects like the proposed Katkit water pan, must undergo Environmental and Social Impact Assessment that includes conducting public meetings for the stakeholders, project affected persons, local community/ surrounding enterprises or interested and affected parties. The resulting Summary Project Report must be submitted to the National Environment Management Authority (NEMA) for public and technical review, approval and subsequent issuance of relevant license to enable commencement of project implementation.

The main objective of the consultation meeting was to:

1. Gather comments, suggestions and concerns of the interested and affected parties in the proposed project, and incorporate them in the Summary Project Report (SPR).
2. Disseminate and inform the public and stakeholders about the project with Special reference to its key components and description
3. Create awareness among the public on the need for the ESIA for the proposed project.

The ESIA team Leader then welcomed the attendants to raise their comments, concerns and suggestions in regard to the proposed earth dam project.

MIN. 3 – 23/02/2026: PROJECT BRIEF AND BACKGROUD

The County Project Coordinator started by briefing the community members about proposed project, he explained the project was part of the **BREFONS** program which aims at building resilience for food and nutrition; he further expounded on the design and the expected activities during construction and operation. He also emphasized that the project will be owned by the community and called upon members to support the efforts of the program to ensure cooperation during the construction phase and sustainability during the operation phase.

A community representative then provided the historical background of the Katikit water pan. He begun by stating that before the pan was constructed in 2010, accessibility to clean and safe water was difficult as they depended on a seasonal river and little rain, they received, considering the area is arid. They had to walk long distances for water and this caused a strain to their everyday lives. It was noted that the area initially experienced severe water shortages, prompting the community

to seek a long-term solution. As a result, community members voluntarily donated land for the construction of the water pan.

With the construction of the pan however, relief of just water, happened but the quality of the water has remained poor as the goal of clean and safe water was not yet achieved. The water pan has been used directly by animals for drinking as well as humans, while the human activities take place in the pan, soil erosion caused more damage by causing siltation in the pan. The pan is still in use despite the enormous quantities of silt as this is the closest source of water. With this necessity identified, the **BREFONS** program was acknowledged as a great initiative to solve the issue at hand.

MIN. 4 - 23/02/2026: POSITIVE IMPACTS ANTICIPATED BY MEMBERS FROM THE MEETING

The community welcomed the project. During the meeting, community members anticipated the following positive impacts arising from the proposed desilting of the Katkit water pan:

1. **Improved Water Security**: Restoration of the dam will ensure reliable access to water for domestic use, livestock watering, and small-scale irrigation, particularly during prolonged dry seasons.
2. **Enhanced Agricultural Productivity**: Availability of water for irrigation is expected to support increased production of Orange-Fleshed Sweet Potato (OFSP) and other crops, leading to improved household food security and nutrition.
3. **Improved Livelihoods and Income:** Increased agricultural output and livestock productivity will enhance household incomes and reduce vulnerability to climate-related shocks.
4. **Reduced Water Collection Burden**: The project will significantly reduce the distance and time spent, especially by women and children, in fetching water, allowing more time for productive and educational activities.
5. **Improved Livestock Health**: Reliable water supply will reduce livestock mortality and improve animal health and productivity, particularly during drought periods.
6. **Strengthened Climate Resilience**: Increased water storage capacity will enhance the community's resilience to recurrent droughts and erratic rainfall patterns experienced in the area.
7. **Community Empowerment and Ownership**: Community involvement in operation and maintenance will strengthen local capacity, ownership, and long- term sustainability of the water infrastructure.
8. **Environmental Improvement**: Proper management of runoff and controlled abstraction will reduce soil erosion and environmental degradation around the dam area.
9. **Support to Vulnerable Groups**: Improved access to water and enhanced

food production will positively impact vulnerable households, including women- headed households and youth.

MIN 5 - 23/02/2026: CONCERNS, QUESTION & ANSWER SESSION AND RESPONSES

The ESIA Consultant invited community members to raise questions, concerns, and comments regarding the proposed desilting of the Katikit water pan and its anticipated environmental and social impacts. The following key issues were raised by the meeting participants, and responses were provided by the Client representatives and the ESIA Consultant as summarized below.

Table 1.1 Concerns by ESIA meeting attendants and Responses by Consultants

Key Issue	Stakeholder concerns	Technical Team Response
Increased soil erosion and sedimentation	Community members raised concerns regarding further soil degradation as they claimed that excavation and earthworks with heavy machines may loosen soil which leads to further erosion and sediments deposition.	The ESIA Consultant acknowledged the concern and assured that sit traps and sedimentation basins are considered to be constructed. The ESIA expert also promised to recommend that grassing and bioengineering can also be used to stabilize embarkments. Installation of diversion channels was also tabled as a possible mitigation measures and finally revegetation immediately after works are completed.
Disturbance to terrestrial and aquatic wildlife	Members expressed fear that the desilting and expansion process will eradicate the existing terrestrial and aquatic wildlife like tortoise, fish and birds	The Consultant explained that the desilting and expansion process will be keen on the wildlife available and around, and from his/her side recommend maintenance of buffer zones, a probable gradual desilting rather than complete draining of the pan and also possible restoration of the natural shoreline contours.

Key Issue	Stakeholder concerns	Technical Team Response
Water contamination during construction	Community members raised concerns water being contaminated during the construction process from fuel leaks from the heavy machinery used due to possible poorly maintained machinery, fueling or possible machinery servicing while on site.	The ESIA Consultant acknowledged the concern and assured that the site will have designated fueling areas away from the pan, the construction team will have spill kits on site, machinery will be regularly serviced an inspected and servicing will be prohibited within 50m of the pan.
Occupational health and safety risks	Community members raised concerns in exposure to hazardous materials such as fumes from the machines during operations that could lead to long term health issues	The ESIA consultant was in agreement with the issue raised but assured strong recommendations that involved the construction team to provide the needed PPEs, install warning signages, fencing of deep excavations, conduct toolbox safety talks also have trained personnel on Fire safety, first aid and occupational health and safety while on site.
Increased risk of conflicts	Concerns were raised about possible conflicts over water use for domestic, livestock, and irrigation purposes.	The Client emphasized that a community-based water management committee should be formed after the project has been handed over to the community to help oversee equitable water allocation and develop simple water- use rules to minimize conflicts.

Key Issue	Stakeholder concerns	Technical Team Response
Land Encroachment	Some members sought clarification on land encroachment and whether the desilting works would affect private land nearby	It was clarified that the dam is located on voluntarily donated land and no additional land acquisition is anticipated.
Construction Impacts (Dust, Noise, Access)	Members expressed concern about dust, noise, andtemporary disruptionduring construction.	The Contractor will implement mitigation measures including controlled working hours, watering of access roads to suppress dust, and adherence to occupational health and safety standards.
Employment Opportunities	Youth and women asked whether they would be given priority for employment during construction.	The Consultant promised to recommend that priority be given to the locals for unskilled and semi-skilled labor opportunities.
Environmental Degradation	Participants raised concerns about destruction of vegetation and disturbance to wildlife.	The Consultant explained that vegetation clearance will be minimized, disturbed areas Rehabilitated after construction, and no protected or endangered species will be affected.
Operation and Maintenance	Members asked who would be responsible for maintainingthe water panafter desilting and expansion.	It was explained that the community, through a registered management committee, will be trained on operation and maintenance, with support from the County Government and project partners.

Key Issue	Stakeholder concerns	Technical Team Response
Project Timeline	Community member asked how long the desilting works would take.	The Project coordinator stated that they are yet to get clarification on the project timelines and will give feedback as soon as possible. However, he stated that the usual timeline is 4 months

MIN 6 - 23/02/2026: SUGGESTIONS FROM MEMBERS IN ATTENDANCE

- Community members recommended that unskilled and semi-skilled labour required during construction be sourced locally in order to enhance local employment and livelihoods. However, skilled personnel may be engaged from outside the project area where specialized expertise is required.
- It was suggested that the Environmental and Social Management Plan (ESMP) should explicitly provide for the use of appropriate Personal Protective Equipment (PPE), including gloves, gumboots, helmets, and reflective jackets, to minimize occupational injuries and accidents.
- The community recommended the installation of clear safety signage, controlled access to the construction site, and community sensitization, particularly to safeguard children and livestock from potential construction-related hazards.
- It was further suggested that priority be given to local community members for unskilled and semi-skilled job opportunities during the construction phase as a deliberate effort to support household incomes and community ownership of the project.
- Members advised that vegetation clearance be kept to the minimum necessary, and that all disturbed areas be rehabilitated after construction to restore the natural environment and reduce long-term ecological impacts.

MIN 7 – 23/02/2026: A.O.B AND ADJOURNMENT

There being no other business, the meeting ended with a word of prayer from one of the community members at 13:40hrs.

Signatures for Authentication

Name/Title	Signature	Date
ERICK O. ORWA		27 FEBRUARY,
Lead Environmental Expert	_____	_____
_____		

Appendix 2: List of Attendance

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)
STATE DEPARTMENT FOR AGRICULTURE
PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)
PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

PROPOSED ACTIVITY: ESIA FOR PROPOSED DESILTING OF KATIKIT WATER PAN

Date: 23/02/2026 Venue: KATIKIT VILLAGE

CHIEF KOSITEI LOCATION

PUBLIC PARTICIPATION ATTENDANCE LIST

NO	NAME	DESIGNATION / VILLAGE	Gender M/F	Below 35 Years	Above 35 Years	ID NO. / P No.	TELEPHONE NUMBER	SIGNATURE / THUMB PRINT
1	KANDAGOR NELLY	KATIKIT	F	✓			0798520513	
2	KEVIN SARICH	KATIKIT	m		✓		0716 647694	
3	CHEPKORU AGEDA	KATIKIT	m	✓			0757871155	
4	LOPUNE KIREU	KATIKIT	m		✓		0745 23911	
5	KAPEL NABISA	KATIKIT	m		✓		0725580448	
6	ZELEMOI MEKENG	KATIKIT	m		✓			
7	TULIARENG NGORKERIS	KATIKIT	m		✓		0792888273	
8	MERIKALES KAPEL	KATIKIT	m	✓			0716439449	
9	KESSE LOKWADO	KATIKIT	m	✓			0768 413607	

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)
STATE DEPARTMENT FOR AGRICULTURE
PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)
PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

CHIEF KOSITEI LOCATION

PROPOSED ACTIVITY: ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

Date: 23/02/2026 **Venue:** KATIKIT VILLAGE

PUBLIC PARTICIPATION ATTENDANCE LIST

NO	NAME	DESIGNATION / VILLAGE	Gender M/F	Below 35 Years	Above 35 Years	ID NO. / P No.	TELEPHONE NUMBER	SIGNATURE / THUMB PRINT
10	KANGORAPOG ZIWARENG	KATIKIT	m	✓			07AC104327	
11	ZIWAPEL RENGETIA	KATIKIT	m		✓		0769015444	
13	CHOLIA NGONTAKAN	KATIKIT	m		✓			
14	NAMERI NGORAKERIS	KATIKIT	m	✓			0727288906	
15	NGORASEL DONOPANG	KATIKIT	m	✓			0112643174	
16	LOSIWARENG MANTOKWA	KATIKIT	m	✓			0741922474	
17	LORANGI LOKORWO	KATIKIT	m		✓			LOR.
18	CHEMKEA AKORMAZEA	KATIKIT	F	✓				
19	WILLIAM ROTICH	KATIKIT	m		✓			

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)
STATE DEPARTMENT FOR AGRICULTURE
PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)
PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

PROPOSED ACTIVITY: ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

Date: 23/02/2026 **Venue:** KATIKIT VILLAGE

PUBLIC PARTICIPATION ATTENDANCE LIST

NO	NAME	DESIGNATION / VILLAGE	Gender M/F	Below 35 Years	Above 35 Years	ID NO. / P No.	TELEPHONE NUMBER	SIGNATURE / THUMB PRINT
20	CHEPCHEPKATO NYANGORIAR	KATIKIT	F	✓			0714226780	
21	CHEYECH LOREI	KATIKIT	F				0798823711	
22	CHEPOKUGHO LONGOLEION	KATIKIT	F		✓		0745653507	
23	CHEPIRANYEI CHOLIA	KATIKIT	F	✓			0759955040	
24	LOTEM KOTUKOY	KATIKIT	F					
25	CHEPTOLEL KAPEL	KATIKIT	M	✓			0741157572	
26	ZIWARENG AMONGIN	KATIKIT	M		✓		0113241249	
27	Jonathan Lotulia	SCAD	M	✓			0727373263	
28	Hesbon Monda	CDE (NEMA)	M		✓		0727564832	

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)
STATE DEPARTMENT FOR AGRICULTURE
PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)
PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

CHIEF KOSITEI LOCATION P.O. Box 1-30... NGINYANG 23 02 2026

PROPOSED ACTIVITY: ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

Date: 23/02/2026 **Venue:** KATIKIT VILLAGE

PUBLIC PARTICIPATION ATTENDANCE LIST

NO	NAME	DESIGNATION / VILLAGE	Gender M/F	Below 35 Years	Above 35 Years	ID NO. / P No.	TELEPHONE NUMBER	SIGNATURE / THUMB PRINT
29	Elphas K. Ruttoh	ADA	M		✓		0721579150	
30	Eric Ogada	ESIA ASSOCIATE EXPERT	M	✓			0700033598	
31	Siti Athman	EIA EXPERT	F	✓			07962A7AG1	
32	LOKOPE AMASLE	KATIKIT	M		✓			
33	CHEPARSIP DOMOKONG	KATIKIT	F		✓			
34	CHEPOCHEMPUM DOMOKONG	KATIKIT	F		✓			
35	Munono -N. Edison	CHIEF	M		V		0726661728	
36	Erick O. Dewa	ROAD EXPERT	M		✓		0721178504	

Appendix 3: Sample of Filled Questionnaires

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity: ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

Pursuant to the provisions of the Environmental Management and Co-ordination Act (1999), and the Environmental (Impact Assessment and Audit) Regulations (2003) revised in 2015. **African Development. Bank (AfDB)** Environmental & Social Safeguards that encompass rigorous Environmental and Social Assessments, Stakeholder Engagement, development of Environmental and Social Management Plans (ESMPs), establishment of Grievance Redress Mechanisms, Continuous Monitoring and Evaluation, Capacity Building, And Knowledge Sharing which are applicable in the Sub-Project, Public Health Act and Legal Supplement 2003 an Environmental and Social Site Assessment (or EIA/ ESMP is being conducted for the **PROPOSED PROJECT.**

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

Respondent

Name: CHEPRANTEI CHOLIA

Phone Number: 0759953040

Village: Kedi PO Sub-County: Tiaty West

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   → improved water availability, hygiene & sanitation
   → Kitchen gardens will be established
   → Agroforestry practice will improve.
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   — soil erosion
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

Signature/ Thump Print: .....

Date: 23-2-2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity:
ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

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

Respondent
Name: CHEPKORU ANGEDA
Phone Number: 0757871155
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

- Domestic use
- Livestock use

4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

- wildlife conflict

5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

N/A

Signature/ Thump Print: ✓

Date:
23/02/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity:
ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

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

Respondent
Name: SIWARENG AMONGIN
Phone Number: 0713244209
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

- Domestic water
- Livestock use

4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

- Drowning
- Human Wild life conflict

5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

N/A

Signature/ Thump Print: Toh

Date:
23/12/2021

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity: ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

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

Respondent

Name: Jonathan Kosgei

Phone Number: 28637629/0713621979

Village: Katikit Sub-County: Tiaty West

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Enough Water for Livestock
   - Reduced distance of fetching water
   - Improved Agroforestry practices
   - With water accessibility school going children will have time to go to School
   - Establishment of kitchen Garden
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Land degradation & soil erosion
   -
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.** The project will benefit the Community

Signature/ Thump Print: 23/02/2026

Date:

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

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

Respondent
Name: KESSE LOKWADO
Phone Number: 0769413607
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   water for domestic use
   accessibility to water is closer
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   drowning of people
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

Signature/ Thump Print: ……

Date: 23/02/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

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

Respondent
Name: CHEYECH LOPEI
Phone Number: 0798823711
Village: KEDIPO Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Improved hygiene and sanitation at household level
   - Improved water availability
   - Establishment of small farms by women
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   → soil erosion
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**
   The project to continue has planned.

Signature/ Thump Print: ✓

Date: 23-2-2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity:
ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

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

Respondent
Name: CHEPOCHEDUNYO NYANGORIARENG
Phone Number: 3818608/0714826720
Village: Kedipo Sub-County: Tiaty West

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Establishment of kitchen gardes
   - Availability of water
   - Women and Children will have other work to do
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Soil erosion
   - Breeding site for Mosquites
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**
   To project to start immediately

Signature/ Thump Print: 23/02/2026

Date: 23/02/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity: ESIA FOR THE PROPOSED ~~EXPS~~ DESILTING OF KATIKIT WATER PAN

Pursuant to the provisions of the Environmental Management and Co-ordination Act (1999), and the Environmental (Impact Assessment and Audit) Regulations (2003) revised in 2015. **African Development. Bank (AfDB)** Environmental & Social Safeguards that encompass rigorous Environmental and Social Assessments, Stakeholder Engagement, development of Environmental and Social Management Plans (ESMPs), establishment of Grievance Redress Mechanisms, Continuous Monitoring and Evaluation, Capacity Building. And Knowledge Sharing which are applicable in the Sub-Project, Public Health Act and Legal Supplement 2003 an Environmental and Social Site Assessment (or EIA/ ESMP is being conducted for the **PROPOSED PROJECT.**

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

Respondent

Name: Kiepokugho Longoletom

Phone Number: 0748653507

Village: Kedipo Sub-County: Tiaty West

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - School Enrolment will increase
   - Reduced distance of fetching water
   - Animals will get safe and reliable water
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Breeding for mosquito
   - Water related diseases such as typhoid will increase.
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**
   The Project will bring alot of impact to the community

Signature/ Thump Print: .....

Date: 23/2/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

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

Respondent
Name: KAREL NARUSAA
Phone Number: 0725850448
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

   - Livestock
   - Domestic

4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

   - Malaria
   - Soil erosion

5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**
   N/A

Signature/ Thump Print:

Date:
23/02/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

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Specific Site Activity:
ESIA FOR THE PROPOSED DESILTING OF KATIKIT ~~DAM~~ WATER PAN

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

Respondent
Name: TULIARENG NGORAKERIS
Phone Number: 0792 32 82 73
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   Availability for farming.
   Short distance to cows for drinking.
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   Pollution of water
   Conflict in community
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

Signature/ Thump Print: .....

Date:
23/02/2026

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

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

Respondent
Name: CHOLIA YOKAN
Phone Number:
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   closer to water source for cows
   access to water for domestic use
   fish farming can be done
   irrigation farming.
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   soil erosion
   drowning of cows and people
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

Signature/ Thump Print:

Date:
23/02/2026

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

PROJECT TITLE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROJECT ACTIVITIES IN BARINGO COUNTY

Specific Site Activity:
ESIA FOR THE PROPOSED DESILTING OF KATIKIT WATER PAN

Pursuant to the provisions of the Environmental Management and Co-ordination Act (1999), and the Environmental (Impact Assessment and Audit) Regulations (2003) revised in 2015. **African Development. Bank (AfDB)** Environmental & Social Safeguards that encompass rigorous Environmental and Social Assessments, Stakeholder Engagement, development of Environmental and Social Management Plans (ESMPs), establishment of Grievance Redress Mechanisms, Continuous Monitoring and Evaluation, Capacity Building, And Knowledge Sharing which are applicable in the Sub-Project, Public Health Act and Legal Supplement 2003 an Environmental and Social Site Assessment (or EIA/ ESMP is being conducted for the **PROPOSED PROJECT.**

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

Respondent
Name: CHEPTOLE KAPEL
Phone Number: 0741157572
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   water for cow
   water for farming
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   drowning of cow
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**
   N/o

Signature/ Thump Print: .....

Date:
23/02/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA (BREFONS)– KENYA COMPONENT

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

Respondent
Name: LOPUNE KIREW
Phone Number: 0745423911
Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Vegetation growth
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Drowning
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**
   N/A

Signature/ Thump Print: .....

Date:
23/02/2026

REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

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

Respondent

Name: SARICH KEMOI KEVIN

Phone Number: 0716647694

Village: KATIKIT Sub-County: TIATY CENTRAL

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   1. IRRIGATION
   2. FARMER
   3. DOMESTIC USE
   4. LIVESTOCK USE
   5.
4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?
   - Mosqueto
   - Wildlife conflict
   - Soil erosion
   - GVB
5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

   N/A

Signature/ Thump Print: [signature]

Date: 23/02/2026

MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT (MoALD)

STATE DEPARTMENT FOR AGRICULTURE

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

Respondent

Name: KALDAGHOR NELLY

Phone Number: 0798 52 05 13

Village: KATIKIT Sub-County: TIATY WEST

1. Do you support the proposed project in the area Yes (✓) No ( )
2. Within the area are there similar projects Yes ( ) No (✓)
3. What **Potential Positive Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

   AVAILABILITY OF WATER
   Short distance to water.
   water for irrigation

4. What **Potential Negative Environmental and Socio-Economic** impacts do you anticipate the project's implementation will generate?

   N/O

5. In your general opinion, should the project be implemented on the proposed site? Yes (✓) No ( )
6. Kindly give any other comments or suggestions you may have about the **project.**

   N/O

Signature/ Thump Print: ....

Date: 23/02/2026

Appendix 4: Land Agreement / Title/ Search

COMMUNITY LAND RESOLUTION FORM – BARINGO COUNTY

Community Resolution on Identification/ Selection of structure sites i.e.

DESILTING KATIKIT WATER PLAN

We, the beneficiaries of Katikit Village Have discussed and agreed that Katikit will be the site for the proposed construction of Katikit water pan in Tiaty West Sub County. Ribkwo Ward, Kositei Location, Kositei Sub-location.

We, on behalf of the beneficiaries (beneficiaries' representatives) confirm the above information be true.

(Names of three (NO) Beneficiaries' representatives)

S/NO.	NAME	ID/NO.	SIGNATURE
1.	KAPEL NARISA	32923370	[signature]
2.	NGURANGOLE DOMOKOL	7149275	[signature]
3.	CHEPKON Angeda	35283179	[signature]

Witnessed By: Elphas K Rutton — Project BREFONG Co-ordinator.

Chief office (Stamped)

NAME	P/NO.	DESIGNATION	SIGNATURE
MUNONO -N. EDISON	20140200013	CHIEF	[signature]

CDA'S OFFICE (Stamped)

NAME	P/NO.	DESIGNATION	SIGNATURE
Vincent [signature]	2006007288	ADA	[signature]

County Government (Stamped)

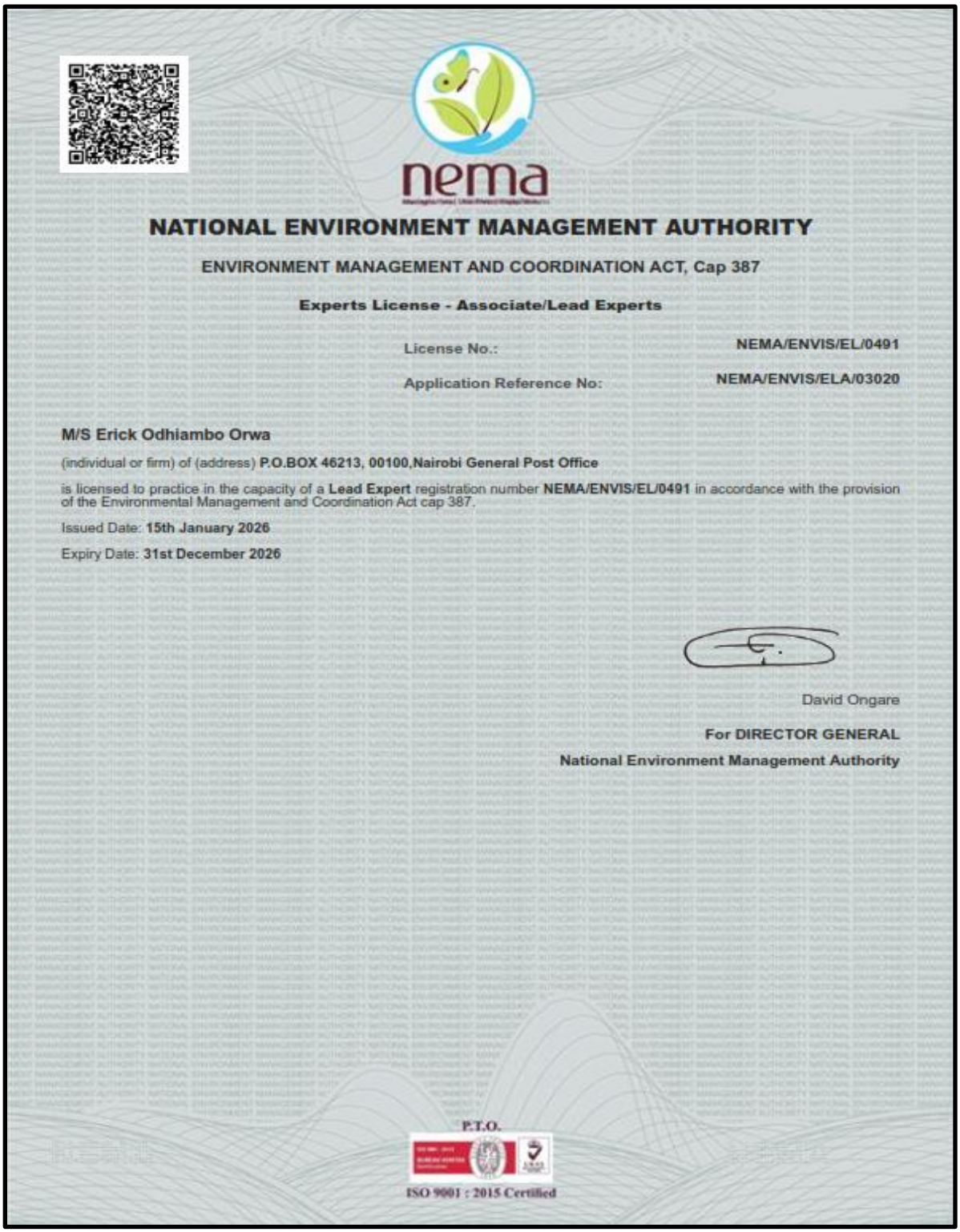
(County Executive for Agriculture / Livestock)

NAME	ID/NO.	SIGNATURE
Rispo Chepkonga	9779573	[signature]

(NB: Please add any other relevant information)

Scanned with CamScanner

Appendix 5: Expert's Nema Practicing License



nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

ENVIRONMENT MANAGEMENT AND COORDINATION ACT, Cap 387

Experts License - Associate/Lead Experts

License No.: **NEMA/ENVIS/EL/0491**

Application Reference No: **NEMA/ENVIS/ELA/03020**

M/S Erick Odhiambo Orwa

(individual or firm) of (address) **P.O.BOX 46213, 00100,Nairobi General Post Office**

is licensed to practice in the capacity of a **Lead Expert** registration number **NEMA/ENVIS/EL/0491** in accordance with the provision of the Environmental Management and Coordination Act cap 387.

Issued Date: **15th January 2026**

Expiry Date: **31st December 2026**

David Ongare

For DIRECTOR GENERAL

National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

ENVIRONMENT MANAGEMENT AND COORDINATION ACT, Cap 387

Experts Lieense - Asseeiate/Lead Experts

License No.: NEMA/ENVIS/EL/0249

Application Reference No: NEMA/ENVIS/ELA/03086

M/S Siti Athuman Mwarora

(individual or firm) of (address) P.O.BOX 96542, 80110,Likoni

is licensed to practice in the capacity of a **Associate Expert** registration number **NEMA/ENVIS/EL/0249** in accordance with the provision of the Environmental Management and Coordination Act cap 387.

Issued Date: **5th January 2026**

Expiry Date: **31st December 2026**

David Ongare

For DIRECTOR GENERAL

National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified

Appendix 6: Photo Gallery

ESIA experts filling quistionnaires are Katikit Water Pan site.

ESIA expert leading the public participation meeting.

The environment surrounding the existing water pan.

The existing water pan. Photo taken during rainly season.

The exsiting water pan in Katikit Village.

Community members participating in the public baraza.

A community member giving his remarks on the project impacts.

Associate expert explaining the project impacts.

Some livestock (goats) getting direct water access from the existing water pan.	Nema director also accessing the project impacts and advicing the community.
The water pan environment with selected tree cover.	Road access to the water pan area.

Appendix 7: Chance Find Procedure

1. Purpose of the chance find 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 construction or operation. A Chance Find Procedure, 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.

2. Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, 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.

3. 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.

4. Chance find procedure

If any person 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:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;

2. Immediately notify a foreman. The foreman will then notify the Resident/Supervising Engineer and the Environment Officer (EO)/Environmental Manager (EM);

3. Record details in Incident Report and take photos of the find;

4. 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;

5. 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;

6. Sites of minor significance (such as isolated or 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 National Museums of Kenya (NMK), once completed.

7. In case of significant find the National Museums of Kenya (NMK) should be informed immediately and in writing within 7 days from the find.

8. The onsite archaeologist provides the NMK with photos, other information as relevant for identification and assessment of the significance of heritage items.

9. The NMK must investigate the fact within 2 weeks from the date of notification and provide response in writing.

10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;

11. Construction works could resume only after permission is granted from the responsible authorities.

12. In case no response received within the 2 weeks' period mentioned above, this is considered as authorization to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photo log, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports - kept.

5. Additional information

Management options for archaeological site

a) ***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)
b) ***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.)
c) ***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.

Management of replicable and non-replicable heritage

Different approaches for the finds apply to replicable and non-replicable heritage.

Replicable heritage[1]

[1] Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures.

Where tangible cultural heritage that is replicable and not critical is encountered, mitigation measures will be applied. The mitigation hierarchy is as follows:

a) Avoidance;
b) Minimization of adverse impacts and implementation of restoration measures, in situ;
c) Restoration of the functionality of the cultural heritage, in a different location;
d) Permanent removal of historical and archaeological artefacts and structures;
e) Compensation of loss - where minimization of adverse impacts and restoration not feasible.

Non-replicable heritage[2]

Most cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable damage or even destruction of the cultural heritage. Nonreplicable cultural heritage must not be removed unless all of the following conditions are met:

a) There are no technically or financially feasible alternatives to removal;
b) The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and
c) Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.

Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above. There are two possible courses of action:

a) ***Avoid.*** The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.
b) ***Exhume.*** Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.

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[2] Nonreplicable cultural heritage may relate to the social, economic, cultural, environmental, and climatic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the (i) cultural heritage is unique or relatively unique for the period it represents, or (ii) cultural heritage is unique or relatively unique in linking several periods in the same site. Examples of non-replicable cultural heritage may include an ancient city or temple, or a site unique in the period that it represents.

Appendix 8: ESIA Inspection form

WATER PAN NAME:		DATE	
MONITORED BY:		WATER LEVEL:	
ITEM	CONDITION	ACTION REQUIRED	BY WHOM
CATCHMENT AREA			
Erosion			
EMBANKMENT (cracks, vegetation, erosion, slumps, leaks, animals)			
Crest			
Downstream slope			
Upstream slope			
Lining Material			
SPILLWAY (debris, vegetation, erosion)			
Sill Area			
Culverts under Road			
Channel			
River confluence			
DRAW-OFF WORKS			
Status of Pump and Meter			
WATER QUALITY			
Color/turbidity			
Smell			
Chemical Analysis required?			
ENVIRONMENT			
Details of Any Animals			
Details of Any Plants			
Accessibility to Pan			
SIGNED BY			

Appendix 9: Katikit Water Pan Crisis Action Plan (CAP)

A crisis action plan for Katikit Water Pan should be developed and should consist of:

1. Contact names and telephone numbers (owner of the Katikit Water Pan, authorities downstream, police and emergency services and others) to call if the pan is damaged, develops problems or is considered unstable.

2. Information on possible areas likely to be affected downstream (estimated area of inundation) should the pan fail or significant amounts of water require immediate release from gates, drains or outlets. A map to illustrate various levels of inundation (with estimates of timings for any flood wave) should be prepared and be available.

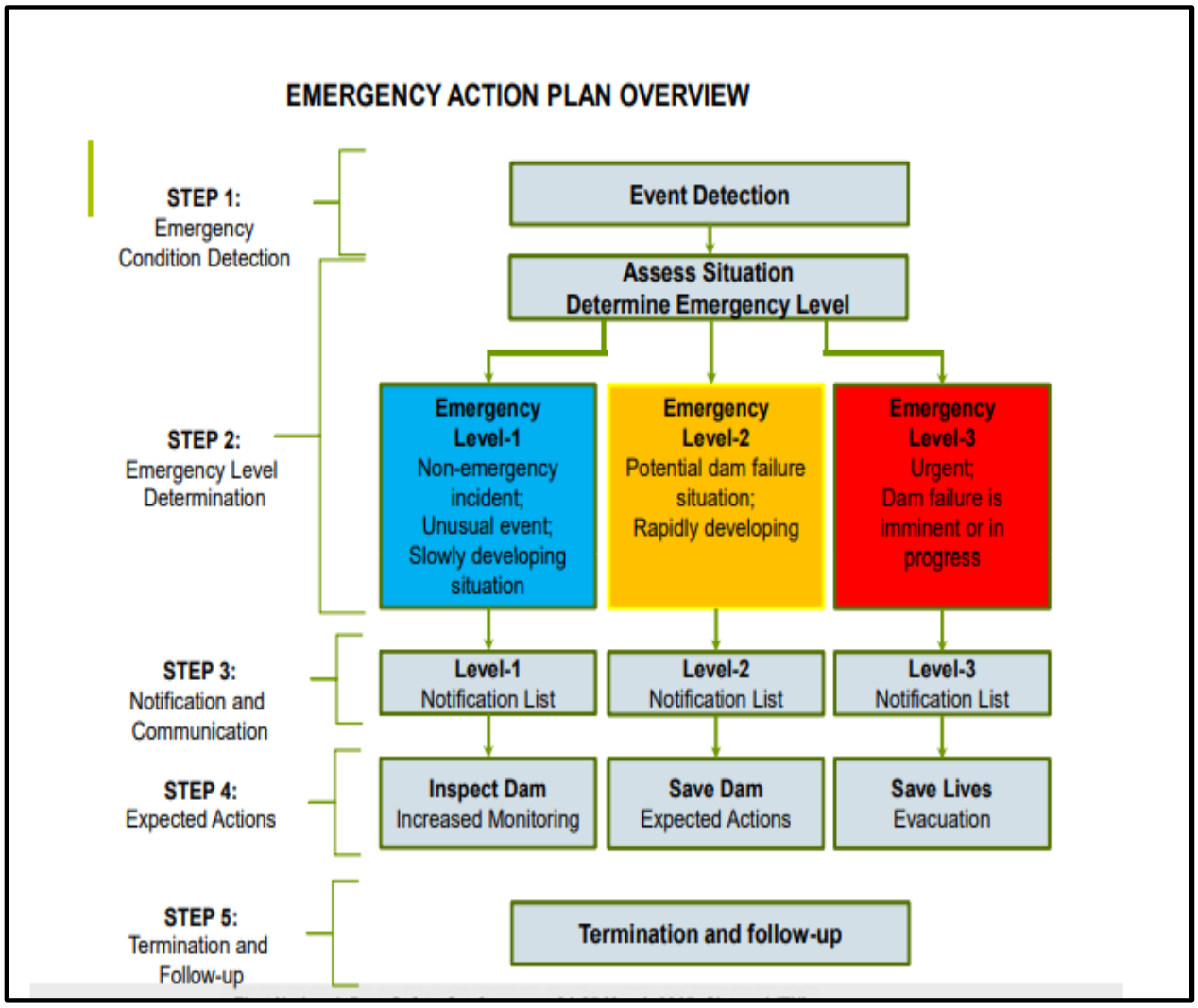
3. A list of names, addresses and telephone numbers (keep this up to date) of inhabitants living immediately downstream of the pan and within the estimated area of inundation.

4. The CAP should be periodically updated to consider changes in land use downstream and any changes to the catchment upstream.

5. Plans for warning and emergency evacuation, including the provision of safe routes to follow in case of flooding/pan failure. Immediate evacuation should take priority over any other action should the stability of the pan be threatened.

6. Information on resources to use and procedures to follow for emergency repairs. This should include a list of civil engineering contractors, equipment and materials' suppliers and engineers available locally.

Appendix 10: Overview of Emergency Action Plan that will apply to the Pan



Source EGIS

Appendix 11: Design Layout Drawings

ATTACHED