



Republic of Kenya



BARINGO COUNTY GOVERNMENT



KCSAP
Kenya Climate Smart
Agriculture Project

Kenya Climate Smart Agriculture Sub-project (KCSAP)

GPS OF SITE: LATITUDE 0.606655, LONGITUDE 35.82988



***ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
COMPREHENSIVE PROJECT REPORT FOR THE PROPOSED
KIPCHERERE WATER PROJECT BARTUM LOCATION,
KIPCHERERE SUB LOCATION, SAIMO SOI WARD, BARINGO
NORTH SUB-COUNTY, BARINGO COUNTY.***

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CERTIFICATION

This Environmental Impact Assessment Report has been prepared by Dr. Joel Sumukwo; a registered lead expert. The report has been done with reasonable skills, care and diligence in accordance with the Environmental Management and Co-ordination Act, 1999 and the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019.
We certify that the particulars given in this report are correct to the best of our knowledge.

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ACRONYMS

ACC	Assistant County Commissioner
CAACs	Catchment Area Advisory Committees
CBD	Convention on Biological Diversity
CBOs	Community Based Organizations
COC	Combined Oral Contraceptives
COVID - 19	Corona Virus Disease
CPP	Consultation, Public Involvement, and Participation
CPs	Contracting Parties
DOSH	Directorate of Occupational Health and Safety
EMCA	Environmental Management and Coordination Act
EMMP	Environmental Management and Monitoring Plan
ESIA/ EA	Environnemental and Social Impact Assessment /Environnemental Audit
GBV	Gender Based Violence
GHGs	Green House Gases
GoK	Government of Kenya
IAPs	Interested and Affected Parties
KCSAP	Kenya Climate Smart Agriculture Project
KFS	Kenya Forest Service
M & E	Monitoring and Evaluation
MoF	Ministry of Finance
Mo ALF	Ministry of Agriculture, Livestock and Fisheries
MoU	Memorandum of Understanding
MW&I	Ministry of Water and Irrigation
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NWCPC	National Water Conservation and Pipeline Corporation
RGS	River Gauging Station
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SOP	Standard Operating Procedure

ToR	Terms of Reference
WA2016	Water Act 2016
WHO	World Health Organization
WRA	Water Resource Authority
WUA	Water User Association

EXECUTIVE SUMMARY

The proposed Kipcherere Water Project is situated in Biringweny village, Kipcherere sub location, Bartum location, Saimo Soi ward, Baringo North Sub-county in Baringo County. The sub-project will involve the construction of an intake at Kipcherere (Ononoi) Spring catchment. The project site is positioned at Latitude 0.606655, Longitude 35.82988 at an altitude of 1766 m asl. According to Legal Notice No. 31 on EMCA (No.8 of 1999) to the amendment of the second schedule the proposed Kipcherere Water sub project, which is categorized under community water project, is classified under Low Risk Project. Springs are a common water resource for the rural communities in Kenya and are generally considered to have low risk impacts which can be easily reversed. The land for the proposed project was allocated as water catchment area meant for Kipcherere Community Water Project. Surveying, boundary demarcation and curving out of the land for the sub project was undertaken by the county and registered under the community water project. (see annex 10 for the land ownership document)

The sub project is a gravity system and will be implemented through Kenya Climate Smart Agriculture Project (KCSAP) in Baringo County. The proposed sub project Proponent is Kipcherere Water Project Committee who submitted proposal to KCSAP Baringo for support with the sub project. The overall objective of the Kipcherere Water sub project is to establish a safe reliable source of water for increased agricultural production and productivity in Kipcherere by harnessing water from Kipcherere spring. Kipcherere is a semi-arid area and therefore suffers water scarcity especially during the dry season. Water sources in the area include Barsemoi borehole which is 8 Km away, Kipcherere River which is seasonal and Kipcherere and Tunoiwonin intakes whose supplies are inadequate and the flow is intermittent during the dry season. During drought the residents walk between 2-10 Km to water sources for both livestock and domestic. Kipcherere spring is perennial with a yield of 8380.8L/day during the dry season. The water applied for by the proponent is 3649L/day of the available flow. This flow is sufficient to meet the current demand and the balance for environment flows and downstream users (see appendix 1 on flow assessment)

The activities for the proposed project will entail; mobilization of construction materials and equipment, construction of intake at Kipcherere (Ononoi) spring, pipeline laying, construction of 100m³ masonry tank and 50m³ masonry tank masonry tanks, construction of two (2) cattle troughs and a communal water points and also, the rehabilitation of two (2) other intakes (Kipcherere and Tunoiwonin) and storage tanks. The sub-project will have a total investment cost of **Kshs. 25,966,430**. The planning of the project entailed a participatory approach where the members of the community were involved in identifying, planning, designing, of the sub project and the ESIA processes. This Environmental and Social Impact Assessment (ESIA) has been undertaken in compliance with the Kenya Government environmental regulation, EMCA 1999 sections 138 (b) and 58, and the World Bank Applicable Operational Policies. The ESIA process started by screening, followed by scoping, and then the actual ESIA study.

This ESIA has considered all the relevant legal, policy and institutional framework, key among them; the World Bank Environment and Social Safeguards Policies, the existing environmental regulatory

framework EMCA 1999 and the Environmental (Impact Assessment and Audit) Regulations of June 2003, Occupational Health and Safety Act (2007), the Water Act (2016), wastes disposal regulation of 2006, environmental standards, and sustainable use of natural resources principles. Other relevant legislations to this EISA that were considered include the public health, community land and land planning Acts and gender promotion, HIV/AIDS prevention and control Act, and sexual offences Act, among others.

The methods used in this ESIA were; review of existing literature on similar projects, stakeholder consultation; site visits, and administration of questionnaires. Out of the 45 questionnaires distributed 35 were returned. (see annex 7 for filled questionnaires). Public participation and stakeholders' engagements were done through holding one public meeting attended by 56 people and adhered to Ministry of Health Guidelines for COVID-19 control, namely: keeping social distance, washing of the hands, and putting on face masks correctly. The 56 participants were split in 4 different groups in with each having an average of 15 participants. In addition, Four (4) Focused Group Discussions (FGD) were held for women, men, youths with each attended by 13, 14, and 11 participants respectively (see annexes 5,6 &7 for men, youth & women minutes and attendances respectively). Community translators were used to address the language barrier. At the county level one stakeholder consultative meeting was held for technical persons and was attended by 14 participants.

Baseline reviews established that there was no sensitive or fragile ecosystem or habitat and threatened or endangered plant or animal life in the project area. However, it was observed that conservation and management of the spring catchment was necessary to address pollution, erosion and siltation of the Ononoi Spring.

Potential environmental and socio-economic benefits of the proposed sub project include; ready availability and accessibility to clean and safe water, employment creation (skilled/unskilled and women supplying foodstuffs), increased agricultural productivity (milk yield and crops), reduced walking distance to water sources by 2 Km and enhancement of livelihood diversification.

The negative impacts in the construction phase are disturbance of vegetation along the water pipeline, soil erosion, water pollution, solid waste generation, air pollution, noise and vibration generation and accident and occupational health and safety concerns.

Negative operation phase impacts include solid waste generation, soil erosion, water pollution, contamination & sedimentation, decreased water flow and damage to the pipeline.

Key mitigation measures for the identified impacts include; provision of PPEs, First AID Kit, handwashing equipment/soap or sanitizer and a sanitary facility etc.), provision of litter bins, sorting & recycling of waste, implementation of SLM practices for soil erosion and siltation control (such as indigenous tree planting), water pollution control through conducting Participatory Health and hygiene Education (PHHE) for community, ensuring no latrines are constructed 30 m upstream and downstream of the spring, carrying out water quality testing regularly etc.; water use conflict management through establishment and training of water users association (WUA), grievance committee and formulation of bylaws.

Negative socio-economic impacts include; increase to exposure to communicable diseases including HIV/AIDS & COVID 19, Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and

increase in livestock diseases and poor livestock breeds due to uncontrolled breeding in watering points.

Significant mitigation measures include Contractor's Health and Safety Management Plan (CHSMP) to be enforced by the Work's Foreman, Contractor to develop SOPs, train Social accountability and Integrity Committee (SAIC) and administration on GBV incidences monitoring, assessment, prevention and control, proponent to ensure the Contractor complies with National and WB policies and rules on welfare of children and develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP.

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. If cessation of the sub project becomes necessary, the proponent needs to remove all materials resulting from the demolition from the site. Under these circumstances, the proponent will demolish all the structures including the intake remove the piping; salvage materials and restore the sections affected to the original state. The estimated cost of implementing the ESMP is **KHs 1,990,000**

As required by the Water Act, the proponent has applied for the works and water use permits from Water Resources Authority and are waiting for the approval, they are advised to acquire the permit before implementing the sub project. The proponent shall ensure that the permit has been acquired before the works commences and before water is used among other recommendations as indicated in this document. The ESMP will be implemented by the selected contractor, CPCU and other stakeholders. The monitoring of the implementation of the ESMP will be by KCSAP CPCU through its County Environment and Social Safeguard Officer (CESSCO) and NEMA officers in terms of enforcement and compliance. After completion of the project, the community is expected to run the project with minimal or no external support through an appointed management committee.

Considering the positive and negative impacts this project will not result to significant, cumulative, or irreversible negative impacts. All the predicted impacts will be easily mitigated through the ESMP. The Proponent should share the ESMP with the selected Contractor and the latter will be required to develop and implement a Contractor-Specific ESMP. The CPCU will follow up and monitor implementation of the ESMP. The CPCU/ CESSCO, contractor, the supervising engineer/public works, the proponent will be required to ensure that the mitigation measures proposed in the ESMP are followed. Based on the assessment, the project is, therefore, recommended for approval by the National Environment Management Authority (NEMA) for issuance of an ESIA license subject to annual environmental audits after operating for one year. The review of this ESIA is undertaken during the Coronavirus Disease (COVID-19) pandemic outbreak. The preparation of the ESIA including the relevant consultations have been undertaken in strict compliance with guidelines for infection prevention and control in the country. Additionally, specific mitigation measures have been introduced to prevent the spread of the pandemic during the construction period

CHAPTER ONE

SUB - PROJECT BACKGROUND

1.1 General Overview of Proposed sub-project

The proposed Kipcherere water sub project is situated in Biringweny village, Kipcherere sub location, Bartum location, Saimo soi ward, Baringo North Sub-county in Baringo County. The project site is positioned at Latitude 0.606655, Longitude 35.82988 at an altitude of 1766 m asl. Kipcherere sub location has a population of 1,653 people with 824 males and 829 females and 397 Households (HH) (KNBS, 2019). This population forms the direct beneficiaries of the sub project. The community conceptualized the sub project through public participation forum (see annex 4 on minutes and attendance list). Drought has been identified as the major hazard faced by Kipcherere community (NDMA, 2017). The effects of drought in the community are water scarcity and food insecurity affecting livelihoods. The area lies in agro-pastoral livelihood zone in Baringo County.

1.2 Objectives of the Sub-project

The overall objective of the sub project is to establish a safe reliable source of water supply for increased pastoral productivity and build the community resilience to climate change risks for the targeted smallholder farming in Kipcherere.

The specific objectives are.

- ✓ To increase food security through development of agricultural infrastructure for livestock water.
- ✓ To improve nutrition through the establishment of kitchen gardens and growing of fruit trees (affruitation).
- ✓ To provide safe drinking water for livestock.
- ✓ To improve household income in the sub project area.
- ✓ To improve public hygiene (for water for the required handwashing in the COVID-19 pandemic era and
- ✓ To protect and conserve Ononoi water catchment through soil & water conservation measures.

1.3 Justification

Kipcherere is a semi-arid area and therefore suffers water scarcity especially during the dry season. Water sources in the area include: Barsemoi borehole (8 Km away), Kipcherere stream which is seasonal, Kipcherere and Tunoiwonin intakes whose supplies are inadequate and the flow is intermittent during the dry season. During drought the residents walk between 2-10 Km to water sources for both livestock and domestic. Therefore, the development of the Ononoi intake under the Kipcherere water sub project is essential to address the water problem in the area in an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate.

1.4 The Purpose of this ESIA Report

This ESIA report represents the environmental and social impacts of the proposed sub project and outlines the ESMP for mitigating against the adverse impacts that were predicted. It also gives baseline conditions, highlights stakeholder consultations and expert opinion on the proposed sub project.

1.5 The Objectives of this ESIA

The overall objective of conducting this Environmental and social Impact Assessment is to identify potential negative impacts and develop mitigation measures early enough to ensure that the environmental concerns of the proposed development are integrated into all stages of the project cycle to contribute to sustainable development. The ESIA has also been conducted to comply with regulatory requirements including requirements of World Bank environmental and social policies, EMCA CAP 387 and other laws & policies affecting the proposed development.

The specific objectives are:

- To generate baseline data for monitoring and evaluation of how well the mitigation measures are being implemented during the sub-project cycle.
- To identify potential adverse environmental and social impacts of the proposed sub-project, to ensure that they are considered during the sub-project design, construction, operation, and decommissioning stages
- To review the statutory and legislative conditions for the implementation of the sub-project.
- To assess the relative importance of the impacts of alternative plans, design and sites.
- To outline cost-effective mitigation measures to minimize possible negative impacts.
- To assess the significance of the impacts.
- To obtain views/opinion of the public and all key stakeholders on the impacts of the project and mitigation measures: and
- To develop an Environmental and Social Management Plan (ESMP) to guide the community in decision making and implementing the sub-project in an environmentally friendly manner and future environmental auditing.

1.6 The ESIA Approach and Methodology

This ESIA began with environmental and social screening, followed by scoping and the actual ESIA study. The study involved the use of several techniques and methodologies. The techniques and methodologies used were necessary for collating baseline information, understanding the legal and policy framework, predicting the potential impacts, assessing the nature of the impacts and determining the order in which the impacts are to be avoided and or mitigated.

1.6.1 Environmental Impact Study Techniques and Methodologies

The team was guided by the requirement of the National Environmental Management Authority (NEMA) Environmental Impact Assessment Guidelines, section 58 of EMCA 1999 and

Environmental (Impact Assessment and Audit) Regulations 2003; and the World Bank Environment and Social Safeguards Policies Environmental Assessment (OP 4.01), Physical Cultural Resources (OP 4.11), and Pest Management (OP 4.09) in carrying out this ESIA.

The methods used in the study are as discussed in the sections that follow.

1.6.1.1 Desktop study

This involved documentary review on the nature of the proposed activities, sub-project documents, designs, policy and legislative framework as well as the environmental status of the sub project area, beneficiary areas and adjoining sub locations, land use practices in the area, development strategies and plans and case study of similar projects as analogues and references. Key documents reviewed are KCSAP project appraisal document, Water Act 2016, EMCA Cap 1999 and EMCA Amendments 2015, Forest Conservation and Management Act 2016, Baringo County CIDP 2018-2022, KCSAP PAD, 2019 Census Reports Volumes I and II., the World Bank Environment and Social Safeguard Framework and Socio-economic survey reports (2015/16 Kenya Integrated Household Budget Survey (KIHBS))

Source of Socio- Economic Survey Information

A sample survey involving 50 households was carried out for Kipcherere sub location by KCSAP Baringo CPCU and a report developed. This is the source of the socio-cultural-economic information provided in this report. The Kenya Integrated Household Budget Survey (KIHBS) (KNBS, 2018) has also been a source of socio-economic data. The key socio-economic aspects provided include education, health, energy, housing, water and sanitation among others.

1.6.1.2 Field Site Assessment

Field site visits were meant for physical inspections of the site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts, establish part of the environment to be affected and extent of the impacts. Field site visits were enhanced by the use for checklist that is beside observation and seeking clarification from the local community living in the proposed project area.

1.6.1.3 Public Participation and Stakeholders Consultation

Public participation and consultation was achieved through holding community barazas, focussed group discussions (FGD) and consultative forums with the local stakeholders. Through public participation the sub project was explained to to the community members and other local stakeholders in the project area. Oral and written comments were then received about the suitability of the project, concerns about the project that might affect them, the expectations they had about the sub project and their suggestions in addressing what impacts they had pointed out. In this assessment one (1) public baraza and one consultative meeting was held with the local stakeholders. The public participation was attended by 56 people out of which 12 were females and 44 males (see annex 4 on minute and attendance). The public baraza was held on 7th February 2021 at chief's Office ground. Focused group discussion (FGDs) were held for men, women, youths and the professional groups. FGD men had 14 participants (see annex 5 on minutes & attendances), women 13 (see annex 7 on minutes & attendances), youth 11 (5

females, 6 males) (see annex 6 for minutes & attendances). Public participation and stakeholder's consultation were important for ensuring the project receives a high level of acceptability. This report has incorporated all the views and suggestions from public participation as demonstrated in Chapter 6.

1.6.1.4 Interview method

A total of 14 key informants were interviewed. They comprised chairperson Kipcherere Water Project, water engineer, chief and assistant chief, Bartum Location and Kipcherere sub location, livestock and agricultural officers, water quality officer (WRA), county wetlands officer, CPCU, faith-based representative, parties of affected persons (PAPs) and youth representatives (male and female).

1.6.1.5 Filled in Questionnaires

This involved the use of a list of questions filled in by the local stakeholders and community members in the project area. One (1) environment and social screening checklist was filled in the pre planning by the NEMA office (see to annex 2 on the environmental and social screening). A total of 45 filled in questionnaires were administered to the community members and 35 were duly filled in and returned (see annex 3 on filled in questionnaire).

1.7 Covid – 19 Infection prevention and control measures

The review of this ESIA is undertaken during the Coronavirus disease (COVID-19) pandemic outbreak. The preparation of the ESIA including the relevant consultations have been undertaken in strict compliance with guidelines for infection prevention and control in the country. Additionally, specific mitigation measures have been introduced to prevent the spread of the pandemic during all phases of the sub project. For this reason, the risk of contracting the virus during consultations will be avoided, minimized and mitigated with specific measures to ensure national requirements on social distancing and recommendations on how to minimize contact are adhered to.

1.8 Chapter Outline

This ESIA has investigated and analyzed anticipated environmental, social and economic impacts of the proposed development in line with the World Bank Social Safeguards and EMCA Environmental (Impact Assessment and Audit) Regulations, 2003. Consequently, the report is organized into nine substantive chapters. Following this introductory chapter, Chapter 2 presents the nature of the proposed project and project activities while, Chapter 3 presents the environmental and social baseline information of the study area, Chapter 4 gives the policy, legal, institutional and administrative framework. Chapter 5 analyses the proposed alternatives to the project, Chapter 6 presents the outcome of the public participation and stakeholder's consultation process, Chapter 7 identifies and discusses the environmental and social impacts and mitigation measures of the project. Chapter 8 presents the environmental and social management plan (ESMP) while Chapter 9 wraps with the conclusions and recommendation. The References and Annexes then follows in Chapters 10 and 11 respectively.

CHAPTER TWO

NATURE OF THE PROPOSED SUB-PROJECT AND ITS ACTIVITIES

2.1 Proposed sub-project overview

2.1.1 Project Details and Location

The proposed sub project name is Kipcherere Water Project and it is situated in Biringweny village, Kipcherere sub location, Bartum location, Saimo soi ward, Baringo North Sub-county in Baringo County (Figure1). The project site is positioned at Latitude, Longitude 0.6057367, 35.8303533 at an altitude of 1806.89 m asl. The proposed Kipcherere (Ononoi) spring intake is situated along Kipcherere/Bartum road and 500 m from Kaseset-Biringweny-Kamatony Road.

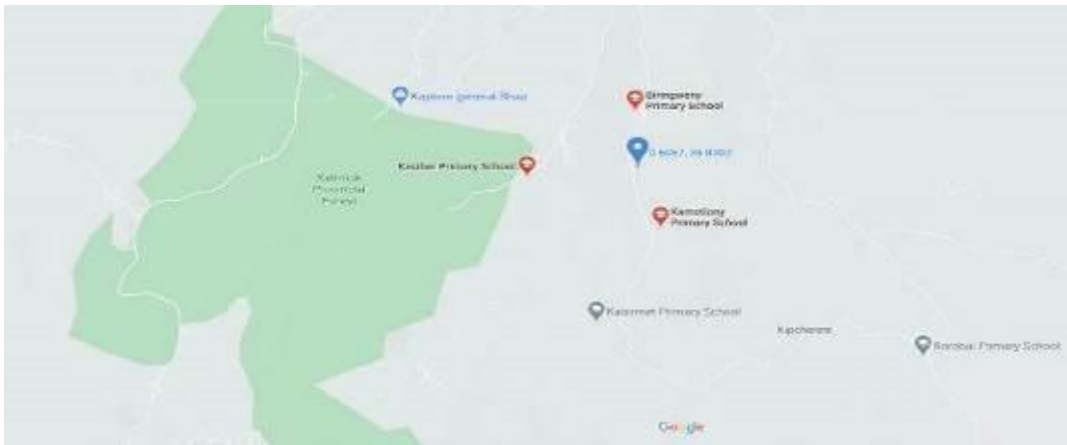


Figure 1 Google map showing Kipcherere water project position

2.1.2 Current water situation of the sub-project area

During drought the residents walk between 2-10 Km to water sources for both livestock and domestic.

2.1.3 Water Demand

A water supply is normally designed to meet actual needs as well as anticipated demand for 20 to 30 years in the future. Hence, any changes in water use practice as well as the projected population growth over this period need to be considered. Water usage depends on local customs as well as on the supply standard. A typical domestic water use pattern for communal standpipes at a walking distance of less than 200 meters ranges from 25 to 50 litres per person per day. The water requirement in the sub project context is 3649L/day. The yield of the spring is estimated to be 8380L/day during the dry season. The flow is sufficient to meet the current demand and balance for environment flows and downstream users. (refer to appendix 1 on water flow availability assessment report).

2.2.1 Design of water Sub-project

The design concept and criteria for Kipcherere Water Sub-project has been developed in accordance with the general guidelines and standards used in the water resource supply projects

in Kenya and are in line with international standards for best practice. The proposed technology is a gravity main that will not need any form of energy for pumping the water. The intake will be connected to a piped water supply system with a storage tank to balance between water supply and demand. The intake and the water tanks lie on a higher ground and water will flow with gravity to the areas supplied.

3.2.2 Sub-project Activities

The components of the proposed Kipcherere Water sub project are as shown in table 3.

1. Mobilization of Construction Materials and Equipment

This will involve the mobilization of machinery, tools and equipment of the proposed work to the project site and erection of signboard to inform of the proposed sub project activity to be undertaken. Transportation of materials will be through using human labour about 500m from the access road. The spring intake site is not accessible by vehicle due to the steep slope.

2. Intake works

a. Intake Weir and Spring Protection

Diversion of the stream water will be carried out to create a workable dry area for construction of the weir. Boulders and large rocks or hard rock will be removed from site and carted away as directed by the work foreman.

b. Excavation works

Over site soil material will be excavated to reduce levels not exceeding 225mm deep. This soil will be carted away to a designated place.

c. Construction of the weir

This will include the construction of the spring chamber. The spring chamber is very important in that it provides the possibility for regular checkups at the spring.

3. Fencing of the catchment area (435M perimeter)

This will involve fencing of 435M perimeter using angle lines, chain link and barbed wire with a gate 2M wide. The gate shall be fitted with locking mechanism.

4. Pipeline and pipework

This will entail excavation of trenches and Masonry pipe anchorage and valve chambers will be constructed for gate and air valves. Pipeline will cover a distance of 3.6 KM. Clearing of vegetation will be undertaken along the pipe line.

5. Construction of Storage Tank and Cattle Troughs

Storage tanks will involve the construction of 100M³ and 50M³ concrete (masonry) storage tanks. Excavation 150mm deep will be done to remove top soil. Further excavation of 1.5 M for foundation and an extra 1.5M will be undertaken. The excavation will be kept free from water, all fallen materials and rubbish. The foundation will be filled with hardcore for slab and 225mm thick reinforced masonry wall as indicated in design drawing. Plastering and painting of the storage concrete tanks will be done as finishing works. Two (2) cattle troughs 10M X 1.2M and

Communal Watering Points (CWP) will be constructed as per the design drawings (see annex 9 for design drawings) and contouring.

6. Kipcherere old WP intake Rehabilitation Works

Rehabilitation work will be undertaken on Kipcherere WP old intake, CDF constructed intake (and a 100m³ Tank as directed by the supervising engineer.

2.2.3. Sub project inputs

Material input in the project during implementation will comprise water, sand, bondex, hardcore, cement, steel rods, pipes (GI pipes, HDPE pipes, GS pipes), UPVC perforated intake pipes, plain wire, barbed wire, weld mesh, mild steel post, paint and cross beams (as annexed at 8 on BQs) Skilled and unskilled human resource will also be required. Manpower will be required to transport construction materials to the intake site.

2.2.4 Proposed Sub-project cost

The sub-project will have a total investment cost of **Kshs. 25,966,430.**

CHAPTER THREE

ENVIRONMENTAL, ECOLOGICAL AND SOCIAL BASELINE INFORMATION

3.1 Introduction

This chapter gives a description of the environmental and social status of the proposed sub-project area and its environs in terms of its physiographic and natural conditions, biological and cultural and socio-economic environment.

3.2 Physiographic and Natural Conditions

3.2.1 Climate

The climate of Baringo varies from humid highlands to arid lowlands while some regions are between these extremes. Baringo County has four Agro-ecological zones, the sub project area lies at LM4 (Baringo County 2018).

a. Rainfall

The rainfall varies from 1,000mm to 1,500mm in the highlands to 600mm per annum in the lowlands (Baringo County 2018), the sub project being a gravity, it will affect the two ecological zones for water is to be conveyed to the ASAL area from the highland of Kipcherere approximately 3.8km.

b. Temperature

The temperatures range from a minimum of 10°C to a maximum of 35°C in different parts of the county. Average wind speed is 2m/s and the humidity is low (Baringo County 2018).

3.2.2 Geology, Soils and Drainage

a. Topography and geology

Saimo Soi ward is found in the Rift Valley. The topography is hilly and characterised with step faulted areas and gentle and steep slopes. The altitude ranges between 1400-1900 m asl. Kipcherere trading center is at an elevation of 1450 m asl. The predominant rock type and soil parent material comprises undifferentiated volcanic rocks. Moderate to severe sheet erosion is common in the area. Sokta Hill forest lies 5 Km South West (SW) of Kipcherere and Mosegem Forest is 8 Km to SW. The Tugen Hills are located northwards of Kipcherere (Open TopoMap, 2021)

b. Soils

The soils in the sub-project area are yellowish brown clay, fine sandy and clay loamy soils. The soils in some areas are gravely, rocky and stony. The soils have moderate relatively natural soil chemical fertility, moderate to very low water holding capacity and moderate to very high run off losses. The soils are moderately well drained. Farming in the area does not require the use of fertilizers due to the natural chemical fertility of the soils (Field data, 2021).

c. Drainage

River Kicherere drains from the Tugen Hills through Kipcherere and drains into Lake Baringo. River Endao also drains through the region. All the streams flow eastwards and drian into Lake Baringo. River Kipcherere is seasonal while R. Endao is a permanent stream. Figure 2 below

shows the topography and drainage in Kipcherere sub location (Open TopoMap, 2021)



Figure 2: topography and drainage in Kipcherere sub location

3.3. Biological Environment

3.3.1 Flora

The vegetation cover of the sub-project area comprises *Ficus spp.* blue gum, Cypress, Grevillea, *Croton dichogamus*, *Aloe Spp.*, *Olea Spp.*, *Emitit*, *Warburgia ugandansis*, *Croton megalocarpus*, and *Policias kikuyunsil*. In the intake site and water tank areas there will be no removal of vegetation. The pipeline will involve removal of very minimal bushes and grass. The sub project site does not have threatened and endangered plant species (un-published Field data 2021).

3.3.2 Fauna

The word “Kipcherere” is derived from “cherere” which is a vavet monkey. Population of monkeys used to be high in the region before the increase in human population. Beside wildlife other wildlife in the area are *snakes*, *wild dogs*, *antelopes* and *birds*. The proposed sub-project site is not home to any endangered or threatened species. It also does not have a corridor for any animals. Desert locusts have also invaded some areas in Kipcherere recently.

3.4 Socio-Economic Environment

3.4.1 Land Ownership and Land-use

Land in the project area was owned communal until 2019 when the community started processing land adjudication towards individual ownership. Land uses in the region include grazing (goats and cattle), apiculture, crop farming including fruit farming such as mangoes, paw paws, bananas and oranges, trading centers, public utility use such as health centers, schools, electricity lines and roads. The average land size on the upper side of Kipcherere where the

intake is to be constructed is 2 acres and on the lower side, that is Kipcherere Center and the surrounding it is 5-10 acres. The sub project land is in the process of documentation into public/ownership under the community and custody of the county Government. (Refer to Annex 10). Land acquisition in the community is through inheritance and purchase or both. 90% of the households acquired land through inheritance, 8% through purchase and 5% through both inheritance and purchase. (Unpublished Sample Survey Report, 2020).

3.4.2 Economic Activities/Livelihoods

The community in the sub project area are Agri-pastoralists. Livestock keeping is the main activity with crop farming carried out on small scale. Livestock kept are cattle, goats, honeybees (traditional beehives), and poultry. Bee keeping is shrinking due to drought and use of agrochemicals (particularly according to the community the current spraying of chemicals in locust invaded areas). Crops grown are maize, bananas, millet, sorghum, cassava, sweet potatoes and green grams. Fruits grown are mangoes, bananas, paw paws, avocados, and oranges.

In the community men engage in contracts in building and construction, motorcycle transport (bodaboda), livestock and bee keeping. Women engage in simple arts and craft such as weaving (basketry), crop farming and small-scale groceries businesses. The level of employment is very low in the region. Irrigation is undertaken in River Endao supporting crop farming, horticulture, livestock and bee keeping. Market day is on every Monday in Kipcherere Center. There are various businesses operated in Kipcherere trading center including retail shops, butcheries (goat meat), green groceries stalls selling (vegetables and fruits), carpentry, motorcycle repair shops and auto spare outlets and simple eateries. About 5% of the households in the area depend on employment in the public sector. Farming both crop and livestock forms the major economic activity in the area at and about 80% of the households depending on it. (Unpublished Sample Survey Report, 2020).

3.4.3 Population and Demographic Characteristics

Baringo North has a population of 104,871 people with 23,500 households (with 23,345 conventional HH and 155 Group Quarters) and an area of 1,629.3 sq. km. The sub county has a population of 52,500 females and 52,369 males. The population in Saimo Soi ward is 19,238 people, with males 9,643 and females 9,595 and 4,642 households (4,557 Conventional hh and 85 Group Quarters), with an area of 487.9 sq.km and a population density of 39 persons per sq. km. The average household size in Kipcherere is 7 members. Bartum location borders Sibilo, Ewalel Soi and Saimo Kipsaraman location. Bartum location has four (4) sub locations; Taimon, Akorian, Koroto and Kipcherere. The population in Kipcherere sub location is 1,653 people with 824 males and 829 females. It has a total of 397 HH and a population density of 46 persons per Sq. Km. (KNBS, 2019).

3.4.3.1 Vulnerable and Marginalized Groups (VMGs)

The 28 VMGs (5 widows, 20 youths, and 3 PLWDs) were involved throughout the proposed sub project from the planning and during the public participation and consultation process during this ESIA report. Issues raised have been captured in the public participation and consultations chapter.

3.4.3.2 Major Shocks in the community and coping mechanism

Drought is the main hazard faced by the community in Kipcherere. The effects of drought in the community are water scarcity and food insecurity both the people and livestock. In the past the community coped with drought through the following ways; migration to the highland areas, renting of farm land in other productive areas, barter trade (exchange of livestock for foodstuffs) and engaging in casual labour for food. Other hazards include emerging pests such as the desert locusts. Now the community coping mechanism to drought include sale of livestock for purchase of food stuffs, use of new farming technology such as irrigation, growing of drought resistant crops such as millet and sorghum and involvement in trade (commerce), pasture preservation and storage, and installation of water storage tanks for rain roof water harvesting. (unpublished Sample Survey Report, 2020).

3.4.3.3 Social problems

Social problems at the community level in Kipcherere include alcoholism, early pregnancies, livestock-crop conflict. The causes of the problems were given as poverty, unemployment and inadequate civic education. Other problems include land conflict (23% of HH) and water related conflicts (21% of HH). These problems are addressed through use of the chief and community/village elders and civic education. Problems reported at the family level include transport problem, lack of school fee, inadequate pasture, food shortage and financial problems. Problems at the family level are solved through sale of livestock, engaging in casual labour and fundraising. (unpublished Sample Survey Report, 2020).

3.4.3.4 Community Organisations and groups

The sub location has 8 women groups and 2 youth groups. Community groups in the Kipcherere include Lelnoi PFS (CIG), Tiliowonin Women Group, Kaptany group and Kapkole Vison Fund. Benefits of membership to these organizations include table banking, savings, and access to school fee for children, sensitization on sanitation, and access to loans, merry-go-round and purchase of household items. For community activities men and women are available for the months of April, August and December. Household chores are mainly the responsibility of women. The ratio of representation of men and women in elected village communities is 3:2 respectively. Other organizations operating in the area to which the community are members are Vision Fund and Hand in Hand (HIH). The key decision makers in the community are the elders. The whole members of the community are also involved in decision making through public meetings such as chiefs Barazas (unpublished Sample Survey Report, 2020).

3.4.4 Educational attainment

The sub location has 5 primary schools and 1 secondary school (Kipcherere Secondary School). In the area 90% of the households has children in school ranging from Early Childhood Development Education (ECDE) to college. In Baringo county 83.6 of the population above 15 years is literate by the ability to read and write inferring that the population in the project area can be equipped with new skills that can lead to successful implementation of the sub project and

its replication even to other areas beyond the project target area. (literacy level of the area citation) and transition rate

3.4.5 Health, Water and Sanitation

3.3.5.1 Health Facilities and Morbidity

There are 2 health facilities that is one health center- Kipcherere Health Center and one dispensary. Residents of Kipcherere also visit Marigat sub county hospital which is about 25 KM away from Kipcherere Center. Common diseases and prevalence in Kipcherere are as follow; Malaria 60%, typhoid 17.5%, Coughing 22.5%, Hypertension 2.5%, Amoeba 2.5%, Common Cold 5%, other stomach related illnesses 5% and headache 2.5%. Disability was reported by 2.5% of the households while 5% reported no disease infection incidence. A majority of the diseases reported by the households in the area relate to water problems. (unpublished Sample Survey Report, 2020).

3.3.5.2 Water and Sanitation and Latrine Coverage

Water sources in Kipcherere include River Kipcherere (seasonal), Tunoiwonin Water Intake, Barsemoi Borehole and water pan about 8KM from Kipcherere and springs. Pipeline has been done from Tunoiwonin Water Intake (upper intake) through the Baringo county government Kipcherere water supply pipeline extension project which reaches Kipcherere Center. The community explained that the intake dries up during long periods of drought. The average walking distance to water sources is about 5-10 km during drought. Households also dig shallow wells to temporary solve water problems at the household level. In the sub location households that have constructed and use latrines are about 200 (Field, 2021). Information by the “Afya Uzazi” Sanitation Project showed that about 80% of the community members still practiced open defecation. The community has trained community health volunteers to support the sanitation project. More support has to be given through the Kipcherere water project to increase latrine coverage in the area through urging the community without latrines to construct them in homestead.

3.3.5.3 Solid Waste Disposal Methods

The most common type of solid waste management is open burning reported by 69% of the households. Other methods used include use of pit 23% of HHs, burying 5% of HHs and burning in pit 3% of the HHs. (unpublished Sample Survey Report, 2020).

3.3.6. Cultural and Religious Practices

Christianity is the main religion in the area with churches including African Inland Church and Full Gospel. Cultural sites in the community include sites used for initiation rites (male circumcision). The initiation rites site for male circumcision and area of herbal medicine collection is at Sach. The community has a shrine (Kipsabubu) where the women offer prayers especially during calamities such as drought. The site is about 0.5Km from Kipcherere center. The women offer millet during the prayers. After completing the prayers, the elderly men slaughter a sheep/goat as a sacrifice which they also eat. The community uses indigenous

knowledge in the prediction of weather such as shading of leaves by tamarind tree indicates beginning of the rain season. (unpublished Sample Survey Report, 2020).

3.3.7 Transport and Communication

Connectivity in Kipcherere is by all-weather roads. Kipcherere is connected through the following route: Kabarnet-Sesia-Patkawanin-Kibingor-Cheboruswo-Kipcherere; Marigat-Loberer-Barsemoi-Kipcherere; and Kabarnet-Kapchepkor-Kabartonjo-Tirimionin-Kasisit-Kipcherere. The sub project site is 500 m from Kaseset-Biringweny-Kamationy Road.

Sources of information in the community include radio, television, newspaper, chiefs’ office, hearsay, use of smartphone among the youths and public barazas. Others used include posters. The percentage use of the different sources of information is as indicated in the table below.

Table 1: Percentage Use of Sources of Information

Source	No. of HHs	% of HHs
Radio	29	73
TV	5	13
Newspaper	4	10
Chiefs Office	8	20
Hearsay	5	13
Smartphone	1	3

Source: Field data, 2021

Local radio stations would form important platforms for disseminating information (education, on various subjects concerning the sub project) to the community on the sub project activities that require community engagement.

3.3.8 Energy Sources and Access

The main source of cooking energy in Kipcherere is firewood (100% HH), charcoal (3% of HH) and cooking gas (2% of HH). Energy sources for lighting include paraffin (28% of HH), solar (62% of HH) and electricity 13% of HH. There is potential for non-renewable on-site generation of electricity using solar energy. Electricity is supplied to Kipcherere center, connectivity to households is very low (only 13% (5 HHS) were reported to be connected to electricity. Electricity supply from the national grid was also said to be very unreliable because of frequent and longer power outages in the area. Solar devices is the most commonly used for lighting in business premises as backup power source. (unpublished Sample Survey Report, 2020).

3.3.9 Housing types

Buildings in Kipcherere are made of iron sheets, mud, timber and iron roofs and grass thatch. Composition of housing types in the area is households with iron sheet (roof and wall) houses 75%, mud wall and iron roof 15%, mud and grass thatch 5% and timber and iron roof 5%. (unpublished Sample Survey Report, 2020). Population with iron roofs should be encouraged to install roof rainwater harvesting structures.

3.4 Agricultural Extension services

The participants stated that they received extension services from the government departments on livestock keeping, conservation farming, slope farming and veterinary. Households reported to have received that services were 23%, while 53% of the HHs reported not to have received. 245 of the HHs said they had no idea about extension services and found it not applicable to them. (unpublished Sample Survey Report, 2020).

CHAPTER FOUR

POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 The policy and Legislation Framework

Environmental and Social Impact Assessment takes place within the legal and/or policy and institutional frameworks established by individual countries and international agencies. ESIA provision and procedure can contribute to the successful implementation of the proposed sub-project if these frameworks are followed by all the parties.

4.2 Policy framework

4.2.1 Kenya Constitution 2010

The Constitution of Kenya 2010 is the overarching law. Article 43 deals with economic and social rights and includes the right to clean and safe water in adequate quantities as a fundamental human right. 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*”. *In respect to obligations concerning the management of natural resources the constitution has enshrined the principle of public participation that has been complied with in this ESIA. The Proponent by this ESIA Report has taken precautionary measures to make certain that the project contributes to a clean and healthy environment for the residents of Kipcherere.*

4.2.2 Vision 2030

The Vision 2030 is the Country’s Economic Blueprint that maps the development agenda by seeking to make Kenya a globally competitive middle-income country by 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 vision 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. Devolution under vision 2030 is expected to play a key and enhanced role in correcting existing economic and social inequalities. *The implementation of the proposed water project is an effort to increase agricultural productivity for smaller holders in Saimo Soi location through investing in water for livestock and domestic uses. The sub project is expected to improve the social and economic life of the Kipcherere community in Saimo Soi ward if implemented.*

4.2.3 National Gender and Development Policy, 2000

The State Department for Gender in the Ministry of Public Service, Youth and Gender is responsible for promoting gender equality and empowerment of women in Kenya. The Department has developed the National Gender and Development Policy as a review of the Gender Policy adopted by the cabinet in 2000. The policy outlines the national agenda for gender equality and how Kenya intends to realize these ideals.

The Constitution of Kenya creates a platform for gender equality and nondiscrimination. Article 10 of the Constitution is on the National Values and Principles of governance. It highlights such principles as equality, equity, inclusiveness and non-discrimination. These principles provide an anchorage for gender equality. Further, Article 27 (1) provides that every person is equal before the law and has the right to equal protection and benefit; Article 27 (3) provides that women and men have the right to equal treatment including the right to equal opportunities in political, social, economic and cultural spheres. The Constitution also outlaws discrimination on any basis. The National Gender and Development Policy, 2000 purposes to promote the constitution national values and principles of governance. *The proponent through this ESIA has carried out adequate social assessment of the project and through the ESMP provided adequate measures to comply with the provisions. This Policy will be referred to during Project implementation especially during hiring of staff to be involved in the Project, procuring of suppliers, sub consultants and sub-contractors to the Project in order 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*

4.2.4 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 sub project proponent has put in place plans through the ESMP to develop and implement a SGBV action plan with an Accountability and Response Framework as required by of this policy*

4.2.5 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 sub project will provide direct employment to the youth as required by the Policy. The proponent has provided conducive environment for the involvement of the youths to participate fully in the previous work during the planning stage of this sub project*

4.3 The Legislative Framework

4.3.1 Environmental Regulatory Framework

4.3.1.1 Environmental Management and Coordination Act CAP 387 and EMCA Amendment 2015

The Environmental Management and Coordination Act (EMCA) of Cap 387 was enacted to provide an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. Under EMCA various regulations have been enacted as outlined below.

1. EIA regulations 2003 (ESIA and EA regulations)

The prescribed format for Environmental Impact Assessment guidelines in Kenya has been developed and gazetted. The regulations require that EIA cover issues outlined in the schedule 2nd that is, (ecological, social, landscape, land use, and water considerations) and general guidelines in schedule 3 (impacts and their sources, projects details, national legislation, mitigation measures, a management plan, and environmental auditing schedules and procedures. *By this ESIA report the requirements of this regulations and those of the World Bank Social Safeguards were integrated and followed throughout the process. The proponent did the screening and scoping then as advised by the NEMA office commissioned an ESIA partial study. The proponent shall observe the guidelines as set out in the ESMP laid out in the ESIA report.*

2. 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 disposing of any waste on any part of the environment except in designated waste receptacle or facility provided by the county government which may be legitimate dumpsites or landfills. Since the proposed sub-project will generate waste in form of waste soils, waste oil and other solid wastes in small quantities, this act provides for the waste generator to be responsible for the collection, segregation at source and proper disposal of their wastes. *Through the ESMP the proponent has provided measures for managing waste generated through the proposed sub project. The proponent will comply with the provisions of EMCA in managing wastes as stipulated under waste management regulations.*

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

This regulation prohibits generation of 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. It also gives maximum permissible noise levels for silent zones, places of worship, residential (indoor/outdoor), mixed residential; and commercial. *The proponent through this*

ESIA 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 ESMP (such as provision of personal protective equipment to workers and switching off engines or machinery when not in use)

Table 2: NEMA Maximum permissible noise levels

Zone		Sound level limits dB(A)		Noise rating level (NR)	
		(Leq,14h)		(Leq,14h)	
		Day	Night	Day	Night
A	Silent zone	40	35	30	25
B	Places of worship	40	35	30	25
C	Residential: indoor	45	35	35	25
	Outdoor	50	35	40	25
D	Mixed residential (with some commercial and places of entertainment)	55	35	50	25
E	Commercial	60	35	55	25

4. Environmental Management and Coordination, (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 complied with this regulation by undertaking this ESIA which has determined possible activities that may affect the quality and quantity of water during the construction and operation phases in the sub project context. Mitigation measures have been provided for all the predicted impacts on water quality. The proponent and all other parties (including sub project beneficiaries) shall fully comply with the requirements of these regulations to ensure that its objectives are achieved.*

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

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, Cap 387. *The proponent will ensure compliance with Air quality regulations by enforcing all the proposed preventive and mitigation measures in the ESMP.*

4.4 Legislative Framework Relevant to the Proposed Sub Project

4.4.1 The Water Act, NO. 43 of 2016

The purpose of the **2016 Water Act** is to align the **water** sector with the Constitution's primary objective of devolution. 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 licence under the Environmental (Impact Assessment and Audit) Regulations 2003 made under Environmental Management and Coordination Act 2015 (Act No. - of).*

Section 39. subsection (1) of the Act states that the *holder of a permit which authorizes the construction of works that would or a portion of works which would when constructed, be situated upon land not held by the permit holder shall, subject to any relevant law, acquire an easement on, over or through the land on which the works would be situated and, unless the works have previously been lawfully constructed, shall not construct or use the works unless he or she has acquired such an easement.*

The Act states an application for a permit shall be the subject of public consultation and, where applicable, of environmental impact assessment in accordance with the requirements of the Environmental Management and Coordination Act, 1999.

The Proponent engaged the services of qualified and approved water experts in the development of the designs for the water weir among other requirements, has provided a Hydrology Report which was produced through qualified personnel, by developing ESIA report the proponent has complied with this Act. Finally, the community has applied to WRA for permissions.

4.4.2 The Public Health Act (Cap. 242)

Part IX, 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. Work areas should be clean and sanitary to prevent the occurrence of nuisance or condition liable for injurious or dangerous to human health. *The proponent through this ESIA and the ESMP has defined the necessary measures to prevent the occurrence of nuisance or condition liable for injurious or dangerous to human health during the construction and the operation phase of the project. Additionally, COVID-19 control measures have been provided in the ESMP and will be implemented during all phases of the project.*

4.4.3 County Government Act, 2012 (No. 17 of 2012)

An Act of Parliament to give effect to chapter eleven of the Constitution; to provide for county governments' powers, functions, and responsibilities to deliver services and for connected purposes. Part VIII of the Act outlines the Principles of citizen participation in counties among others reasonable access to the process of formulating and implementing policies, laws, and regulations, including the approval of development proposals, projects, and budgets, the granting of permits and the establishment of specific performance standards and protection and promotion of the interest and rights of minorities, marginalized groups and communities and their access to relevant information; *The Proponent has complied with the outlined principle of citizen participation and those of other stakeholders through the planning, screening, designing and*

ESIA process. The sub project committee is in place and are responsible with the oversight of the sub project implementation

4.4.4 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 sub-project is in line with the proposed land use for the sub-project site.*

4.4.5 The Energy Act, 2019

The Energy Act, 2019 was enacted in response to calls to consolidate the laws relating to energy; promote renewable energy; promote exploration, recovery and commercial utilization of geothermal energy; regulate midstream and downstream petroleum and coal activities, among others. *The Proposed sub-project is a gravity main and as per the designs will not require energy in its operations. The sub project complies with Kenya climate change mitigation and adaptation strategies and in line with the socio-economy of the user community.*

4.4.6 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 has taken all the necessary measures to ensure that the provisions of this Act are complied with. Through this ESIA the proponent has taken precautionary steps towards preventing or reducing adverse effects that might arise from the activities of the proposed sub project in the construction, operation and decommissioning phases. Hence, there is no possibility of the proponent contravening the stipulated conditions of this act.*

4.4.7. The Occupational Health and Safety Act, 2007

The Occupational Safety and Health Act, 2007 require 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. *In the ESMP the proponent has put in place measures to be observed by the contractor during the construction phase of the project to ensure the health and safety of workers. The proponent will share the ESMP with the contractor to enable the latter to develop a CESMP which will be strictly followed during construction. Compliance of the CESMPs will be monitored by the regulatory agents. A comprehensive occupational health and safety audits will be carried out periodically to ensure compliance with this Act particularly in the construction phase. COVID-19 control measures have been provided in the ESMP.*

4.4.8. Employment Act, 2007

Section 3. (1) States that this Act shall apply to all employees employed during the sub-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 recruitment of the labour force to be used during the construction phase and other sub project cycles when necessary. Locals will be given preference in labour, works. Women will be offered opportunities in the sub project.*

4.4.9. The Forest Conservation and Management Act No 34 of 2016

Section 56, subsection (2) states that KFS may issue authorizations for forestry activities in the form of—(a) A permit; (b) A timber licence; (c) A special use licence; (d) A contract; (e) A joint management agreement; or (f) A concession agreement. (Section of Act 44 outlines the conditions under which a concession may be granted) (3) No authorization shall be issued in respect of a forest for which there is a pre-existing authorization, except on terms mutually agreed upon by all the parties involved. The sub project is not in a forest but this regulation is relevant in managing the catchment. The proponent shall comply to this regulation through seeking of permits whenever he intends to harvest the vegetation in the catchment.

4.4.10 The Land Act, 2012 No. 6 (The Land Laws Amendment Act, 2016 No. 28 of 2016)

Under section 3. (1) the Act applies to all land declared as— *(a) public land under Article 62 of the Constitution;* (b) private land under Article 64 of the Constitution; and (c) community land under Article 63 of the Constitution and any other written law relating to community land.

In section 8(d) the Commission on behalf of the National or County Government may require the land to be used for specified purposes and subject to such conditions, covenants, encumbrances or reservations as are specified in the relevant order or other instrument.

The proponent through this ESIA and ESMP has developed appropriate measures to ensure that the proposed development is implemented sustainably through the prevention and reduction of adverse impacts. The land is registered under the community project. There shall be minimal removal of vegetation.

4.4.11 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 engagement of a qualified, registered and licensed contractor for the implementation of the sub project. Through the ESMP the proponent has outlined appropriate measures to address adverse effects that may occur from the sub project's activities in the construction, operation and decommissioning phases.*

4.4.12 National Construction Authority (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. By this ESIA report and the ESMP the proponent, the community sub project committee and the supervising engineer will check and verify every*

step of the work by the Contractor to ascertain that quality and safety standards are met and that the work output does not compromise the set achievements of the sub project. The proponent will ensure that regular site meetings by all the relevant stakeholders are held to oversight the work.

4.4.13 Trade licensing Act Cap 497

The proponent is required by section 5 of the Act to purchase the building and any other material to be used in the implementation of the proposed project from licensed suppliers. *The contractor will comply with section 5 of this Act by using construction materials and equipment as specified in the engineer's design and bill of quantities. (as indicated under annex 9 of Bill of Quantities). The supervising engineer will assess the quality of work and materials used in the project by the contractor making sure that it complies with this Act by following the Bill of Quantities.*

4.4.14 Climate Change Act, 2016

The CCA aims to reduce vulnerability to climate change and improve our country's ability to take advantage of the opportunities that climate change offers. The Act is to be applied for the development, management, implementation, and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya. *The development and implementation of the Sub-project will contribute towards the stated objectives of the climate change act and enhance the resilience of the Kipcherere community to drought particularly through the availability of livestock water.*

4.4.15 Malaria Prevention Act (CAP 246)

AN ACT of Parliament to repeal and re-enact the Malaria Prevention Act, to establish the National Malaria Prevention and Control Institute, to provide for the prevention and control of malaria and for connected purposes. *The Proponent has adequately provided measures for the prevention and control of malaria.*

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

4.4.16.1 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 offenses on minor (children). *The Proponent will ddevelop and implement a SEA action plan with an Accountability and Response Framework 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. The Contractor will implement the C-ESMP signed with the proponent to address and resolve all identified and emergent SEA concerns.

4.4.16.2. HIV 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, counseling, 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. Section 12 prescribes the penalty for unsafe practices or procedures which might lead to the infection of another person with HIV. Section 31. Prohibits discrimination in the workplace based on the HIV/AIDS status of a person. ***The proponent in this ESIA report has captured HIV/AIDS as a risk in the proposed project and through the ESMP provided adequate measures. The HIV Policy, therefore, 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.***

4.4.17 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 together with World Bank policy OP 4.11 on Physical Cultural Resources will be quoted if the project will encounter such materials. ***The Contractor will follow the chance find procedures outlined if previously unknown heritage resource is accidentally encountered during the project construction period. (refer to Annex 16 for the chance find procedure in Kenya).***

4.5 The Institutional Framework

4.5.1 Institutions under EMCA County Environmental Committees

This is established under Section 18 of the EMCA amendments 2015 and is responsible for proper management of the environment in the county and development of the county environment action plan. ***Some of the members of this committee were among the key persons with whom the project was discussed for input. Through the NEMA office this ESIA report will be shared with the CEC members for review and comments.***

4.5.2 Institutions under the Water Act

1. 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. *As per the requirement of the WATER ACT (No. 43 of 2016), the proponent has applied for the water use and works permit from WRA, the proponent is advised to secure the permit before implementing the sub project. (refer to annex 16 for payment of water application permit).*

2. Water Resource Users Association (WRUA)

WRUAs are local community institution established under the Water Act which work with WRA to manage water resources at the grass-root level. *The proponent in the ESMP will support the formation and capacity building for the WRUA to enhance sustainable management of the project and the catchment of the water sub project.*

4.6 World Bank Environmental Safeguards

The following World Bank environmental safeguards (Operational Policy (OP) /Bank Procedure (BP)) will guide the proposed sub-project.

2.6.1 OP/BP 4.01 (Environmental Assessment)

The World Bank has well-established environmental assessment procedures, which apply to its lending activities and to the sub-projects undertaken by borrowing countries, to ensure that development sub-projects are sustainable and environmentally sound. The World Bank follows a relatively standard procedure for the preparation and approval of an environmental assessment study, which: identifies and assesses potential risks and benefits based on proposed activities, relevant site features, consideration of natural/human environment, social and trans-boundary issues; compares environmental pros and cons of feasible alternatives; recommends measures to eliminate, offset, or reduce adverse environmental impacts to acceptable levels (siting, design, technology offsets); proposes monitoring indicators to implement mitigation measures; and describes the institutional framework for environmental management and proposes relevant capacity building needs. *The Proponent undertook screening of the proposed Kipcherere Water sub project on 15th November 2019 as per OP/BP 4.01 (Environmental Assessment)-environmental and social screening checklist. The screening report was submitted to NEMA County Director Environment (Baringo) who indicated a partial ESIA be undertaken for the sub project. Consequently, the proponent commissioned the consultant to perform this ESIA study. This ESIA study engaged a wide range of stakeholders to make sure that the views of interested and affected persons are captured early enough in the sub project planning and design. (refer to Annexes 4, 6 & 7 for public participation attendance list, key stakeholders filled in impact categorization matrix and community filled in questionnaires respectively). The ESIA has followed WB social safeguards OP/BP 4.01 (Environmental Assessment) and EMCA 387 EIA/EA regulations 2003 set criterion. This report has established all the significant impacts*

that need to be addressed and proposed appropriate measures to prevent or reduce any risk that may be posed to the environment (physical, biological and social). The adverse impacts and their mitigation measures are well outlined in the ESMP including responsible parties, duration and cost in the whole project cycle.

4.6.2 OP/BP 4.04 (Natural Habitats)

The policy is designed to promote environmentally sustainable development by supporting the protection, conservation, maintenance and rehabilitation of natural habitats and their functions. The policy seeks to ensure that World Bank-supported infrastructure and other development sub-projects consider the conservation of biodiversity, as well as the numerous environmental services and products, which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported sub-project can damage natural habitats (land and water area where most of the native plant and animal species are still present). *The proponent through this ESIA and ESMP has taken advance measures for protecting, preserving and conserving the environment in the sub project setting from predicted and emergent adverse impacts.*

4.6.3 OP/BP 4.11 (Physical Cultural Resources)

This policy is meant to assist in preserving physical, cultural resources including the movable or immovable (above or below ground, or underwater) objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance including sites and unique natural values. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The objective of this policy is to avoid or mitigate adverse impacts on physical cultural resources from the proposed sub-project.

It was found out from the community that the land for the intake sub project site has not and is not known to have any physical or cultural object/resource that the proposed development may interfere with. The proponent and the community through public participation and signing of wayleaves developed measures for avoiding or mitigating any adverse impacts on physical cultural resources and provisions for managing chance find. In accordance, with the requirement of this guideline (OP/BP 4.11 -Physical Cultural Resources) the proponent has outlined precautionary measures (chance find procedure) to be undertaken in case of chance encounter with any physical or natural resource during implementation of project activities. (Refer to annex 12 for chance find procedure)

4.7 International Conventions and Treaties

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

4.7.1 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 sub project site is not habitat to any threatened or endangered species of flora or fauna. The sub project does not pose any threat to any plant or animal life in the sub project context. In the ESMP the proponent has made provision for the establishment of tree nurseries and promotion of indigenous tree growing.*

4.7.3 United Nations Convention to Combat Desertification, 1994

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 via Section 46 where County Environment Committees are required to identify areas that require re-forestation or afforestation as well as to mobilize the locals to carry out these activities. *The proponent will promote reforestation and afforestation activities by the locals through this sub project and therefore, will be contributing to the goal of this Convention.*

4.7.4 Sustainable Development Goals

Through the implementation of the Kipcherere sub project by the proponent the following SDGs will be achieved in the community.

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Goal 6: Ensure availability and sustainable management of water and sanitation for all.

Goal 15: protect, restore, promote sustainable use of terrestrial ecosystems, manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

CHAPTER FIVE

PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

5.1 Introduction

The Kenya government has included the need for public involvement in project development in the Constitution of 2010. This has also been set out in the EMCA, 1999 and Environmental (Impact and Audit) Regulations, 2003. It is also a requirement for Bank funded projects of this nature and after screening results to undergo public participation.

5.2 Categorization of Community Participants and stakeholders

Public participation and stakeholders' consultation comprised the community members includes neighbours in the sub project site, upstream and downstream community of water spring, sub and project beneficiaries. The community participants were from Saimo Soi Wards, Bartum Location. The public participation was attended by 56 people out of which 12 were females and 44 males (see annex 4 on minute and attendance). Smaller groups focused group discussion (FGDs) were also held for men, women, youths and the professional groups. FGD men had 14 participants (see annex 5 on minutes & attendance), youth 11 (5 females, 6 males) and (see annex 6 on minutes & attendance) and women 13 (see annex 7 minutes & attendance).

Participants in stakeholder consultation comprised chairperson Kipcherere Water Project Committee, water engineer, chief and assistant chief, Bartum Location and Kipcherere sub location, livestock and agricultural officers, water quality officer (WRA), county wetlands officer, CPCU, faith-based representative, parties of affected persons (PAPs) and youth representatives (male and female). A total 14 stakeholders were consulted. COVID 19 prevention protocols by the ministry of health and WHO were observed during all meetings including sanitizing of hands, proper wearing of face masks and observing the 1.5 social distance.

5.3 Objectives of Public participation and Stakeholder Consultations

The main objective of the public consultation is to engage key stakeholders' groups to provide their inputs into the planned development and especially on those impacts that directly affect the Kipcherere community. The specific objectives of the public participation and consultation in this ESIA is to.

- Build up confidence between the stakeholders and the proponent to minimize the risk of delays in the implementation of the Kipcherere sub project.
- Help the project proponent to make informed assessment of public opinion about the project, and the nature and extent of opposition likely to occur during the implementation stage.
- Have a fair interaction with affected groups and ensure them that every attempt would be made to minimize the negative impacts of the Kipcherere water sub project.
- Bring out the contentious issues and gives a chance to those who may be affected by the proposed project to give their views.

- Get No Objection from the members of the public and the affected community on the implementation of the project.

5.4 Methods for Public Participation and Stakeholder Consultations

The techniques and methods used in the public participation and consultations were public meetings (community barazas) for the Kipcherere community, interviews, FGDs and administering of individual questionnaires. Mobilization of members of the public and other interested parties to attend the public baraza was done through the chief's office. The public baraza was held on 7th February 2021 chief's Office ground. Key informant interviews, formal technical meeting for experts for the government agencies were conducted to provide more insight on project design, impacts, mitigation, monitoring framework, role of each government agency in the implementation and project alternatives. A total of 45 filled in questionnaires were administered to the community members and 35 were duly filled in and returned (see annex 3 for sample individual filled in questionnaire). The questionnaires were administered on 8th & 9th February 2021.

5.5 Summary of Issues Raised by the Community and Stakeholders

A range of issues were raised during the public participation and stakeholders' consultation. The issues are categorized into the following;

- Poor sanitation
- Transportation of construction materials to intake site.
- Spring catchment protection and conservation.
- Labour/employment.
- Water resource use conflict

A summary of issues raised and proposed mitigation are shown in table 4 below.

5.6 Summary of Issues Raised by the Community and Stakeholders

Table 3: Details of Concerns, Recommendations and Issues Raised

ISSUE	ASPECT/CONCERN RAISED BY STAKEHOLDERS	Suggested Mitigation Measure
Poor sanitation	Concern raised over low latrine coverage and open defecation which would result in water contamination & waterborne diseases	✓ Sensitize the community on benefit of sanitation and encourage construction of latrines.
Transportation of construction materials to intake site.	Concern raised on difficult in transporting construction materials to site due to steep topography	✓ Use human labour in transportation of materials to intake site ✓ Use locals who are used to the terrain to minimise accidents. ✓ Transportation to be done during dry season.
Spring catchment protection and conservation.	Concern was raised over reduction in spring water due to catchment degradation from	✓ Fencing of the spring catchment ✓ Sensitization of the upstream community on conservation and SLM practices such as terracing,

	human activities	agroforestry, etc.
Labour/employment.	Concern was raised over employment of foreigners in the sub project leaving out the locals.	<ul style="list-style-type: none"> ✓ Chosen contractor to sign agreement to give priority to locals in employment of available skills ✓ Involve local administration in the employment process for transparency.
Water resource use conflict	Concern was raised over conflict over sharing of water resource in times of scarcity, distribution of the pipeline & dissatisfaction of the upstream community	<ul style="list-style-type: none"> ✓ Proposed formulation of bylaws to regulate water use ✓ Support formation and training of Water Users Association for the sub project ✓ Establish a grievance committee & training on resolving water use conflicts. ✓ The upstream committee had no objection to the implementation of the project.

5.6 Community and future Stakeholder Engagement

There will be continuous stakeholder engagement throughout the project cycle to ensure that the community and stakeholders continue to be informed during construction and, where appropriate, during operation of the facility.

Response to concern:

- ✓ The community members present were assured that the ESIA would provide necessary measures to mitigate anticipated impacts.
- ✓ The administrators who were present confirmed that the land had no issues of adjudication therefore, no objection by the community on the implementation of the proposed project.

5.7 Grievance Redress Mechanism

A Grievance Redress Mechanism (GRM) is a system by which queries or clarifications about a project are responded to, problems that arise out of implementation are resolved and grievances are addressed efficiently and effectively

KCSAP incorporates complaint-handling and grievance redress mechanisms and social audits for greater transparency in sub project selection, implementation, and equitable sharing of benefits.

CHAPTER SIX

ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

6.1 Introduction

The Environmental and social analysis of the sub-project indicates that there may be occurrence of both positive and negative impacts on the environment and the community.

6.2 Positive Socio-Economic Impacts

The benefits of the sub project include:

1. Availability and accessibility to clean and safe water

Kipcherere water project will result in readily available safe water for livestock and for domestic use by the community in the project area.

2. Employment creation

The implementation of the sub project will lead creation of jobs for the different categories of people. Women will be able to sell foodstuffs to that employment in the project during its construction period. Skilled and unskilled labour will also be required in the project. Engineers, foremen, masons and other general labourers. Informal employment will also arise from increased farming activities in the project area during the operation phase. Local labour will be employed in the transportation of construction materials to the sub project site.

3. Increased Agricultural Productivity

Availability of water will cause increase in livestock and crop yields. Walking distance of livestock to water sources will be reduced and people will be able to undertake small holder farming in horticulture and fruit trees such as mangoes, bananas, oranges among others. Farmers will also be able to improve breeds and undertake zero grazing. The overall impact of increased agricultural productivity will be improved food and nutritional security in the project area.

4. Improved Local Economy

The sub project will involve procurement of construction material and equipment creating business for local dealers. Those employed in the project will earn wages. Women will supply foodstuffs to worker's on the sub project. Business opportunities will be created thus improving the local economy.

5. Improved Standard of Living

Increased livestock and crop productivity, employment in the sub project will result in improved household income resulting in improved standards of living by the households. This will result in the improved quality of life.

6. Infrastructure and Service Provision Improvement

The implementation and operationalization of the project is bound to result into improvement of road, electricity, water and other infrastructures and services in the project area.

7. Improved land value

The increased infrastructural development from the availability of water in the area is anticipated to result to increased property value as more people will be attracted to in the sub project area.

8. Increased Generation of Revenue for the Government

The expansion of the economy through continuous economic growth and development, is bound to expand government revenue through taxation of farm produce. This will lead to the improvement of service delivery by the government to the community including infrastructure improvement.

9. Improved Community Health

The sub project will ensure availability and supply of safe water to the community resulting in reduction in waterborne diseases and an improvement in human health as the water will be treated before supply. Diseases such as typhoid, diarrhoea among others will reduce. Diseases treatment burden will be reduced.

10. Reduced Trekking Distance to Water Sources

The average walking distance to water sources in the sub project area is about 5-10 km during drought. Development of Kipcherere Water sub project including pipeline distribution totaling 3.6KM will reduce walking distance to about 1.5-2KM. Most to benefit will be women and children that have the responsibility of fetching water for the household. Livestock will also benefit. This will save time that will be used for other economic activities.

11. Livelihood Diversification

The availability of water in the sub project will lead to promotion of alternative livelihood sources such as aquaculture (fish farming), increased bee keeping and indigenous poultry keeping. Community members stated that the region was suitable for fish farming and granted the opportunity they would undertake the activity. These and others such as kitchen gardening, micro irrigation will lead to diversification of livelihoods in the area.

12. Improved education standards

Increased agricultural productivity and income will lead to increased school enrollment, transition rates and reduced school dropout. Reduced trekking distance will also lead reduced school absenteeism and increased availability of learners in schools.

6.3 Negative Environmental and Social Impacts

The implementation of the sub project anticipates adverse impacts in the construction, operation and decommissioning phases.

6.3.1 Environmental and social Impacts and Mitigation in the Construction Phase

1. Disturbance of Vegetation

Clearing of vegetation will be undertaken along the pipe line. The actual construction of the intake will not result in any loss of vegetation. The impact is considered to be of very low magnitude.

Mitigation Measure

Sensitize workers to limit disturbance of vegetation in the sub project sites during construction; Vegetation removal to be limited to the demarcated pipeline route; the contractor to ensure replacement of uprooted trees where it could have been inevitable; Establish fruit & tree nursery to supply seedlings for increasing vegetative cover within the catchment and the beneficiary community.

2. Soil Disturbance and Erosion

Excavation will be undertaken for the construction of the intake, foundation for the concrete water storage tanks, community watering point, cattle trough and trenches for the pipeline. This will make the ground loose and easily erodible. Also dug soil if left unattended the soil will be washed away by surface water runoff. Removal of vegetation will also lead to soil erosion as the ground is left bare.

Mitigation Measure

The soil removed from pipeline trenches, concrete water tanks and intake foundation excavation should be re-used in filling back the voids and compacted properly; Where necessary the appropriate vegetative cover should be planted to reduce the chances of future soil erosion after construction (e.g. exposed surfaces including riparian areas are revegetated); Sensitize workers to limit disturbance of vegetation in the sub project sites during construction; Vegetation removal to be limited to the demarcated pipeline route; Supervising engineer to ensure removal of vegetation is avoided until clearance is required; The works supervising engineer to make sure that designs are followed to prevent increase in speed and limit drop across the intake that may cause erosion and Laying of gabions to be provided for in the design to protect against erosion

3. Water Pollution

Careless handling of construction materials during the construction phase may result in the pollution of water. Poor waste management practices at the site may lead to waste ending up in surface water. Ground water may also be polluted and contaminated through leachate from construction works.

Mitigation measure

Contractor to make sure proper diversion of the spring water to create dry area for weir construction; Ensuring protection of the spring ecosystem by proper handling of cement during construction by sensitizing workers; Prevention of construction materials and others from entering the spring by having waste receptacle and designated point for damaged or unused construction material; and Contractor to provide sanitary facility (latrine) for worker on site at least 50M away from the spring.

4. Solid Waste Generation

Solid wastes generated will include wasted mortar, ballast, cement, and other packaging materials, sand, metals, plastics, and parts of PVC pipes, and broken equipment. These wastes generated during construction may impact negatively on the environment if not properly handled and managed. This impact is considered to be of low significance and easily managed.

Mitigation Measure

Contractor to ensure sorting and separation of waste for re use and or recycling; Contractor to provide temporal waste disposal receptacle (waste bins) on site; Contractor to liaise with licensed waste collector to routinely collect and dispose the waste in the designated waste disposal sites; and Train workers and local communities on solid waste management

5. Air pollution

Sources of air pollution include combustion fumes and dust generated from material transport vehicles. Use of cement would also be a source of suspended particles in the air which would be detrimental to the nearby (construction workers). However, this adverse impact is temporal as it is expected to stop once the construction activities end. The impact is also much localized in nature. The magnitude and significance of this impact is low.

Mitigation Measure

Provide protective equipment's to construction workers; Apply water sprays and mist by trucks as dust suppression measures on loose soils and stockpiles (earth roads and active soil stockpiles); Selected contractor to advise drivers not to let motor vehicle engines to run idly; and Drivers to be instructed to observe speed limit in settlement areas to reduce dust generated.

6. Noise and excessive Vibrations

The generation of noise during construction activities is anticipated from use of manual excavation equipment and material delivery trucks. Movement of trucks is likely to generate localized vibrations in areas they pass. Vibrations generated will be very minimal as no heavy machinery will be used in this sub project. Noise generated is not expected to exceed the required noise levels as construction work (such as trenching of pipelines) will be done using manual hand tools. Due to the location of the sub project sites (the intake and the water tanks) the setback distance kept with the receptors of noise and vibrations particularly the human population is achieved. The noise and vibrations impacts are expected to stop after the construction phase and therefore, no cumulative effect.

Mitigation Measure

Regular servicing of all machinery and vehicles in use; Selected contractor to advise drivers not to let motor vehicle engines to run idly; To ensure minimal disturbances of the neighboring community members at night and early morning hours, the work should be done between 8.0 am and 5.0 pm; and Contractor to provide ear muffs to works.

7. Accident and Occupational health and safety

Materials such as cement, steel pipes and other materials and equipment for the intake construction will be transported to the site using human labour 0.5KM from the access road. Intake construction, laying of conveyance pipeline and construction of concrete tanks will involve the use of hand tools and equipment. The dug trenches and resulting heaps of soil may also pose risk to pedestrians. Laying the foundation for the intake will also require removal and carrying of large boulders. There will be an increase in traffic from vehicles ferrying

construction materials. These activities could result to work related accidents and other occupational health and safety related risks.

Mitigation Measure

Warning tapes should be put along the trench line to alert pedestrians on the dangers; Construction signage to be put on site during construction; Contractor to make sure that truck drivers ferrying materials and equipment for use comply with the road traffic rules to avoid accidents (drivers to observe speed limits); Employ drivers who are well trained; Use locals in the manual transportation of construction materials as they are familiar with terrain; Use designated safe routes during material transportation; Avoid ferrying the construction materials during the wet season so as to minimize cases of slipping; Project disclosure to be undertaken before the start of construction in each area; Designate safe site for putting the large boulders (should not be on a sloppy ground or on routes used by workers); The workers should be provided with personal protection gear to avoid cuts on the feet, hands, and head during duty. This includes helmets, gloves, and safety boots overalls, face masks and earplugs in dusty and noise activities, etc; Workers to be trained on procedures to prevent accidents while on the construction site; The workers or their representatives should be trained on first aid and provided with first aid kits; Compliance with COVID 19 prevention and control guidelines (social distancing, use of face masks, provide handwashing equipment); Avail emergency contacts to the workers; First Aid kit to be provided for the workers; and Contractor to take insurance cover for workers, machinery and third parties.

8. Physical/ Cultural resources

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall: Stop the construction activities in the area of chance find; Delineate the discovered site or area; Secure the site to prevent any damage or loss of removable objects; Notify the National Museums of Action, and seek further advise from the same for any significant finds. In cases of removable antiquities or sensitive remains, the necessary procedures shall be observed before the work can continue. (see annex 18 for Chance Find Procedure). Social impacts are presented at section 6.4 below.

6.3.2 Environmental and Social Impacts in the Operational Phase

Solid Waste Generation

The solid waste generated during the operation phase will mainly consist of pieces of PVC, metallic materials replacements from repair and maintenance and wrapping packages. This impact is found to be negligible and easily manageable.

Mitigation Measure

Waste should be sorted for recyclables e.g. metals, and plastics for reuse before transportation for disposal to the designated site; Proponent to provide disposable waste carrier bags;

Sensitization of those undertaking repairs on management of the type of waste generated (metals, plastic and wrapping materials).

1. Soil Erosion

The causes of soil erosion in the sub project area will include tramping of the ground by livestock moving to water troughs to drink water, prolonged leakage due to pipeline breakages, poor drainage in communal and livestock watering points and an increase in farming activities due to water availability coupled with poor farming practices.

Mitigation Measures

The proponent to consider increasing the number cattle trough for redistribution of livestock to watering points; Regular monitoring, prompt reporting and repairs of pipeline breakages by the PMC; Sensitization of farmers on SLM (e.g. terracing, tree nursery, agroforestry, crop rotation, strip cropping, correct stocking rate, fencing, afforestation); Install proper drainage in communal watering point to control surface run off (drainage channel and soak pit); Sensitizes framers on the importance of having alternative water resources particularly through use of simple rain water harvesting technologies as alternative source of water for livestock; Sensitize the community on the proper stocking rate; Construction of gabions.

2. Water Pollution, Contamination & Sedimentation

The main cause of pollution of surface water in the project area is poor sanitation as a majority of residences in the sub project area still practiced open defecation. During the rainy season this would be washed by rain water surface run off to water resources causing pollution and contamination. Soil erosion would also affect the quality of water due increased suspended particles and turbidity. Siltation/sedimentation would result from erosion for the farming areas surrounding the sub project water source. During the rains loose soil materials would be carried by surface water run off ending up in the spring. There is no use of agrochemicals in farming in the region even though future use may arise.

Mitigation measure

Regularly monitor water flow from spring chamber (colour, amount of flow) and take water samples for analysis; Conduct Participatory Health and Hygiene Education (PHHE) for the community and beneficiaries to enhance hygienic practices; No latrines should be located within 30M upstream or downstream of the spring; Construct a cut off drain above the spring to prevent contaminated water from entering and mixing with the spring water; Train local community in the catchment area upstream on SLM (reforestation, planting of grass) practices and rationale for catchment protection; Construction of check dams to control erosion and reduce sediments; Fence the area around spring to create a protection zone; Livestock should not be allowed in the protection zone of the spring; Wash out accumulated silt annually from the spring chamber; Maintain spring box, valves and pipes regularly; Local community and beneficiaries trained in the correct maintenance of the spring inlet and system; Local community to develop by laws on protection of the spring water.

3. Decreased flow of water

The reason for decrease in the flow of water in the system would be; clogged collection system, the spring water reducing or drying up, blocked water supply pipe, leakage or bypass and silted spring box.

Mitigation Measure

Unblock (clean collection pipes, take out gravel / filter media and replace it); Train local community in the catchment area upstream on SLM (reforestation, planting of grass) practices and rationale for catchment protection; Unblock and clean supply pipes by PMC; Prompt repair of leaks by PMC; and Scour and clean spring chamber

4. Damage to the Pipeline

The causes of damage to the water pipeline will include faulty construction, animal tramping, corrosion and vandalism.

Mitigation Measure

Provide adequate cover (burry pipe) by contractor; Fence the spring source area; Use appropriate pipes (PVC); Enforce security measures by the local community and beneficiaries; and Education of the local community/beneficiaries on project ownership to prevent vandalism

6.4 Negative Socio-Economic Impacts during construction and operational phase

Increase to exposure to communicable diseases including HIV/AIDS & COVID

a. Health Impact-Increase in incidences of HIV/AIDS and STIs

The influx of people may bring communicable diseases to the project area, including sexually transmitted diseases (STDs), or the incoming workers may be exposed to diseases to which they have low resistance. This can result in an additional burden on local health resources. The activities for the sub project will not require a workforce camp.

Proposed **mitigation measure** for this is.

Contractor to sensitize workers and community members on HIV/AIDS Awareness other communicable diseases to be instituted and implemented as part of the Contractor's Health and Safety Management Plan to be enforced by the Supervising Engineer; Formation of health and safety committees; and Contractor to provide standard quality condoms at the construction site during the construction period.

b. Health Impact – Spread of COVID-19 amongst construction workers

Since World Health Organization declared COVID-19 a global pandemic various guidance and measures to prevent the spread of the virus. The measures have been adopted worldwide.

During sub project execution (civil works), a number of workers will be required to assemble together in meetings, toolbox talks and even at work sites; varied number of workforce including suppliers of material and services are also expected to come in from various places in the country which may be COVID-19 hot spots; and interaction of workers with the project host community will happen as workers find accommodation close to work sites, and/or return to their homes after works. The potential for the spread of any infectious disease like COVID-19 by projects is

high. There is also the risk that the project may experience large numbers of its workforce becoming ill and will need to consider how they will receive treatment, and whether this will impact on local healthcare services including the project host community.

During project execution (civil works), large numbers of workers will be required to assemble together in meetings, toolbox talks and even at work sites; varied number of workforce including suppliers of material and services are also expected to come in from various places in the country which may be COVID-19 hot spots; and interaction of workers with the project host community will happen as workers find accommodation close to work sites, and/or return to their homes after works. The potential for the spread of any infectious disease like COVID-19 by projects is high. Recognizing the potent risk this may present, it is difficult to clearly outline exhaustive mitigation measures under the mitigation impacts. As such, there is need for the client and the contractor to develop and adopt COVID-19 Standard Operating Procedure (SOPs) in line with the World Bank guidance, Ministry of Health Directives, and site-specific project conditions. These SOPs need to be communicated to all workers and enforced to the latter without fail **Mitigation Measures** against spread of COVID-19 amongst workers are:

The Contractors will customize SOPs for managing the spread of Covid-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilizing to site. The SOPs shall be in line with the WHO guidance on COVID-19, Ministry of Health Directives and site-specific project conditions; Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including workers and visitors; Avoid concentration of more than 15 workers at one location; Where there are two or more people gathered, maintain social distancing of at least 2 meters; All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and other vital signs; The project shall put in place means to support rapid testing of suspected workers for covid-19; Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used; and Ensure routine sanitization of shared social facilities and other communal places.

c. Social risk - Spread of COVID-19 amongst community members during consultations

During implementation of the ESIA, various consultative activities will be undertaken. For efficient and meaningful engagement, a wide range of individual participants, groups in the local community and other stakeholders will be involved. The types of consultations to be used to pass information shall be through public Baraza's, electronic means shall be used where possible and one-on-one basis meetings while observing the COVID-19 mitigation measures to ensure safety stakeholders involved, the community at large and the client. To minimize the risk of spread of COVID-19 amongst community members, alternative means of consultation will be required as

mitigation measures to ensure social distancing and appropriate communication measures. The mitigation measures will be supervised by a communications/ stakeholder engagement / social safeguards expert in the project proponent's team.

The proposed **Mitigation Measures** against spread of COVID-19 amongst community members are: Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible; One-on-one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced; Avoid concentrating of more than 15 community members at one location (meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place); Where two or more people are gathered, maintain social distancing of at least 2 meters; The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet; Use traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements, and mail) in case of challenge with on line channels; and Disseminate information through digital platform like Facebook, WhatsApp and Chat groups.

1. Gender Based Violence (GBV) among the workers

This impact is triggered during project construction phase when the Contractor fails to comply with the following provisions; gender inclusivity requirements in hiring of workers and entire project management as required by Gender Policy 2011 and 2/3 gender rule and failure to protect human risk areas associated with, disadvantaged groups, interfering with participation rights, and interfering with labour rights.

The proposed **Mitigation Measures** of Human Rights and Gender Requirements are. Contractor to formulate clear human resources policy against GBV for the contract workers aligned with national law (such as 2/3 gender rule); Integrate provisions related to GBV in the employee COC; Ensure appointed personnel to manage reports of GBV according to policy; The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse; The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: effective and on-going community engagement and consultation, particularly with women and girls; The contractor will develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to employment; and 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.

2. Sexual Exploitation and Abuse (SEA)

This impact refers to sexual exploitation and abuse committed by Sub 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.

The proposed **Mitigation Measures** to the Risk of SEA include.

Develop and implement a SEA action plan with an Accountability and Response Framework (guided by the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018). 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: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

3. Gender-based Violence (GBV) at the community level

This impact refers to gender-based violence that women and girls may experience because of Project implementation. This also refers to other GBV-related risks incurred as a result of water and sanitation projects that do not adequately consult women and adolescent girls in the community about safety and security issues related to the delivery of water and sanitation services.

The proposed **Mitigation Measures** to Risk of GBV at the community level are.

Develop and implement provisions that ensure that gender-based violence 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, e.g. employment schemes for women; delivery of water supplies; Specific plan for mitigating these known risks, e.g. sensitization around employment; water services; Ensure adequate referral mechanisms are in place if a case

of GBV at the community level is reported related to project implementation; Training of PMC, SAIC, CESSCO and Community (PMC) on GBV and SEA

4. Water Use conflicts

During the social economic survey conducted in the area, it was discovered that water conflicts may arise for several reasons, including a fight for resources, and strategic advantage. Water shortage and increased competition among users will lead to conflict due to refusal by some water users to accept to share equitably the little available water. Catchment destruction through felling of trees and biased or failed reconciliatory intervention by the local administration and leadership and lack of water situation information may be a cause of conflict in the sub project. Mismanagement will result in the wastage of the water and skewed distribution exacerbating inequity. Women being the key player in water fetching roles and due to their low participation in community decision making will suffer more. Conflict may arise also between the upstream and downstream users. Leadership wrangles may result in inefficiencies in the implementation of the sub project and result in the loss of the expected goals and outcomes. Identified causes of leadership issues may include a lack of participatory leadership, poor budgetary system (over-dependence on external support) and self interest in the project.

Such conflicts will impact negatively on the sustainability of the sub project if they arise.

Mitigation measure

Support the formation of Water User's Association (WUA) for the Kipcherere Water Project; Include women in sub project leadership; Training of the WUA on management of the water sub project; Sensitize the community on efficient water use and the importance of meeting project needs personally; Establish a Grievance redress committee & sub project accountability and integrity committee under the WUA for registration and handling of complaints; Train the Grievance redress committee on resolution of water use related conflicts to ensure fairness, access to and use of the water; Formulate by laws to regulate water use and number of beneficiaries; Sensitize community on alternative water sources such as rainwater harvesting

5. Population change impacts

Intervention by the sub project in ensuring availability and accessibility to water in Kipcherere will attract people to settle in the area. This will put pressure on the water supply available and on other resources including land.

Mitigation Measure

Sensitize the community on the water demand and its different users; Develop and implement a community water users development plan in consultation and partnership with the local community and established WUAs; Develop a spring catchment/shed management plan to protect the spring catchment from encroachment; Formulate by-laws on water use

6. Increase in Disease Causing Vectors e.g. mosquitoes and water borne diseases e.g. typhoid.

Poor drainage and misuse of the water supplied through the sub project would result to pools of stagnant water resulting to an increase in disease causing vectors such as mosquitoes. This will result in an increase in malaria incidences in the project area. Contamination of the spring water because of poor sanitation in the area would lead to increased incidences of typhoid, diarrhoea and other water borne diseases.

Mitigation Measures

Monitoring and surveillance of malaria increase by community health workers; Vector control by local community through clearing mosquito breeding grounds and draining stagnant water; Provide proper drainage; Periodic monitoring of water supply for quality checks; Sensitize the local community on the importance of indoor residual spraying (IRS) with insecticides and use of insecticides protected mosquito nets; and Sensitize the community on simple methods of treating water before drinking (e.g. filtering or/and boiling of drinking water, use of aqua tabs)

7. Increase in Livestock Diseases/Pests and Poor Breed Animals

The coming together of animals from different households and areas would lead to the spread and increase in livestock diseases such as Rift Valley Fever, Foot and Mouth Disease and pests such as ticks. The mixing of the animals would also result to poor livestock breeds due to in breeding. These will have economic impacts in economic terms due to reduced productivity by the animals and poor market prices.

Mitigation Measures

Joint and regular disease surveillance and early warning programmes between the veterinary department and local community; Development of disease management plan for coordination of disease response programmes (quarantine, vaccination campaigns); Sensitization of the community on disease spread, monitoring and control; Equipping/rehabilitation of existing livestock facilities (cattle dips).

6.5 Decommissioning of the Sub-project

Decommissioning refers to the final disposal of the project and associated materials at the expiry of the project lifespan. The reasons for the decommissioning could be; the source may become inadequate due to unexpected change in climate rendering the sub-project inefficient or other cheaper means of getting water may be developed near the entire or part of the community and other target areas and cause the proponent to close and change to the new source. It could also involve rehabilitation of the project. The hazards and risks associated with the decommissioning of the site will be identified, assessed, and managed when the nature of these works is known. A decommissioning ESMP will then be developed. If cessation of the sub project becomes necessary, the proponent needs to remove all materials resulting from the demolition from the site. Under these circumstances, the proponent will demolish all the structures including the intake remove the piping; salvage materials and restore the sections affected to the original state. The concrete storage tanks may require to be connected to other water sources. Backfilling of

surface openings may be required if practicable. Landscaping by flattening heaps of soil would also be necessary coupled with planting indigenous trees. The resultant waste should be sorted into re-recyclables and non-recyclables before disposal at the designated site in accordance with EMCA Cap 387 (Solid Waste Regulation of 2006) . The recyclables could be re-used in new sub-projects or sold to recyclers.

The following table summarizes the impacts and associated mitigation measures during the decommissioning phase.

Table 20: Summary of Key Impacts and Mitigation in the Decommissioning Phase

ENVIRONMENTAL/SOCIAL IMPACTS	MITIGATION MEASURES
Accumulation of solid waste after demolition	Collection and sorting for waste disposal or recycling Provide waste receptacles
Landscape impacts and soil erosion	Restoration of the affected site e.g. storage tanks, etc. through landscaping and planting vegetation cover Backfilling of surface openings
Loss of income for workers and the neighboring community	Sensitize the community on imminent occurrence so that they can absorb the psychological shock without devastating consequences.
Loss of source of water	Develop alternative water source Sensitize the community on establishment of farm rain water harvesting infrastructures

CHAPTER SEVEN

ANALYSIS OF PROPOSED SUB-PROJECT ALTERNATIVES

7.1 The ‘no sub project’ alternative

The selection of the “No sub project” alternative would mean the discontinuation of the proposed Kipcherere Water Sub-project. The “No sub project” alternative is likely to have the greatest loss of the anticipated socio-economic benefits that include opportunity for employment and access to water supply in the area hence no livestock water and micro irrigation water will be available. It would mean the stated demand for water would not be met, vulnerability to drought would continue and the livelihood in Kipcherere will continue to be adversely affected. This will lead to increased malnutrition, environmental degradation and low-income levels in the community. It will also lead to increase in resource-based conflicts. The No sub project option is, therefore, not an appropriate choice in this case as it also counters development.

7.2 Alternative technology between gravity flow and pumping system

The proposed sub project is a gravity flow system where water flows by gravity to the reservoir tanks and then to the end users (beneficiaries). An alternative consideration is to convert this into a pumping water system where water is pumped using a diesel-powered generator or electricity or a hand pump. The hand pump in this case is not feasible and therefore not a suitable alternative due to the water demand in the project area. Choosing a water pumped system using diesel generator or electricity would require spaces for; pump hall/engine room, transformer station including high voltage switch gear, low voltage switch gear, switch board, control desk, often combined and stores, workshop and stores, office, toilet (including water supply), (central) heating and/or ventilation and generator room. All these components would require more land and more finances both for construction and maintenance. Use of diesel-powered generator would also not be in line with the project objective of reducing GHGs emissions.

7.3 Alternative Site

Choosing a different site would mean change in designs, technology and more funding which may not be feasible. Also shifting to an alternative site would mean changing the sub project to a borehole or a dam or a river intake all of which are not feasible. WRA carried out an assessment of flow of water in the Kipcherere Spring which has been found to be adequate to meet the sub project expected outcomes. As it stands now there is no water resource available to provide sufficient water for the activities that have been proposed for this sub project that is livestock watering, micro irrigation and domestic use.

7.4 Water Tanks Construction Materials Alternative

Water tanks are provided for the purpose of balancing the constant supply rate from the water source with the fluctuating water demand in the distribution area.

Based on the materials used to construct them water storage tanks may be classified as; reinforced concrete water tanks (R.C.C. tanks), masonry/concrete tanks and steel tanks. PVC water tank was not a priority in the alternatives therefore it is not considered

Having considered the different types of water storage tanks based upon the materials used to construct them the concrete/masonry tanks are found to be a suitable alternative as they could withstand; (i) adverse weather elements and (ii) pressure exerted by the volume of water to be held compared to the other type of tanks.

7.5 Open system and closed system alternative

Open system is a collection chamber with a valve chamber and an open system where the water flows freely through a pipe to the users. The open system is prone to sedimentation and water contamination and highly affected by seasonality changes in water flow. The closed system has a collection chamber with a valve chamber and then the outlet pipes feeds into a storage reservoir where the water is collected. The storage reservoir is important for accommodating the cumulative differences between water supply and demand and in case of breakdowns between source and tanks.

This reservoir feeds another pipe to a tap/user. The closed system retains as much water as possible. The closed system may also be installed with a sedimentation tank or filter after the spring chamber in case of turbidity in water. Based on this analysis the current proposed project design of a closed system water supply is found appropriate due to provision for water storage as a safeguard against seasonality changes in water flow, easy to manage sedimentation and water contamination. It is also easy to undertake water treatment in closed system as compared to the open system.

7.6 Exploitation of groundwater (borehole or shallow well drilling)

This is not feasible as attempts have been made to drill boreholes in the sub project area. In some instances, one borehole was drilled but did not yield any water and was abandoned, another attempt was made and on drilling the borehole emitted fire because of combustible gases underground. There is one borehole about 4 km from the proposed intake drilled successfully but whose yield is low to meet the water demand of the area. Some households have dug shallow wells (silted very fast) of which they described as inadequate as the well dried up during the dry season and the yield was too low for the stated objective of Kipcherere Water Project. Considering this Kipcherere Water project remains a suitable choice.

7.7 Source water from elsewhere

This option is also not feasible as Kipcherere stream and its environs are devoid of county waterworks. The other nearby source is Kitcheree which is seasonal and also faces challenges of pollution and the community are not willing to use its waters. Though the community will be encouraged to install roof rainwater harvesting structures the water will not be adequate to serve the sub project purpose. Kipcherere and Tunoiwonin intakes which are to be rehabilitated to complement the (Kipcherere Water project) ononoi Spring have low yields and will not meet the

water demand of the community. Therefore, the Kipcherere Water Project at ononoi Spring is selected as a suitable alternative to meet the community water demand for livestock and kitchen gardening.

7.7. The sub project alternative

The implementation of the proposed sub-project as outlined in this ESIA document has no objection from the public. The design has taken into consideration the catchment area and type of soils on site. The proposed gravity system of water harvesting is best suited for the area considering it has a gentle slope. The proposed intake construction and gravity main was arrived at after consultations by different experts and community found to be appropriate in terms of socio-economic considerations. The gravity main is therefore, a preferable alternative in respect of economy in construction, operation, maintenance and importantly adverse impacts to the environment. It has low significant impacts and does not alter the natural habitat or interfere with the biodiversity of flora and fauna.

CHAPTER EIGHT
ENVIRONMENTAL AND SOCIAL MANAGEMENT & MONITORING
PLAN (ESMMP)

8.1 Introduction

The environmental and social management & monitoring plan involves risk management strategies that will be undertaken by the sub-project proponent and all the stakeholders to mitigate environmental the predicted environmental, social and economic impacts. ESMMP for the sub-project provides logical frameworks within which the environmental issues of concern can be mitigated or monitored. The ESMMP outlined below addresses the identified issues of concern (potential negative impacts) and mitigation measures as well as roles, costs and measurable indicators that can help determine the effectiveness of actions to upgrade the quality of the environment as regards the proposed construction of the water. The ESMMP has considered both construction, operation and decommissioning phases

Table 4: Environment and Social Management & Monitoring Plan (ESMMP)

Environment/ Social Impact	Proposed Mitigation Measure	Indicator	Responsibility	Frequency/Duration	Estimated cost
ENVIRONMENTAL IMPACTS AND MITIGATION IN THE CONSTRUCTION PHASE					
Disturbance of Vegetation	Sensitization of the community to limit disturbance of vegetation in the sub project sites during construction, limit vegetation removal to the demarcated pipeline route, replacement of uprooted trees, establishment of indigenous/fruit tree nursery to supply seedlings for increasing vegetative cover	No. of persons sensitized to protect vegetation, Acreage with intact vegetation, Number of trees planted by the contractor after removal, Area of farmland with tree cover, Number of seedlings procured and planted, Number of tree nurseries established	Contractor, Proponent/PMC, community, POE	Once/5 weeks	300,000 (for community tree nursery & purchase of seedlings)
Soil disturbance/ Soil erosion	Soil removed from pipeline trenches, concrete water tanks and intake foundation excavation should be re-used in filling back the voids and compacted properly, planting of vegetation to reduce chances of future soil erosion after construction (e.g. exposed surfaces including riparian areas are revegetated), sensitize workers to limit disturbance of vegetation in the sub project sites during	Length of the excavated trench covered/backfilled, number of trees planted in exposed area, area of riparian planted with vegetation, area of land exposed to soil erosion / excavated, area of pipeline cleared, no of workers sensitized to protect vegetation and number of	Contractor/ Work foreman, POE Proponent/PMC	Once/8 weeks	50,000 for purchase of aquatic vegetation

	construction, vegetation removal to be limited to the demarcated pipeline route, works supervising engineer to make sure that designs are followed to prevent increase in speed and limit drop across the intake that may cause erosion, laying of gabions to be provided for in the design to protect against erosion	gabions constructed			
Water Pollution	Contractor to make sure proper diversion of the spring water to create dry area for weir construction, sensitize workers on proper handling of materials during construction, prevention of wastes from construction materials from entering the spring by having waste receptacle and designated point for disposal, the contractor to provide sanitary facility (latrine) for worker on site at least 50M away from the spring	No of diversion created, working area created, no. of workers sensitized, no. of waste bin installed, no. of sanitary facilities constructed, distance of latrine from spring.	Contractor/supervising engineer/work foreman PMC	Once/8 weeks	75,000 establishment of latrine.
Solid waste generation	Contractor to ensure sorting and separation of waste for re use and or recycling, contractor to provide temporal waste disposal receptacle (waste bins) on site, contractor to liaise with licensed waste collector to routinely collect and dispose the waste, training workers and local communities on solid waste management	Quantity of solid waste recycled, number of bins installed, number of licensed waste handlers engaged, number of workers and community members trained on waste management, etc.	Contractor/work foreman Environment dept, community	Once/8 weeks	30,000 for purchase of litterbins & sensitization

Air quality (Dust generation & motor vehicle emissions)	Provision of suitable PPE/C to workers, application of water sprays and mist by trucks as dust suppression measures on loose soils and stockpiles, contractor to advise drivers not to let vehicle engines to run idly, sensitize drivers to observe speed limit in settlement areas to reduce dust generated. Motor	No of workers with appropriate PPEs, no of times water sprays are applied, no. of drivers sensitized on speed limit	Contractor/ Work foreman	Daily/8 weeks	75,000 for PPEs & spraying water
Noise and vibrations	Servicing of all machinery and vehicles in use, vehicle inspection, selected contractor to sensitize drivers not to let motor vehicle engines to run idly, the work to be done between 8.0 am and 5.0 pm to minimize disturbance of the neighboring community, contractor to provide ear muffs to works.	Number of workers (drivers) with earmuffs, no of vehicles with inspection certificates, no of machines/ vehicles serviced, no of drivers instructed to observe idling time of vehicles, time for construction work	Contractor/ Work's Foreman	Daily/8 weeks	Factored above
Occupational Health and safety (OHS)	Warning tapes to be put along the trench line to alert pedestrians on the dangers, putting construction signage at the site during construction, contractor to make sure that truck drivers ferrying materials and equipment for use comply with the road traffic rules to avoid accidents (drivers to observe speed limits), employ drivers who are well trained, use locals in the manual transportation of construction materials as they are familiar with terrain,	No of Labels and warning signs installed, no of drivers with valid driving license, no of locals employed, no of sensitization meetings undertaken, no of sites of storage of large boulders, number of workers with full protective gear, no of First-aid Kits at site, no of workers trained on first aid and	Contractor/Supervising engineer Contractor/Supervising engineer/work foreman Work foreman Directorate of Occupational Health and Safety (DOSHS)	Daily/8 weeks	170,000

	development of an occupational health and safety contingency plan, full disclosure of the project activities before commencement, designate safe site for putting the large boulders (should not be on a sloppy ground or on routes used by workers), workers to be provided with personal protection gear to avoid cuts on the feet, hands, and head during duty includes helmets, gloves, and safety boots overalls, face masks and earplugs in dusty and noise activities, workers to be trained on procedures to prevent accidents while on the construction site and be trained on first aid. In addition, first Aid kits to be provided for the workers.	emergency procedures, no of contingency plans for accident response, no of Emergency response contacts at the site, no of persons insured.			
Physical/ Cultural resources	In case of chance find, the following should be done; stop the construction activities in such areas, delineate the discovered site or area, secure the site to prevent any damage or loss of removable objects, notify the National Museums for action and seek further advise from the same for any significant finds	No. of physical cultural resources discovered, no. of sites discovered with physical cultural resources. Cases of chance finds encountered	Contractor National Museum of Kenya	8 weeks	50,000 for securing site
Negative Socio-Economic Impacts during Construction phase					
Increase in incidences of	HIV/AIDS awareness creation seminars and educational programs for all workers	Number of HIV/AIDS sensitization forums	Contractor Proponent	4 months	100,000

STIs and HIV/AIDS	and the surrounding community, provision of standard quality condoms at the construction site during the construction period.	conducted, number of community members and workers sensitized on HIV, no of picking points for condoms	CPCU/CESSCO Ministry of health Local administration		
Spread of COVID-19 amongst workers	The Contractors will develop a Standard Operating Procedures (SOPs) in line with the WHO guidance on COVID-19, Ministry of Health Directives, and site-specific project conditions, mandatory provision and use of appropriate PPE for all project personnel/works/visitors, avoid concentration of more than 15 workers at one location, maintain social distance of 2M, screening of workers daily for temperature & other vital signs, rapid testing of suspected workers for covid-19, installation of handwashing facilities with adequate running water and soap, or sanitizing facilities at strategic points and routine sanitization of shared social facilities and other communal places.	No. of SOP(s), no of training material developed, no of PPEs and sanitizing facilities procured, no of sanitation facilities installed e.g. handwashing equipment no of community sensitization on Covid-19 conducted/ number of participants to such community sensitizations	Contractor Proponent CPCU/CESSCO PHO	4 months	75,000
Spread of COVID-19 amongst community members during	Contractor and proponent to develop SOPs for COVID control, encourage electronic means of consulting stakeholders and holding meetings whenever feasible, one-on-one engagements for the PAPs while	No of SOP(s), no of training material developed, no of PPEs purchased and used PPE, no of hand washing & sanitizing facilities, no. of participants registered online,	Contractor Proponent/PMC CPCU Communication / Engagement expert in project team	4 months	150,000

consultations processes	observing social distance and adhering to PPE wearing shall be enforced, avoid concentrating of more than 15 community members at one location. Where two or more people are gathered, maintain social distancing of at least 2 meters, the team carrying out engagements within the communities on one-on-one basis to be provided with appropriate PPE for the number of people they intend to meet, use of traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements, and mail) in case of challenge with on line channels, holding meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration, dissemination of information through digital platform (where available) like Facebook, WhatsApp and Chart groups.	no of people attending community meetings, no of electronic media devices used for information dissemination/engagement e.g. printed electronic mails, addresses of video links created and no of FGDs held for community engagements.	PHO		
Gender Based Violence among	Contractor to formulate clear human resources policy against GBV for the contract workers aligned with national law (such as 2/3 gender rule),integrate	No of policies on GBV formulated, no of GBV provisions in COC, no of personnel appointed to	Contractor Proponent/PMC CPCU/CESSCO SAIC	4 months	20,000

workers	provisions related to GBV in the employee COC, appoint personnel to manage reports of GBV according to policy, all personnel engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse, contractor to develop specific plan for mitigating these known risks (sensitization on GBV), contractor to ensure adequate referral mechanisms are in place in case of reported GBV incidence at community level.	address GBV, no of personnel signed COC, no of plans in place to mitigate known GBV risks, no of referral mechanism in place to address reported GBV incidence from community.	GBV Expert Local CBO/NGO		
Sexual Exploitation and Abuse by project workers against community members	Develop and implement a SEA action plan with an Accountability and Response Framework based on WB Good Practice Note for Addressing GBV in Investment projects, prevention of SEA through signing COCs and sensitization of staff on responsibilities related to the COC, Survivor-centered response to SEA redress mechanism with a multi-sectoral referral and assistance to complainants, staff reporting mechanisms; written procedures related to case oversight, investigation, and disciplinary procedures at the project level, including confidential	No of SEA Action Plan, no of staff signed Code of Conduct, no of staff trainings on SEA, no of community Liaison trained in PSEA, no of IEC materials for workers' sites and community, no of SEA reporting pathway, no of relevant policies, e.g. investigations and discipline and whistleblower protection.	Supervision Consultant GBV Expert Local CBO/NGO	1 year	250,000

	<p>data management, engagement with the community and development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; development of contract policies related to SEA, including whistle blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.</p>				
<p>Gender-based violence at community level</p>	<p>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. employment schemes for women; delivery of water supplies; etc. Specific plan for</p>	<p>No of consultations with women and girls, no of trainings for PMC, SAIC, CESSCO on GBV and SEA, no of components heightening GBV risk reviewed, no of plans in place to mitigate known risks, n`o</p>	<p>Contractor Proponent/PMC CPCU/CESSCO SAIC GBV Expert Local CBO/NGO</p>	<p>Once/4 months</p>	<p>100,000 training of PMC, SAIC, CESSCO on GBV and SEA</p>

	mitigating these known risks, e.g. sensitization around employment; water services; etc.Ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation, training of PMC, SAIC, CESSCO and Community (PMC) on GBV and SEA	of referral mechanisms in place to address reported GBV cases.			
Environmental Impacts in the Operational Phase					
Soil Erosion	The proponent to consider increasing the number cattle troughs for redistribution of livestock to watering points, sensitization of farmers on SLM (e.g. terracing, tree nursery, agroforestry, crop rotation, strip cropping, correct stocking rate, fencing, affruitation)	No of additional cattle troughs constructed, no of farmers sensitized on SLM practices, no of SLM practices implemented.	Proponent/PMC CPCU	12 months	50,000 for sensitization on SLM practices.
Water Pollution, Contamination & Sedimentation	Regularly monitor water flow from spring chamber (colour, amount of flow) and take water samples for analysis, conduct Participatory Health and Hygiene Education (PHHE) for the community and beneficiaries to enhance hygienic practices, construct a cut off drain above the spring to prevent contaminated water from entering and mixing with the spring water, training the local community in the catchment area upstream on SLM (reforestation, planting	Frequency of monitoring & sample analysis, no of PHHE conducted for community & beneficiaries, length of cut off drain, no. of community members upstream trained on SLM, area of spring and catchment fenced, frequency of washing out accumulated silt/sediments, no of community members trained on spring system	Proponent/PMC CPCU Public Health Department WRA	Quarterly/ 1 year	150,000 for sensitization and trainings (PHHE, IPM) & 40,000 for sample water analysis.

	of grass) practices and rationale for catchment protection, construction of check dams to control erosion and reduce sediments, fencing of the area around the spring to create a protection zone, livestock should not be allowed in the protection zone of the spring, maintaining spring box, valves and pipes regularly, training the pmc in the correct maintenance of the spring inlet and system, local community to develop by laws on protection of the spring water.	maintenance, no of by laws formulated.			
Decreased Water Flow	Unblock (clean collection pipes, take out gravel / filter media and replace it), train local community in the catchment area upstream on SLM, prompt repair of leaks by PMC	Frequency of unblocking pipes, no of local communities trained on SLM, no of repairs done.	Proponent/PMC Sub county water officer CPCU	Quarterly/1 year	50,000 for repairs
Damage to pipeline	Adequate backfilling, fencing the catchment area, use of appropriate pipes (PVC), education of the local community/beneficiaries on project ownership to prevent vandalism	Type of pipes used, no of community members & beneficiaries educated on project ownership, area of spring fenced	Contractor/works foreman Proponent/PMC CPCU Local administration	Quarterly/1 year	50,000 for training on project ownership
Negative Socio-Economic Impacts during Operation phase					
Spread of COVID-19	Contractor and proponent to develop SOPs for COVID control, encourage	No of SOP(s), no of training material developed, no of	Contractor Proponent/PMC	4 months	Factored above

<p>amongst community members during consultations processes</p>	<p>electronic means of consulting stakeholders and holding meetings whenever feasible, one-on-one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced, avoid concentrating of more than 15 community members at one location. Where two or more people are gathered, maintain social distancing of at least 2 meters, the team carrying out engagements within the communities on one-on-one basis to be provided with appropriate PPE for the number of people they intend to meet, use of traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements, and mail) in case of challenge with on line channels, holding meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration, dissemination of information through digital platform (where available) like Facebook, WhatsApp and Chart groups.</p>	<p>PPEs purchased and used PPE, no of hand washing & sanitizing facilities, no. of participants registered online, no of people attending community meetings, no of electronic media devices used for information dissemination/engagement e.g. printed electronic mails, addresses of video links created and no of FGDs held for community engagements.</p>	<p>CPCU Communication / Engagement expert in project team PHO</p>		
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Water Use Conflicts	Formation and training of Water User's Association (WUA), establishment and training of Grievance redress committee, formulation of by laws to regulate water use, sensitization of the community on alternative water sources such as rainwater harvesting.	No of WUAs formed and trained on water use management, no of GRM formed and trained on water conflict management and resolution, no of by-laws formulated to govern water use, no of households sensitized on rainwater harvesting,	Proponent/PMC WRA CPCU/CESSCO	1 year	100,000 for trainings
Population Change Impact	Sensitize the community on the water demand and availability for different users, develop and implement a community water users development plan in consultation and partnership with the local community and established WUAs, formulate by laws to regulate water use and number of beneficiaries.	no of community members sensitized on water demand & availability, no of community water user plan developed & implemented, no of by laws on water use developed	Proponent/PMC WRA CPCU/CESSCO Upstream community, Panel of Experts (PoE)	4 months	50,000 for development of catchment management plan
Increase in Disease Causing Vectors e.g. mosquitoes & water borne diseases e.g typhoid.	Vector control by local community e.g draining stagnant water, provide proper drainage in all watering points, periodic water quality analysis, sensitize the local community on the importance of indoor residual spraying (IRS) with insecticides and use of insecticides protected mosquito nets, sensitize the community on simple methods of treating water	Number of HH using mosquito nets, no of sensitization meetings held on IRS, no of households practicing safety rules, no. of water quality analysis undertaken, no of community members educated on simple water treatment methods	Proponent Department of Veterinary services CPCU Department of Public Health Local administration	1 month	75,000 for trainings

	before drinking (e.g. filtering or/and boiling of drinking water, use of aqua tabs)				
Increase in Livestock Diseases/Pests and Poor Breed Animals	Joint and regular disease surveillance and early warning programs between the veterinary department and local community, development of disease management plan for coordination of disease response programs (quarantine, vaccination campaigns), sensitization of the community on livestock health and disease management.	Number of disease surveillance done, no of sensitization meetings held on livestock health and disease control, no of livestock disease management plan in place & implemented	Proponent Department of Veterinary services CPCU	2 months	100,000 for sensitization & development of disease management plan
	TOTAL COST				1,990,000

8.2 Institutional Arrangement for Monitoring Compliance with ESMMP

The environmental and social issues included within the mitigation measures will be monitored and supervised by the project beneficiaries, chosen contractor, The Supervision consultant and the KCSAP County Environment and Social Safeguards Compliance Officer (CESSCO) and the Projects Monitoring and Evaluation Officer. The importance of monitoring is to ensure that the ESMP has been effectively implemented, furnish information on the progress and results of mitigation and provide early detection of conditions that necessitate mitigation measures. Although the environmental and social impacts are expected to be moderate or low, the potential negative environmental and social impacts are planned to be prevented or mitigated during the construction and operation stages. Environmental and social monitoring system started from the preparation phase of the sub project and will continue through the operation phase in order to prevent negative impacts of the project and observe the effectiveness of mitigation measures. The monitoring system will provide technical assistance and supervision when needed, early detection of conditions related to mitigation measures, follows up on mitigation results, and provides information of the project progress. The ESMMP has provided information about the key environmental and social aspects of the sub project including the mitigation measures to be monitored. The KCSAP Project Coordinating Unit in Baringo will comply with the provisions of any other environmental and safeguard requirement provided by legislation and conditions of the main funding agency (WB).

Audits and Reviews:

Annual environmental, health and safety audits and reviews as required by NEMA will be conducted to assess the performance of the environmental, health and safety policies and operational procedures implemented.

Training

The selected contractor and workers that shall be engaged in the construction of the sub project will be provide with basic training to accomplish the objectives of the ESMP. Additionally, special training on GBV/SEA shall be provide to the key personnel who have key responsibilities under the ESMP.

Key Roles and Responsibilities in M & E

The Contractor

The Contractor will have the overall responsibility of adherence to the ESMMP. He/she will work closely with the KCSAP CESSCO to identify necessary improvement to the implementation of the ESMMP.

The CESSCO

The CPCU/CESSCO will undertake the planning and coordinating with NPCU on GBV/SEA issues with subject specialist or consultant for meeting the measures proposed in the ESMP. The CESSCO is expected to carry out quarterly reporting of the sub project together with the M & E officer. These quarterly reports will form the basis for effective auditing and review of the ESMP of the proposed sub project.

CHAPTER NINE

CONCLUSION AND RECOMMENDATIONS

9.0 Conclusion

This study has ascertained that the construction of the proposed **Kipcherere Community Water Sub-project** will have both positive and negative impacts on the physical and the surrounding human environment. Positive impacts include availability of water for livestock, casual employment, improved agricultural productivity, self-employment, improved sanitation in the area and a reliable source of water.

The negative impacts include increase in water-borne diseases, noise, dust pollution, disturbance of vegetation to create space for the weir and concrete water storage tanks, soil erosion, socio-economic impacts such as increase in communicable diseases such as HIV/AIDS, COVID 19, water related conflicts, GBV/SEA issues among others.

The project design has integrated measures to mitigate the adverse impacts with a view to ensure compliance with applicable laws and procedures. Additional and more detailed measures are provided in the ESMP and will help in mitigating the impacts. Overall, the ESIA study concludes that construction of the weir and other components of the sub project will **not** generate significant negative impacts that can compromise the ecological and environmental wellbeing of the area as well as health and safety of the residents.

Recommendations

9.1 Implementation

It is thus recommended that the proposed subproject be implemented and the recommended mitigation measures to be implemented as outlined in the ESMP. *The ESMP should be shared with the Contractor and the same should be required to translate this ESMP into and implement Contractor-Specific Environmental and Social Management Plan (CESMP). The contractor will also be required to employ a qualified Environmental and Social Safeguards specialist as well as Safety and Health officer to oversee implementation of the ESMP.*

On approval, it is recommended that the proponent should implement the proposed project based on the proposed plans and if alterations are necessary, advice should be sought from the CESSCO, subsequently environmental expert and County NEMA director.

The proponent should share the ESMP with the Contractor and other responsible stakeholders and that the ESMP form part and parcel of the Contractor's contract to ensure that their obligations as outlined in the ESMP are executed

The proponent will be required to undertake annual environmental audit pursuant to the provisions of the Act.

9.2 Compliance with the Water Quality Regulations

The Proponent in consultation with other related parties should ensure compliance with the water quality standards as outlined in EMCA water quality regulations 2006 as per the proposed water

use from Kipcherere. In this regard the proponent should ensure that water testing for the necessary parameters is undertaken regularly.

Finally, the proponent must apply for the *WRA license and permits on quality and water use*.

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ANNEXES

ANNEX 1: TERMS OF REFERENCES FOR THE SUB-PROJECT REPORT

The Terms of Reference to prepare a sub-project report for the **Kipcherere Community Water Sub-project** to include the following:

(1) Purpose of the sub-project report

- To ensure adequate identification of potential negative environmental impacts.
- To propose workable mitigation measures
- To formulate an Environmental and Social Management Plan (ESMP) articulating envisaged impacts.

The Environmental Management Plan will outline the implementation of the mitigation measures; indicate the responsible persons and the required resources as well as the implementation timeframe.

(2) The objectives

The overall objective of the sub-project report, on the other hand, is to ensure that all the negative environmental concerns are integrated into the development proposals and the activities in order to contribute to the sustainable development of the Kipcherere Area.

Specifically, the objectives are: -

- (i) To identify both direct and indirect potential environmental impacts on the proposed Kipcherere water project
- (ii) To assess the significance of the impacts of the proposed water on to the natural and human environment.
- (iii) To assess the relative importance of the impacts of the site plans, designs, and the relevant drawings.
- (iv) To propose preventive mitigating and compensative measures for the significant negative impacts of the water on the immediate environment.
- (v) To generate environmental baseline data to provide parameters to monitor and to evaluate the implementation of the mitigating measures during the sub-project cycle.
- (vi) To document and present environmental baseline information on the impact of alternative development sites.

- (vii) To present the results of this sub-project report, that will guide informed decision making on the development of the proposed sub-project, and,
- (viii) To prepare an Environmental Management and Monitoring Plan for the proposed Kipcherere Water sub-project.

(3) Legal statutes

The report will further ensure that the proposed residential development complies with the following statutes.



- Environment Management and Co-ordination Act of 1999 and the Environmental (Impact Assessment and Audit), Regulations of 2003.
- Physical Planning Act (Cap 286), on change of user of land.
- Public Health Act (Cap 242); on sanitation and waste management
- Occupational Health and Safety Act (2007)
- EMCA (Noise & Excessive Vibration Pollution Control Regulations, 2009) Legal Notice 61
- EMCA (Waste Management Regulations 2006)
- Environmental Management and Coordination (Water Quality) Regulations, 2006
- Environmental Management and Coordination Act (Air Quality) Regulations, 2008.

(4) Public consultation

In conducting, this environmental impact assessment (ESIA) for the proposed sub-project, it is a requirement that a public consultation process be instituted in accordance with the laid down legislative framework and statutes. The public consultation for the construction of the proposed sub-project was therefore, done in compliance with the provisions Environmental Management and Coordination 1999, the Environmental (Impact Assessment and Audit) Regulations of June 2003, the Environmental Management and Coordination Act (Water Quality) Regulations 2006 and the Environmental Management and Coordination Act (Waste Management) Regulations 2006 as well as the other regulatory requirements.

Annex 2: Environmental and Social Screening for Kipcherere Water Sub Project

KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)

KCSAP
Kenya Climate Smart
Agriculture Project

REPUBLIC OF KENYA

ATTENDANCE LIST

ACTIVITY Screening and site visit

DATE 27/1/2020 Kipcherere

S/No	Name	Age(Years)		Gender		Position	Station	Phone number	Signature
		18-35	>35	Male	Female				
1.	Rael delegat	✓	✓	♀	F	Member	Kipcherere	0715140255	Rael
2.	Milka Rotich	✓	✓		F	committee	Kipcherere	0722504570	Milka
3.	Caroline Chesine	✓	✓		F	Member	Kipcherere	0716676712	Caroline
4.	Arima Cherop		✓		F	Member	Kipcherere	0717450015	Arima
5.	Truphana Mwangi	✓			F	member	Kipcherere	0720429167	Truphana
6.	Ernest Totomwa	✓	✓		F	Member	Kipcherere	0175555005	Ernest
7.	Eunice Cherop	✓			F	member	Kipcherere	0716676712	Eunice
8.	Rebecca Rotich	✓			F	member	Kipcherere		Rebecca
10.	Esther Cherutich		✓		F	member	Kipcherere		Esther
11.	Salina Kipchumba		✓		F	Member	Kipcherere		Salina
12.	David Chesire		✓		M	member	Kipcherere		David

13.	KIPREAU CERAGONG	✓						
14.	Pamir Sultan	✓	M	MEMBER		KARIS	KARIS	
15.	SAMMY CHIBBI	✓	M			INDONESIA	INDONESIA	
16.	Dr Paul Hammering		M			KIPREAU	KIPREAU	
17.	Loac Kubogoy	✓	M			BARU	BARU	
18.	Ag Chappagon	✓	M			BARU	BARU	
19.	Joseph Chesaro	✓	M			BARU	BARU	
20.	Joseph Choptoo	✓	M			KITCHARI	KITCHARI	
21.	Joseph Choptoo	✓	F	SCW	0724288351	KOLAKONG	KOLAKONG	
22.	Joseph Choptoo	✓	M	ME	072822696	KBI	KBI	
23.	Philip Nandwa	✓	M	MEMBER	072094950	KBI	KBI	
24.	BELINDA NIANIA	✓	✓	MEMBER	072149951	RAT	RAT	
25.								
26.								
27.								
28.								
29.								
30.								

Coordinates
 0 36 13.79" N
 35° 50' 10.39" E

Witoke Kipcherere

(Coolo) Kipcherere - Subcounty
 Kipcherere - Sublocation
 Kipcherere - village

Elevation - 1614M

ENVIRONMENTAL AND SOCIAL SCREENING CHECK LIST

(Sub-projects screening process by benefitting communities/Agencies)

Section A: Background information

Name of County.....	BARINGO.....	CONV. 7.....
Name of CPCU/Monitoring Officer/Researcher.....	Philip Nandwa	
Sub-project location.....	Kipcherere	
Name of CBO/Institution.....	Self Help Group	
Postal Address.....	66 (Kipcherere)	
Contact Person.....	Simon Cheser	Cell phone..... 0711-381217
Sub-project name.....	Kipcherere Water Project	
Estimated cost (KShs.).....		
Approximate size of land area available for the sub-project.....		
Objectives of the sub project.....	To provide water to the head through irrigation to the provision of water	
Activities/enterprises undertaken.....		
How was the sub-project chosen?.....	Agreement by Kipcherere community	
Expected sub project duration.....		

Section B: Environmental Issues

Will the sub-project:	Yes	No
Create a risk of increased soil erosion?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Create a risk of increased deforestation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Create a risk of increasing any other soil degradation soil degradation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Affect soil salinity and alkalinity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Divert the water resource from its natural course/location?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cause pollution of aquatic ecosystems by sedimentation and agro-chemicals, oil spillage, effluents, etc.?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Introduce exotic plants or animals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Involve drainage of wetlands or other permanently flooded areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cause poor water drainage and increase the risk of water-related diseases such as malaria?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduce the quantity of water for the downstream users?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Result in the lowering of groundwater level or depletion of groundwater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Create waste that could adversely affect local soils, vegetation, rivers and streams or groundwater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduce various types of livestock production?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Affect any watershed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Focus on Biomass/Bio-fuel energy generation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the answers to any of the above is 'yes', please include an EMP with sub-project application.

Section C: Socio-economic Issues

	Yes	No
Will the sub-project:		
Displace people from their current settlement?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Interfere with the normal health and safety of the worker/employee?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduce the employment opportunities for the surrounding communities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduce settlement (no further area allocated to settlements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduce income for the local communities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Increase insecurity due to introduction of the project?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Increase exposure of the community to HIV/AIDS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Induce conflict?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have machinery and/or equipment installed for value addition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Introduce new practices and habits?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Lead to child delinquency (school drop-outs, child abuse, child labour, etc.)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lead to gender disparity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lead to poor diets?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lead to social evils (drug abuse, excessive alcohol consumption, crime, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>

If the answers to any of the above is 'yes', please include an EMP with sub-project application.

Section D: Natural Habitats

Will the sub-project:		
Be located within or near environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands) or threatened species?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Adversely affect environmentally sensitive areas or critical habitats – wetlands, woodlots, natural forests, rivers, etc.)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Affect the indigenous biodiversity (Flora and fauna)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cause any loss or degradation of any natural habitats, either directly (through project works) or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Affect the aesthetic quality of the landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reduce people's access to the pasture, water, public services or other resources that	<input type="checkbox"/>	<input checked="" type="checkbox"/>

depend on?			
Increase human-wildlife conflicts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Will the sub-project:			
Involve the use of pesticides or other agricultural chemicals, or increase existing use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cause contamination of watercourses by chemicals and pesticides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Cause contamination of soil by agrochemicals and pesticides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Experience effluent and/or emissions discharge?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Export produce? Involve annual inspections of the producers and unannounced inspections?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Require scheduled chemical applications?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Require chemical application even to areas distant away from the focus?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Require chemical application to be done by vulnerable group (pregnant mothers, chemically allergic persons, elderly, etc.)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Use irrigation system in its implementation?			

If the answers to any of the above is 'yes', please include an EMP with sub-project application.

Section E: Pesticides and Agricultural Chemicals

This questionnaire will be used with the farmers groups for purpose of implementing the IPMF

1) Pest Control practices

a) Do you use any pesticides to control pests (Insects, diseases, weeds) of crops each season?

Yes No If yes, name them:	Name of pesticide	Name of pest, disease, weed controlled	Number of times applied/ season	When did you apply (growth stage or month) Quantity purchased

If No, WHY?

b) If you use any of the above pesticide types, do you keep records of the:

Application location Yes..... No

Date of application Yes..... No

Pesticide product trade name

Yes..... No

Operator name Yes..... No

If No, WHY?

c) How do you decide when to use the pesticides (tick all that apply)?

(i) We use pesticides at regular intervals throughout the season (calendar)

(ii) We use pesticides when we see pests in the field (control)

(iii) We use pesticides after field sampling and finding a certain number of pests or a certain level of damage (scouting)

(iv) Told by someone to apply (specify who) _____

(v) Other (specify) _____

d) Do you use a knapsack sprayer? Yes No _____

If yes,

(i) Do you own it Yes No _____

(ii) Do you rent it Yes No _____

(iii) Do you borrow it Yes No _____

e) From your experience, are there any negative/harmful effects of using pesticides? Yes No _____

f) If yes, list the negative effects:

(i) headache

(ii) Stomach

(iii) irritation of birds

(iv) loss of quantity of product

(v) eye irritation

g) Do you use any kind of protective clothing while applying or handling pesticides? Yes No _____

Why? _____

a) If YES, what kind? _____

2. Knowledge of pesticide handling and storage (tick one in each row)

a) Do you read labels on the pesticide container before using?

Sometimes Always _____ Never _____

b) How often do you wear protective clothing and other accessories like nasal mask, eye goggles, and boots when applying the pesticides?

Sometimes _____ Always _____ Never

c) Do you mix pesticides with your hands?

Sometimes Always Never _____

d) Do you observe the pre-harvest waiting periods after applying the pesticides?

Sometimes _____ Always _____ Never

e) After spraying, do you wait 12 hours before entering the field?

Sometimes Always _____ Never _____

- Do you store pesticides in a secure, sound and well-ventilated location?
 Sometimes Always _____ Never _____
- Do you make a cocktail before applying the pesticides? (i.e., mix more than one chemical and apply them at once?)
 Sometimes _____ Always _____ Never
- h) Where do you store your pesticides? in house away from children
 Why do you store them there?
prevent risk of contamination / poisoning
- i) What do you do with your pesticide containers after they are empty? dispose in latrine
- j) Do you know of any beneficial insects (insects that eat harmful insects)?
 Yes..... No
- k) If yes, name them:
 i) _____ ii) _____ iii) _____

3. Pesticides and Health

- a) Do you find that pesticide application is affecting the health of: Persons regularly applying pesticides?
 Sometimes Always _____ Never _____
- Persons working in fields sprayed with pesticides
 Sometimes Always _____ Never _____
- Persons harvesting the produce
 Sometimes _____ Always _____ Never N/A

4. Options to Pesticides

- a) From your experience, are you aware of other methods for controlling insect's diseases and/or weeds besides pesticides?
 Yes... No
- b) If yes, describe these practices:
 i) _____ ii) _____ iii) _____ iv) _____
also maize

5. Information

- a) What information do you think you need for improving your crop production and marketing?
training on crop production & management (including afforestation)

6. Training

- a) Have you ever received any training on any of the following topics related to crop production?
 b) Integrated Pest Management Yes..... No

- c) No. of times/past yr.
- d) b).Pesticide Usage Yes..... No ✓
- e) No. of times/past yr.
- f) Pesticide Safety Yes..... No ✓
- g) No. of times/past yr.
- h) Insect Identification Yes..... No ✓
- i) No. of times/past yr.
- j) Disease Identification Yes..... No ✓
- k) No. of times/past yr.
- l) Quality aspects of production Yes..... No ✓
- m) No. of times/past yr.....

7) Is there anything else that you want us to know about your crop production?

.....

If the answer to the above is 'yes', please consult the IPM that has been prepared for the project.

Section F: Vulnerable and Marginalized Groups meeting requirements for OP 4.10

Are there:	Yes	NO
People who meet requirements for OP 4.10 living within the boundaries of, or near the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Members of these VMGs in the area who could benefit from the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VMGs livelihoods to be affected by the sub project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the answer to any of the above is 'yes', please consult the VMGF that has been prepared for the project.

Section G: Land Acquisition and Access to Resources

Will the sub-project:	Yes	No
Require that land (public or private) be acquired (temporarily or permanently) for its development?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Use land that is currently occupied or regularly used for productive purposes (e.g. gardening, farming, pasture, fishing locations, forests)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Displace individuals, families or businesses?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Result in temporary or permanent loss of crops, fruit trees and pasture land?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

... affect small communal cultural property such as funeral and burial sites, or sacred groves?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
... result in involuntary restriction of access by people to legally designated parks and protected areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Be on monoculture cropping?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the answer to any of the above is 'yes', please consult the mitigation measures in the ESMF, and if needed prepare a (Resettlement Action Plan) RAP.

Section H: Proposed action

(i) Summarize the above:	(ii) Guidance
<input type="checkbox"/> All the above answers are 'No' <input checked="" type="checkbox"/> There is at least one 'Yes'	<ul style="list-style-type: none"> • If all the above answers are 'No', there is no need for further action; • If there is at least one 'Yes', please describe your recommended course of action (see below).

(iii) Recommended Course of Action

If there is at least one 'Yes', which course of action do you recommend?

- CPCUs and County Director of Environment (CDE) will provide detailed guidance on mitigation measures as outlined in the ESMF; and
- Specific advice is required from CDE and CPCUs regarding sub-project specific EIA(s) and also in the following area(s)
- All sub-project applications/proposals MUST include a completed ESMF checklist. The KCSAP-CPCU and CDE will review the sub-project applications/proposals and the CDEs will sign off;
- The proposals will then be submitted to KCSAP PIU for clearance for implementation by communities in the proposed subprojects.

Expert Advice

- The National Government through the Department of Monuments and Sites of the National Museums of Kenya can assist in identifying and, mapping of monuments and archaeological sites; and
- Sub-project specific EIAs, if recommended, must be carried out by experts registered with NEMA and be followed by monitoring and review. During the process of conducting an EIA the proponent shall seek views of persons who may be affected by the sub-project. The WB policy set out in OP 4.01 requires consultation of sub-project

affected groups and disclosure of EIA's conclusions. In seeking views of the public after the approval of the sub-project, the proponent shall avail the draft EIA report at a public place accessible to project-affected groups and local NGOs/CSOs.

Completed by:

Name:

Position / Community:

Date: _____

Field Appraisal Officer (CDE): 

Signature:

Date: _____



Note:

Project category	Characteristics
A	Full and extensive EIA needed- irreversible environmental impacts; impacts not easy to pick or isolate and mitigation cost expensive; EMP design not easily done; Must have the EIA done and future annual EAs instituted
B	Site specific environmental impacts envisaged; mitigation measures easy to pick, not costly and EMP design readily done; need an EIA and future EAs
C	Have minimal or occasionally NO adverse environmental impacts; exempted from further environmental processes save environmental audits

Annex 3: Sample Filled in Individual Questionnaires

STAKEHOLDERS' PERCEPTIONS ON THE POTENTIAL SOCIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED WATER WTP PROJECT IN BAROTSKO COUNTY

SUB-COUNTY NORTHWARD LOCATION BAROTSKO SUB-LOCATION BAROTSKO

This project is anticipated to have effects on the physical, biological and socio-economic environments of the surrounding area and the community. It is important, therefore, to determine these impacts and public participation is a requirement of Environmental Management and Coordination Act, 1999 (Section 58 on Environmental Impact Assessment) in this process. Therefore, as a key stakeholder (i.e. local leader/surrounding institution or organization/ interested person or group), we request for your comments on the potential socio-economic and environmental impacts of the proposed _____

- Are you a resident of the proposed project area? Yes , No
- How far is your place of residents from the proposed project area? 1 km
- For how long have you resided in this area? Since Birth
- Are you aware of the proposed project? Yes , No
- (a) Do you agree with the proposed project activity? Yes , No
 (b) If NO why? N/A

(c) If YES

- In your view, What are the **Positive** socio-economic and environmental impacts (i.e. to people, land/soil, water, forest, air, wetlands, livestock, wildlife, etc) do you anticipate from the proposed activity?
It will improve economy of the community
- In your view, What are the **Negative** socio-economic and environmental impacts (i.e. to people, land/soil, water, forest, air, wetlands, livestock, wildlife, etc) do you anticipate from the proposed demolition?
It will cause environmental degradation - soil erosion, water pollution, livestock & human diseases
- How can the negative impacts identified above be mitigated?
To do community sensitization on prevention & control of water borne diseases by environmental awareness

Should the project be implemented? Yes , No
 if no, why? N/A

Respondent Name: John Kipkoe ID No/phone No: 07224177 sign: [Signature] Date: 08/20

THANK YOU FOR YOUR COOPERATION

1

STAKEHOLDERS' PERCEPTIONS ON THE POTENTIAL SOCIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT IN..... COUNTY

SUB-COUNTY Bugere NDA WARD Stano 301 LOCATION Bugiri SUB-LOCATION Muhozi

This project is anticipated to have effects on the physical, biological and socio-economic environments of the surrounding area and the community. It is important, therefore, to determine these impacts and public participation is a requirement of Environmental Management and Coordination Act, 1999 (Section 58 on Environmental Impact Assessment) in this process. Therefore, as a key stakeholder (i.e. local leader/ surrounding institution or organization/ interested person or group), we request for your comments on the potential socio-economic and environmental impacts of the proposed

1. Are you a resident of the proposed project area? Yes [], No []
2. How far is your place of residents from the proposed project area? 15 km
3. For how long have you resided in this area? 6 yrs
4. Are you aware of the proposed project? Yes [], No []
5. (a) Do you agree with the proposed project activity? Yes [], No []
(b) If NO why?

(c) If YES

- i) In your view, What are the **Positive** socio-economic and environmental impacts (i.e. to people, land/soil, water, forest, air, wetlands, livestock, wildlife, etc) do you anticipate from the proposed activity?

Yes coz it will help us to improve our economic activities in
to improve our economic activities in

- ii) In your view, What are the **Negative** socio-economic and environmental impacts (i.e. to people, land/soil, water, forest, air, wetlands, livestock, wildlife, etc) do you anticipate from the proposed demolition?

- It will cause soil erosion
- It will cause disease to wild animals
- It will cause environmental

- iii) How can the negative impacts identified above be mitigated?

by avoid nearest forest and near
water due to the cause of diseases

6. Should the project be implemented? Yes [], No []
If no, why?

7. Respondent Name DURKI H. BANDA No/phone No. 0729255263 sign Durki Date 8/2/2021

THANK YOU FOR YOUR COOPERATION

STAKEHOLDERS' PERCEPTIONS ON THE POTENTIAL SOCIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED KIPCHERERE SUB-LOCATION WATER PROJECT IN KABARTOJO COUNTY

SUB-COUNTY KARURU WARD SAKOTO LOCATION KIPCHERERE SUB-LOCATION KIPCHERERE

This project is anticipated to have effects on the physical, biological and socio-economic environments of the surrounding area and the community. It is important, therefore, to determine these impacts and public participation is a requirement of Environmental Management and Coordination Act, 1999 (Section 58 on Environmental Impact Assessment) in this process. Therefore, as a key stakeholder (i.e. local leader/surrounding institution or organization/ interested person or group), we request for your comments on the potential socio-economic and environmental impacts of the proposed KIPCHERERE WATER PROJECT

1. Are you a resident of the proposed project area? Yes , No
2. How far is your place of residents from the proposed project area? 15 KM
3. For how long have you resided in this area? 30 YEARS
4. Are you aware of the proposed project? Yes , No
5. (a) Do you agree with the proposed project activity? Yes , No
- (b) IF NO why?

(c) IF YES

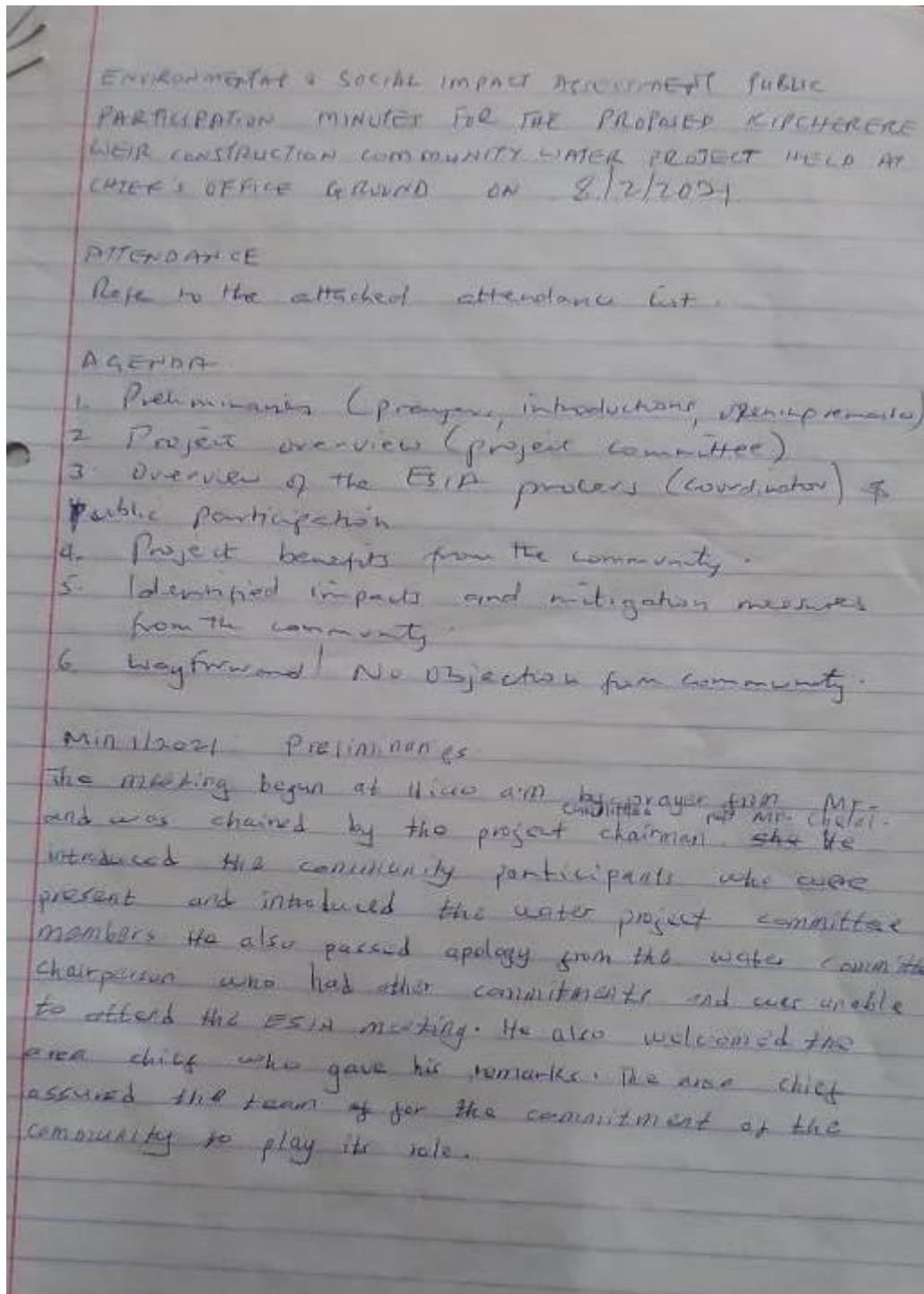
- (i) In your view, What are the **Positive** socio-economic and environmental impacts (i.e. to people, land/soil, water, forest, air, wetlands, livestock, wildlife, etc) do you anticipate from the proposed activity?
 - Improved food security
 - Reduced distance from water collection area thus utilized time
 - Improved and increased livestock production.
 - (ii) In your view, What are the **Negative** socio-economic and environmental impacts (i.e. to people, land/soil, water, forest, air, wetlands, livestock, wildlife, etc) do you anticipate from the proposed demolition?
 - Livestock diseases and also human.
 - Complicated transportation of materials is challenging due to the topography of the land.
 - (iii) How can the negative impacts identified above be mitigated? The community will be sensitized on the negative impacts that may occur such as diseases and demolishing of homes. The water tanks will also be fenced thus reducing accidents that may occur.
6. Should the project be implemented? Yes , No
- If no, why?

7. Respondent Name FELIX CHEMELI ID No/phone No 24161230 sign [Signature] Date 11/1/21

THANK YOU FOR YOUR COOPERATION

ASSISTANT CHIEF
KIPCHERERE SUB-LOCATION
P.O. BOX 66-30401, KABARTOJO
Date: _____ Sign: _____

Annex 4: Minutes for the ESIA Public Participation and Consultations of Proposed Kipcherere Community Water Project & Attendance List



Min 2/2021 overview of the ESIA process and
of public participation.

This was introduced by Mr. Bete, SPC JACSTP. He
informed members that it is mandatory that ex-
plicit a loan through the ESIA process before
implementation. He emphasized for the need
fast-track the implementation process for the com-
munity beneficiaries as possible. Mr. Kiprop-CE
inquired about documentation and he was informed
that land and WRUA permits were ready.
informed them that they is also important for them
work on wayleave agreements.

He also informed ^{the community} that public participation is key to
the community has a say in the development process.
He also explained to them the meaning of ESIA and
its objective. The understanding a.o. for undertaking
is to ensure sustainable development through identify
of possible negative impacts and putting in place
mitigation measures for the identified negative impacts.

Min 3/2021 BENEFITS OF KIPUKHARE WATER PROJECT

The following are the benefits for the Kipukhare com-
munity water project as identified by the community:
Improved access to water for household use
Saving of time that can be used in other productive
activities.

- Access to clean and safe water -
- Mixed irrigation of fruits & vegetables
- Kitchen-gardening by women
- Water can be used in fish farming
- Reduced water-borne disease outbreaks

- ix) Access to water for livestock,
- x) enhance economic development in the area,
- xi) improved business opportunities in the area,
- xii) selling up small stocks by women for construction workers
- xiii) enhanced infrastructure development.
- xiv) increased livestock productivity due to enhanced water access.
- xv) Enhanced household nutrition
- xvi) increase in land value due to water access

MINI CASE: PROJECT HAD NEGATIVE IMPACTS AND MITIGATION MEASURES

The following were the negative impacts as identified by the community:

- i) Disturbance of vegetation
- ii) Soil erosion increases
- iii) Challenges in transportation of construction materials
- iv) Encroachment of land
- v) Human wildlife conflict.
- vi) Water resource use conflict: Between those who reside in the upstream and the users in the downstream
- vii) increased spread communicable diseases: HIV, COVID
- viii) Gender based violence
- ix) Vandalism of the infrastructure.
- x) Environmental pollution: ^{poor} solid waste disposal
- xi) Water use conflict: due to unfair distribution
- xii) increased livestock diseases as livestock gather at watering point.
- xiii) accidents to construction workers during construction
- xiv) Gender discrimination in employment during construction
- xv) waterborne diseases: typhoid.


The following were the mitigation measures suggested for the identified negative impacts.


- i. vegetation disturbance:
 - only cut tree where necessary.
 - Planting of trees after construction.
- ii. Soil erosion control:
 - Sensitization of the community on soil erosion control.
 - tree planting by the community.
- iii. challenges in transportation of materials to the site:
 - Mobilization of appropriate groups in transportation.
 - using the locals or they are used to the terrain.
- iv. water use conflicts:
 - By laws in water use.
- v. communicable diseases: sensitization of the community on preventive measures putting in place hand washing points to prevent virus spread.
- vi. Vandalism and accidents due to children falling in → Fencing
- vii. Environmental pollution = Proper disposal of human waste: construction of pit latrine at the construction site

Min 1/2021: way forward.

The community agreed in one accord that the plan should be implemented and the proposed mitigation measures be put in place. The meeting ended at 1:33 Pm. The area chief thanked the community for attending the public participation meeting and urged them to be cooperative and supportive whenever called up.

Completed by:

1. Project committee chairperson
Walter Thomas CHELNO 0724905588 signature 

2. Area Chief
James Felix C. CHESTNUT ID 28161230 Signature 

ASSISTANT CHIEF
KIPCHERERE SUB-...
P.O. BOX 55-30401, KAI
Date: 8/2/2020 Sig

Attendance List ESIA Public Participation

**KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
BARINGO COUNTY**

ATTENDANCE LIST

Activity: *ESIA Public Participation for Irrigation water project*
 Venue: *Chief's Office meeting room* Date: *6/12/2021*

No	Name	AGE(years)		GENDER		Position	station	Phone number	Sign
		<35	>35	Male	Female				
1	<i>Felix O. Ochieng</i>		✓	✓		<i>Asst. Chief</i>	<i>Kildare</i>	<i>07167041</i>	<i>[Signature]</i>
2	<i>Thomas K. Chelani</i>			✓		<i>Asst. Chief</i>	<i>"</i>	<i>072490353</i>	<i>[Signature]</i>
3	<i>Jacob K. Tuiet</i>		✓	✓		<i>Committee</i>	<i>Kaptele</i>	<i>072487201</i>	<i>[Signature]</i>
4	<i>Josephine O. Ochieng</i>		✓	✓		<i>"</i>	<i>"</i>	<i>072370481</i>	<i>[Signature]</i>
5	<i>James O. Gogoi</i>		✓	✓		<i>Elder</i>	<i>Barton</i>	<i>072710793</i>	<i>[Signature]</i>
6	<i>Ezeikel V. Ochieng</i>		✓	✓		<i>HOUSE</i>	<i>Barton</i>	<i>072111176</i>	<i>[Signature]</i>
7	<i>Peter Chepyegon</i>		✓	✓		<i>Elder</i>	<i>Barton</i>	<i>0733278339</i>	<i>[Signature]</i>
8	<i>Josephine Ochieng</i>		✓	✓		<i>Elder</i>	<i>Baringo</i>	<i>072710793</i>	<i>[Signature]</i>
9	<i>Josephine Ochieng</i>		✓	✓		<i>Farmer</i>	<i>Kipkoi</i>	<i>072487201</i>	<i>[Signature]</i>

No	Name	AGE(years)		GENDER		Position	station	Phone number	Sign
		<35	>35	Male	Female				
10	<i>Alex Ochieng</i>			✓					
11	<i>Paul Ochieng</i>			✓		<i>Asst.</i>	<i>Kipkoi</i>	<i>072710793</i>	<i>[Signature]</i>
12	<i>Miriam Kipkoi</i>			✓		<i>Asst.</i>	<i>Kipkoi</i>	<i>072710793</i>	<i>[Signature]</i>
13	<i>Lotus Ochieng</i>		✓	✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
14	<i>Nathan Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
15	<i>John Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
16	<i>Flora Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
17	<i>Caroline Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
18	<i>David Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
19	<i>Kevin Michael</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
20	<i>David Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
21	<i>David Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
22	<i>David Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
23	<i>Reel Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
24	<i>Josephine Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
25	<i>Paul Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
26	<i>Paul Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
27	<i>Talor Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
28	<i>Clara Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>
29	<i>Charles Ochieng</i>			✓		<i>Farmer</i>	<i>Kaptele</i>	<i>072710793</i>	<i>[Signature]</i>

**KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
BARINGO COUNTY**



Activity ESDP Public Participation for Implementation with Budget
 Venue Chief's office - Mochipkand Date 8/2/2021

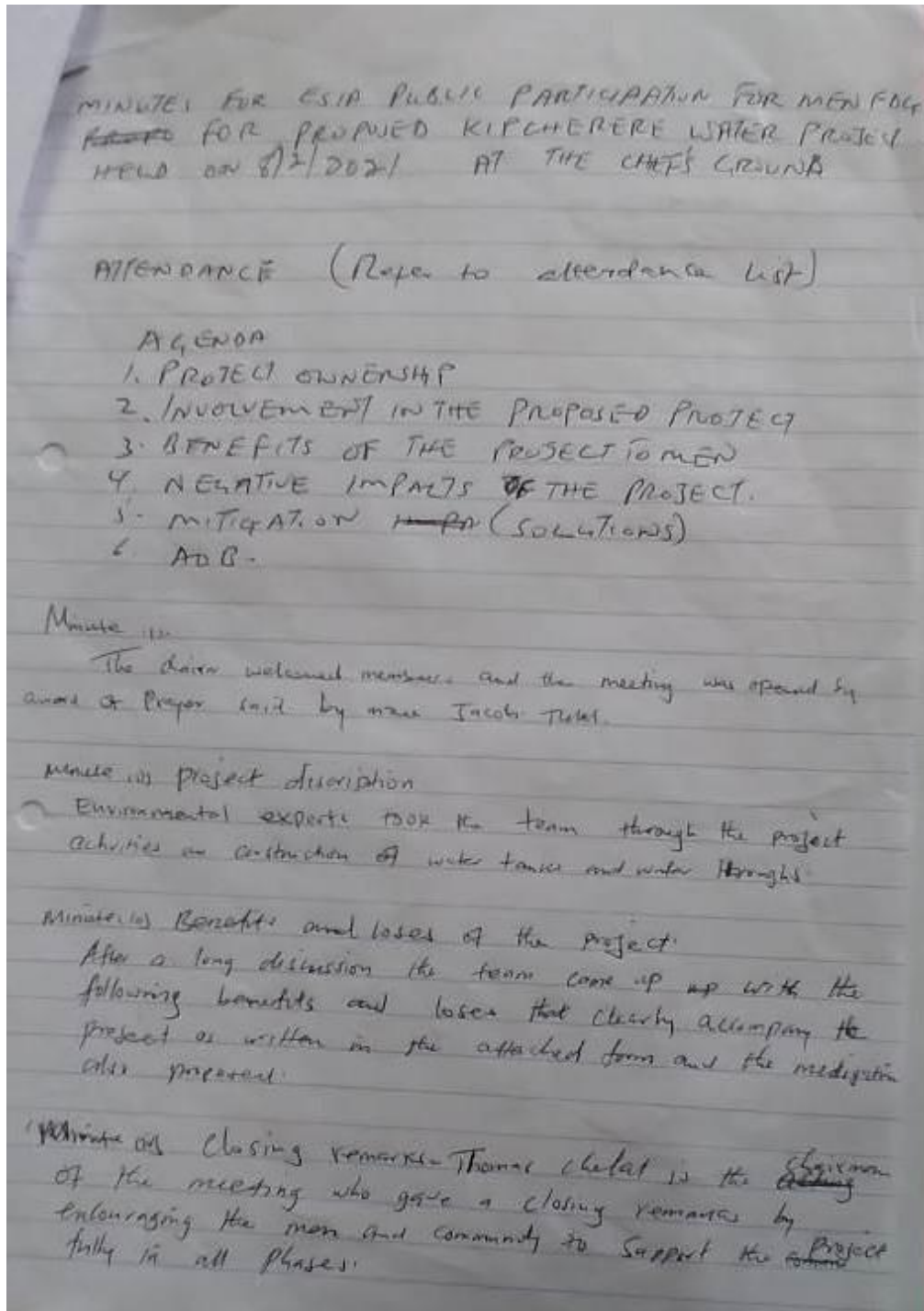
ATTENDANCE LIST

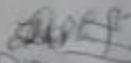
No	Name	AGE(years)		GENDER		Position	station	Phone number	Sign
		<35	>35	Male	Female				
1	Max Chelwa	✓	✓	✓					
2	Samuel Chelwa	✓	✓	✓		Member	Budo	0722000007	[Signature]
3	Anthony Kipkilel	✓	✓	✓		Farmer	Kipkilel	0712699200	[Signature]
4	Kipkem Kipkilel	✓	✓	✓		Farmer	Kipkem		[Signature]
5	James Mwachira	✓	✓	✓		Farmer	Budo		[Signature]
6	James Mwachira	✓	✓	✓		Farmer	Budo	0715500007	[Signature]
7	James Mwachira	✓	✓	✓		Farmer	Kipkem	07490338	[Signature]
8	James Mwachira	✓	✓	✓		Farmer	Budo	070797000	[Signature]
9	James Mwachira	✓	✓	✓		Farmer	Kipkem	07200471	[Signature]
10	James Mwachira	✓	✓	✓		Farmer	Kipkem	07200471	[Signature]

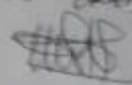
No	Name	AGE(years)		GENDER		Position	station	Phone number	Sign
		<35	>35	Male	Female				
10	[Signature]								
11	Alice Mwachira				✓	Farmer	Kipkem	0715613320	[Signature]
12	Michael Mwachira	✓		✓		Farmer	Kipkem	074390707	[Signature]
13	William Kipkilel		✓		✓	Farmer	Kipkem	0720115000	[Signature]
14	Max Chelwa	✓		✓		Farmer	Kipkem	0715600000	[Signature]
15	James Mwachira			✓	✓	Farmer	Kipkem	0728000000	[Signature]
16	James Mwachira	✓		✓		Farmer	Kipkem		[Signature]
17	James Mwachira	✓		✓		Farmer	Kipkem	0715900000	[Signature]
18	Charles K. Tulel			✓	✓	Farmer	Kipkem	0720000000	[Signature]
19	James Mwachira			✓	✓	Farmer	Kipkem	0720000000	[Signature]
20	James Mwachira	✓			✓	Farmer	Kipkem	0720000000	[Signature]
21	James Mwachira			✓	✓	Farmer	Kipkem	0720000000	[Signature]
22	James Mwachira			✓	✓	Farmer	Kipkem	0720000000	[Signature]
23	James Mwachira			✓	✓	Farmer	Kipkem	N/A	[Signature]
24	James Mwachira				✓	Farmer	Kipkem	0720000000	[Signature]
25	James Mwachira	✓			✓	Farmer	Kipkem	0720000000	[Signature]
26	James Mwachira	✓			✓	Farmer	Kipkem	0720000000	[Signature]
27	James Mwachira				✓	Farmer	Kipkem	0720000000	[Signature]
28	James Mwachira	✓			✓	Farmer	Kipkem	0720000000	[Signature]
29	James Mwachira	✓			✓	Farmer	Kipkem	0720000000	[Signature]


10	BARBARAS ARCIWI	20	✓	Member	Chabonisa	0742281179	1110
11	MARCO KIPPAI	70	✓	member	Chabonisa		1110
12	JULIUS KIPPAI	28	-	member	Chabonisa	07232249	1110
13	SAMUEL UHAPASON	64	✓	member	Chabonisa	311 62392	1110
14	JACOBS KIPPAI	41	✓	member	Chabonisa	21959259	1110
15	CHARLES KIPPAI	64	✓	member	Chabonisa	4152287	1110
16	NAOMI CHERONO	40	✓	Treasurer	Chabonisa	21787272	1110
17	MARY BAKUTAH	62	✓	member	Chabonisa	0722191134	1110
18	JANE CHELANG	40	✓	member	Chabonisa	071015021	1110
19	SOLANGE TALAM	70	✓	member	Chabonisa		1110
20	ANN KOMET	50	✓	member	Chabonisa	0710965222	1110
21	SALINA KENDIE	57	✓	member	"		1110
22	TANKO TALAM	70	✓	member	"		1110
23	ESTER KEITANG	65	✓	Member	"		1110
24	TALCA KIPPAI	72	✓	member	"		1110
25	KOBILA BASWONG	53	✓	member	"		1110
26	KOBILA CHOSAM	74	✓	member	"		1110
27	SARAH CHOSAM	52	✓	"	Kiplima		1110
28	MARGARET KAMBI	50	✓	vice chair	Chabonisa	070120007	1110
29	PAUL KIPPAI	215	✓		Chabonisa	071414524	1110

Annex 5: Men FGD Minutes and Attendance List



Minutes written by - Jeremiah M. Chaptone 

Confirmed by - Thomas Chelal 

ASSISTANT CHIEF
KIPCHERERE SUB-LOCATION
P.O. BOX 88-2047, KASAROTUKI
Date: _____ Sign: 

Attendance List for Men FGD Public Participation

KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
HARINGO COUNTY

ATTENDANCE LIST

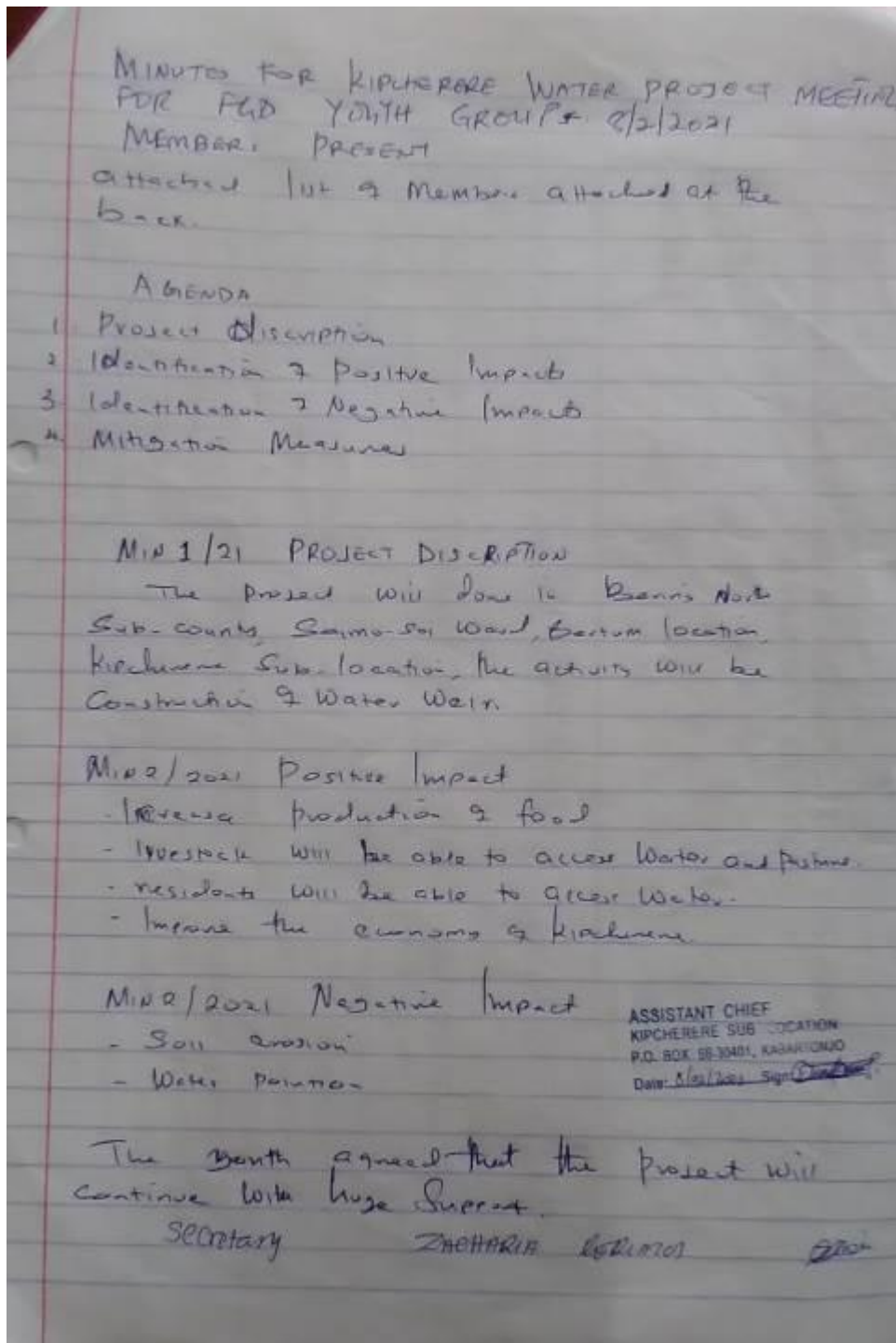
ACTIVITY: FGD (Men) Participative/My dream water Project - FLD-MFF

DATE: _____

No	Name	Attendance		Gender	Position	Signature	Phone number	Signature
		16/11/2017	17/11/2017					
1	Thomas K. Chelal	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
2	Jacob K. Tuleh	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
3	Jeremiah K. Chelal	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
4	Waco K. K. K. K.	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
5	Samuel K. K. K. K.	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
6	John K. K. K. K.	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
7	Benjamin K. K. K. K.	✓	✓	Male	Member	[Signature]	0722111111	[Signature]
8	Richard K. K. K. K.	✓	✓	Male	Member	[Signature]	0722111111	[Signature]

No	Name	Attendance	Gender	Position	Location	Phone No	Signature
9	Kipkemai Kipkebut	✓	✓	Member	BARTUN	-	[Signature]
10	Joshua Kipkenge	✓	✓	Member	UJWANTIN	0722111111	[Signature]
11	Moses C. Chelenge	✓	✓	Member	Kaisnelipton	0722111111	[Signature]
12	Jeremiah Kipkagat	✓	✓	Member	Biringway	0727453353	[Signature]
13	Willy CHEPKALONY	✓	✓	Member	Kipeneken	0722111111	[Signature]
14	Johnston Ochi	✓	✓	Member	Kipeneken	0722111111	[Signature]
15	Julius Chosire	✓	✓	Member	Kipeneken	0722111111	[Signature]
16	James	✓	✓	Member	Kipeneken	0722111111	[Signature]

Annex 6: Youth FGD Minutes and Attendance List



Youth FGD Attendance List

**KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
BARINGO COUNTY**



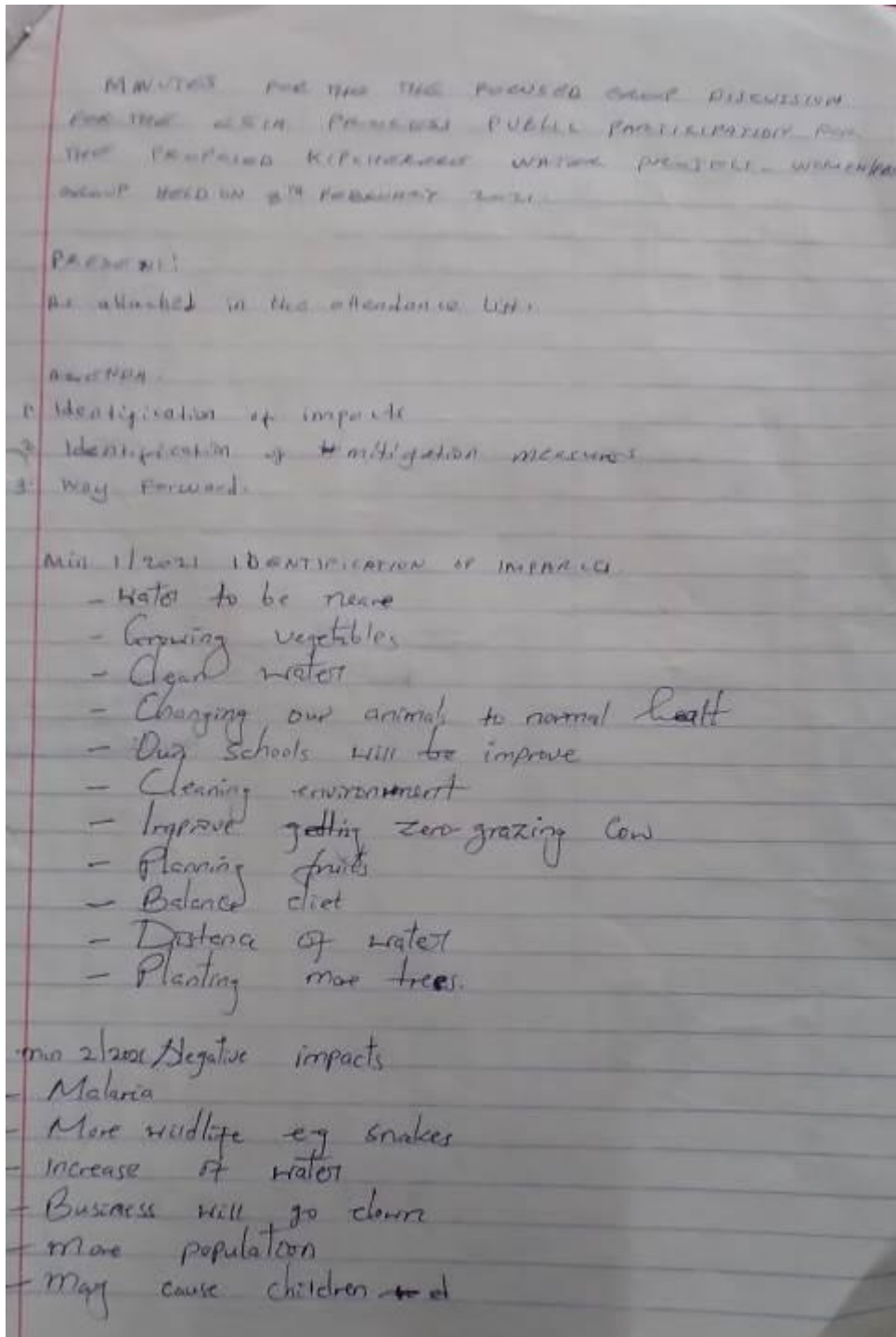

Activity: E3.1A Public Participation in Agriculture Water Project - FGD - Youth

ATTENDANCE LIST

Venue: _____ Date: _____

No.	Name	AGE(years)		GENDER		Position	Address	Phone number	Sign
		<35	>35	Male	Female				
1.	GLADIS KADDIE	27			✓	Direct officer	Makindu	0722111111	[Signature]
2.	FELIX CHEBIRI	22		✓		-	Makindu	0722111111	[Signature]
3.	AUGUSTUS K. CHAMPANI	30		✓		-	Makindu	0722111111	[Signature]
4.	RONALD KIPKICHAKI	22		✓			Makindu	0722111111	[Signature]
5.	ADRIAN FOSI	31		✓			Makindu	0722111111	[Signature]
6.	BENSON KIMUNYI	32		✓			Makindu	0722111111	[Signature]
7.	SHARON I. KIGEN	27		✓	✓		Makindu	0722111111	[Signature]
8.	REMERIME KIPKURUK	32			✓		Makindu	0722111111	[Signature]
9.	ZACHARIA KEBENO	35			✓		Makindu	0722111111	[Signature]

Annex 7: Women FGD: Minutes and attendance



- It might cost us more to do certain
- ... advantages of ...
- How do we ...
- To prevent our children is ...

Mar 4 2021

Way forward they have ... that
the project

Secretary
Dorothy Kibagong

ASSISTANT CHIEF
KIPCHELERE SUB ...
P.O. BOX 44-30417, KISumu
Dist. ...

Women FGD Attendance List

ATTENDANCE LIST

Activity ESIP Public Sanitation and Hygiene Promotion in the FGD - Women

Venue B.P. KERSA Date 2/2/2022

	Name	AGE(years)		GENDER		Position	station	Phone number	Sign
		<35	>35	Male	Female				
1.	BELPHIE NANJI	✓			✓	Member	KERSA	07142980	[Signature]
2.	EVALINE KAMEN				✓	Member	KERSA	0716026407	[Signature]
3.	RAEL CHEPSEKON					Member	BATUM	0708292709	[Signature]
4.	CLARAH CHELATYGA				✓	Member	KERSA	0741325428	[Signature]
5.	SOHAME KIMICHINA	✓			✓	Member	KERSA	0710604903	[Signature]
6.	JANE CHEPCHIEUS	✓			✓	Member	BATUM	0708077602	[Signature]
7.	TRINIA MOROSI	✓			✓	Member	KERSA	07142980	[Signature]
8.	SOHAME ROTICH	✓			✓	Member	KERSA	071463310	[Signature]
9.	RAEL dielaciat					Member	Tila	07142980	[Signature]

	Name	AGE(years)		GENDER		Position	station	Phone number	Sign
		<35	>35	Male	Female				
10.	AURA KARTICH				✓			0715613326	X
11.	RODAN ROTICH				✓	Member			X
12.	LOICE IELU					Member			
13.	DOROTHY HENDRICKS				✓	Member		0724655243	[Signature]
14.	FELIX O-CHARINE	✓		✓		Asst. Chair	Kipkoma	0715574143	[Signature]
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									
25.									
26.									
27.									

Annex 8: KIPCHERERE WATER PROJECT BILL OF QUANTITIES

	SAIMO-SOI WARD, BARINGO NORTH SUB-COUNTY, BARINGO COUNTY			
PROJECT	KIPCHERERE WATER PROJECT BoQ			
TITLE	PRELIMINERIES & GENERAL			
ITEM	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
1.0	BILL No. 1 – PRELIMINERIES & GENERAL			
	<i>The rates are inclusive of handling charges, levies, taxes mobilization and demobilization</i>			
1.1.	Signboards			
	Allow for a prime cost sum of Ksh. 50,000 for provision, erection and maintenance of signboard as directed by Engineer	No.	2	50,000
1.2	Supervision of works by Engineer			
	Provide prime cost for Ksh.600,000 for, supervision to be expended as directed by Engineer to include checking levels, airtime, progress reports, photographs, publicity and community mobilization and sensitization	Item	1	600,000
1.3	Environmental and Social Management Plan (ESMP)			
	<i>This shall consist of the following activities to be undertaken before, during & after the construction of the proposed water facility: 1. Undertake EIA, production of hydrogeological report & abstraction permits, 2. Minimize ground water pollution, spillage of hazardous wastes, dust emissions, solid & liquid waste generation, vegetation & soil erosion, accidents & health safety, HIV/AIDS & STDs and during operations and maintenance phase</i>			
1.3.1	Allow for a sum of Ksh. 170,000 to undertake Environmental Impact Assessment (EIA), hydrogeological report and abstraction permits. To include supervision of the line department officers	Item	1	200,000
	TOTAL CARRIED TO SUMMARY– BILL No.1			
TITLE	KIPCHERERE WATER PROJECT BoQs			
ITEM No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
1.3.2	Allow for a sum of Ksh. 535,000 for supervision by relevant departments	Item	1	535,000

	officers to ensure that recommendations in the Environmental and Social Impact Management Plan are adhered to. This same shall include: NEMA, WRA, Lands, Environment etc.			
1.4	Community/Staff Sensitization/Training			
	Allow a sum of Ksh. 300,000 for community sensitization and training on water management as shall be directed by the project supervisor/ manager	Item	1	300,000
1.5	Add percentage on items 1.2, 1.3.2 and 1.4 above for overheads and profits	%	24	
	Total Carried to Summary			
	Summary – Preliminaries			
	TOTAL CARRIED TO SUMMARY– BILL No.1			
PROJECT	KIPCHERERE WATER PROJECT BOQ			
TITLE	INTAKE WORKS			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
2 0	BILL No. 2 – INTAKE WORKS			
2.1	Intake Weir and Spring Protection			
1	Supply all the necessary tools and equipment and divert the stream water to create a workable dry area for construction of the weir	item	1	
2	Allow for removal of boulders and large rocks or hard rock from site and cart away as directed	item	1	
	Excavation works			
3	Excavate over site soil material to reduce levels not exceeding 225mm deep and cart away	m ²	24	
4	Excavation for raft foundation starting from reduced levels.	m ³	18	
	Formwork			
5	Supply, transport, cut and fix formwork to 50mm thick sides of blinding concrete	M	32	
6	Supply, transport, cut and fix formwork to sides of 200mm thick raft foundation	M	32	
7	Supply, transport, cut and fix formwork to sides of weir vertical sides	M ²	15	
8	Supply, transport, cut and fix formwork to sides of weir slanting sides	M ²	18	

9	Supply, transport, cut and fix formwork to sides of weir sides	M ²	2	
	Reinforcements: Supply, transport, cut, bend and fix the following. Include for tying			
10	D10mm Ø in raft foundation and walling	No	30	
11	D12mm Ø in raft foundation and walling	No	60	
	Supply materials, transport, place and compact concrete class 15 in:			
12	Blinding concrete 50mm thick	m ³	0.7	
	Supply materials, transport, place and compact concrete class 20 in:			
13	200mm thick Raft foundation	m ³	3	
14	Weir	m ³	14	
	Total Carried to Summary			
PROJECT	KIPCHERERE WATER PROJECT BOQ			
TITLE	INTAKE WORKS			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
20	BILL No. 2 – INTAKE WORKS			
	Outlet sump			
	Excavation works			
15	Excavate over site soil material to reduce levels not exceeding 225mm deep and cart away	m ²	3	
16	Excavation for raft foundation starting from reduced levels.	m ³	3	
	Formwork			
17	Supply, transport, cut and fix formwork to 50mm thick sides of blinding concrete	M	5	
18	Supply, transport, cut and fix formwork to sides of 200mm thick raft foundation	M	5	
19	Supply, transport, cut and fix formwork to sides of sump sides	M ²	12.4	
	Reinforcements: Supply, transport, cut, bend and fix the following. Include for tying			
20	Y12 in raft foundation	No	6	
21	Y12 in wall	No	36	
	Supply materials, transport, place and compact concrete class 15 in:			

22	Blinding concrete 50mm thick	m ³	0.2	
	Supply materials, transport, place and compact concrete class 20 in:			
23	200mm thick Raft foundation	m ³	1	
24	Weir	m ³	1.2	
25	Fabricate and install paneled steel cover a 1.6mx1.4m lockable 40mm square hollow framed steel plate (16 g) cover. Include for reinforcing with	Item	1	
26	Fabricate and install a steel ladder with 25mm dia GI pipe as stands and 12mm dia GI pipes welded as connecting pieces. Provide for wall pass to walling	Item	1	
	Total Carried to Summary			
PROJECT	KIPCHERERE WATER PROJECT BOQ			
TITLE	INTAKE WORKS			
	ITEM DESCRIPTION	UNIT	QTY	
2 0	BILL No. 2 – INTAKE WORKS			
27	Fabricate a 1m wide and 2m deep fine screen consisting of aluminium sheet with 10mm diameter holes at 100mm c/c both ways. Include for fixing in the wall.	Item	1	
28	Fabricate a 1m wide and 2m deep fine screen consisting of aluminium sheet with 15mm diameter holes at 100mm c/c both ways. Include for fixing in the wall.	item	1	
	Supply, transport and fix and test the following in outlet pipe			
29	200mm Ø flanged GI pipe	No	2	
30	200mm Ø GI flanged sluice valve	No	1	
31	200mm dia GI pipe, 1.5m long, threaded both sides, capped one end and perforated 15mm dia holes at 100mm c/c,4 no. Columns and a 1m length	No	1	
	Supply, transport and fix and test the following in scour pipe			
32	200mm Ø flanged GI pipe	No	4	
33	200mm dia Ø GI flanged sluice valve	No	2	
	Total Carried to Summary			
PROJECT	KIPCHERERE WATER PROJECT BOQ			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)

2 0	BILL No. 2 – INTAKE WORKS			
	uPVC perforated Intake Pipes			
34	Provide perforate and place 150 mm uPVC class "D" pipe to convey water from spring eyes to collection chamber. Price to include for drilling 5mm holes as shall be directed. Price to include for perforating the pipe	No.	2	
35	Provide and lay natural stones surround of at least 1m thick around the perforated 150 mm uPVC class "D" pipe as directed	M ³	24	
38	Allow for sealing of 150 mm uPVC Class "D" perforated pipe at one end using UPVC end cap or plug as directed	No.	2	
	Apron			
	Supply materials, transport, place and compact concrete class 20 in downstream apron:	M ²	3.6	
	Sub-Total for weir construction			
2.2	Fencing Spring Area (435 M Perimeter)			
1	Provide, dig holes, fabricate, install and fasten 50x50x4mm, 2000mm long angle iron bar spaced at 3,000mm c/c	No.	145	
2	Plain wire	M	1740	
3	Chain-link 6 feet	M	435	
4	Barbed wire	Roll	4	
5	Lean concrete surround for fencing bars	M ³	2	
6	2 m wide gate constructed of hollow sections, weld mesh and mild steel post, the gate shall be fitted with locking mechanism	No.	1	
	Total Carried to Summary Page			
PROJECT	KIPCHERERE WATER PROJECT BOQ			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
2 0	BILL No. 2 – INTAKE WORKS			
2.3	Transport of materials using human labour			
1	Allow a provisional sum of 200000 for transporting of materials using human labour to intake site approximately 500 m from access road	item	1	200000
	Sumarry - Intake Weir			
	Total Summary - Intake Weir			

PROJECT	KIPCHERERE BoQ			
TITLE	BILL No.3 - PIPEWORK			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
3.0	Pipe Work			
	Pumping & Distribution Pipes			
	Prices to include: all necessary pipe fittings, supply, delivery, excavation trenching, laying pipe cutting & threading where necessary			
3.1	Pipes:			
	Provide lay and test the following main gravity and distribution pipes: Note that pipes are to be supplied complete with sockets and other necessary pipe fittings			
1	Socketed GS DN 80 mm class "B" pipe -Rising main	M	2,400	
	Distribution Pipes			
2	Socketed GS DN 50 (2") mm class "B" pipe	M	4,200	
4	Socketed GS DN 40 (1½) mm class "B" pipe	M	1,200	
4	Socketed GS DN 25 mm class "B" pipe line stand pipes and cattle troughs connection	M	600	
5	50mm(1½') ø HDPE 10-Bar (100m Roll) pipe	M	2,400	
6	32 mm (1") ø HDPE 10-Bar (100m Roll) pipe	M	600	
			11,400	
3.2	Pipe Fittings:			
	Provide, fix/install and test the following pipe fittings, as directed by supervisor.			
1	80mm dia. Equal Tee	No.	4	
2	50mm dia. Equal Tee	No.	14	
3	40mm dia. Equal Tee	No.	12	
4	25mm ø Equal Tee	No.	8	
5	80mm ø Gate Valve Pegler	No.	2	
6	50mm ø Gate Valve Pegler	No.	5	
7	40mm ø Gate Valve Pegler	No.	5	
8	25mm ø Gate Valve Pegler	No.	8	

9	80mm ø Hex. Nipple	No.	4	
10	50mm ø Hex. Nipple	No.	10	
11	40mm ø Hex. Nipple	No.	10	
10	25mm ø Hex Nipple	No.	16	
	Total Carried to Summary			
PROJECT	KIPCHERERE WP BoQ			
TITLE	KIPCHERERE WATER PROJECT			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
11	80mm ø GS Bend 90°	No.	4	
11	80mm ø GS Bend 45°	No.	4	
12	80mm ø GS Fabricated long Bend 45°	No.	25	
13	80mm ø GS Fabricated long Bend 22½°	No.	25	
14	50mm ø GS Bend 90°	No.	4	
15	40mm ø GS Bend 90°	No.	4	
16	25mm ø G. S Bend 90°	No.	6	
17	80mm ø G. S Elbow	No.	4	
18	50mm ø G. S Elbow	No.	4	
19	40mm ø G. S Elbow	No.	4	
20	25mm ø G. S Elbow	No.	6	
21	80mm ø Socket union	No.	3	
22	50mm ø Socket union	No.	3	
23	40mm ø Socket union	No.	3	
24	25mm ø Socket Union	No.	12	
25	50 x 40mm ø Red. Bush	No.	4	
26	50 x 25 mm ø Red. Bush	No.	4	
27	40 x 25 mm ø Red. Bush	No.	6	
28	25 x 20 mm ø Red. Bush	No.	6	
29	80mm ø G.S Plug	No.	2	
30	50mm ø G.S Plug	No.	2	
31	40mm ø G.S Plug	No.	8	
32	25mm ø G. S Plug	No.	10	

33	25mm ø Single Air Valve 1" ø	No.	4	
34	50mm ø PE Connectors	No.	49	
35	32mm ø PE Connectors	No.	8	
36	50mm dia. PE Tees	No.	8	
37	32mm dia. PE Tees	No.	3	
38	50mm dia. PE Adaptors	No.	16	
39	32mm dia. PE Adaptors	No.	9	
40	80mm ø. Non-return Vale	No.	1	
	Note:			
	<i>The price for pipes to include a socket for each pipe</i>			
	<i>Any pipe fittings remaining after construction to remain with the project for operation and maintenance use</i>			
	Total Carried to Summary			
TITLE	BILL No.3 - PIPEWORK			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
3.3.0	Excavation and Backfilling			
	Rates for excavation and backfilling in trench shall include for clear of vegetation, trimming trench bottom and for providing selected bedding and surround materials			
3.3.1	Excavation and backfilling 13.41km pipeline trench in normal material for GS and HDPE pipes DN 63mm,50mm, 40mm, 32mm and to a depth not exceeding 1 m. The trench shall be of size 600mm deep and 450mm wide.	M ³	3,078	
3.4.0	Pipe Anchorage and Valve Chambers			
3.4.1	Provide materials and construct Masonry lockable valve chamber of size 1.5 mx1.2 m x1.2 m for Gate and Air valves	No.	10	
3.4.2	Provide materials and construct R.C. anchor blocks/Thrust blocks along the pipeline as directed average 0.1M ³ per anchorage	No.	80	
3.4.3	Provide 50mm & 40mm GS class "B" pipes, cut or fabricate and use them as pipe anchorage along the pipe line as directed. Include for footing excavations and plain concrete under pipe footing for the anchorage pipes (260m)	No.	20	

1	DN 50 (2") mm class "B" pipe	No.	15	
2	DN 40 (1½") mm class "B" pipe	No.	15	
	Total Carried to Summary			
PROJECT	KIPCHERERE WP BoQ			
TITLE	BILL No.3 - PIPEWORK			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
3.5.0	Lay Existing Pipes on Site			
	The activities to include: Trenching pipeline and laying 100 No. 40mm GS pipes and 30 No. 50mm HDPE pipes existing on site, totaling 3.6km of pipeline. The price to include for trenching, fixing the pipes, trenching for the pipes and providing any necessary pipe anchorage	M ³	972	
	Total Carried to Summary			
	Summary – Pipework			
	Total – Pipework			
PROJECT	KIPCHERERE WP BoQ			
TITLE	BILL No.3 - PIPEWORK			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
3.3.0	Excavation and Backfilling			
	Rates for excavation and backfilling in trench shall include for clear of vegetation, trimming trench bottom and for providing selected bedding and surround materials			
3.3.1	Excavation and backfilling 13.41km pipeline trench in normal material for GS and HDPE pipes DN 63mm,50mm, 40mm, 32mm and to a depth not exceeding 1 m. The trench shall be of size 600mm deep and 450mm wide.	M ³	3,621	
3.4.0	Pipe Anchorage and Valve Chambers			
3.4.1	Provide materials and construct Masonry lockable valve chamber of size 1.5 mx1.2 m x1.2 m for Gate and Air valves	No.	10	
3.4.2	Provide materials and construct R.C. anchor blocks/Thrust blocks along the pipeline as directed average 0.1M ³ per anchorage	No.	80	
3.5.0	Pipes for anchorage			
	Provide 50mm & 40mm GS class "B" pipes, cut or fabricate and use them	No.	20	

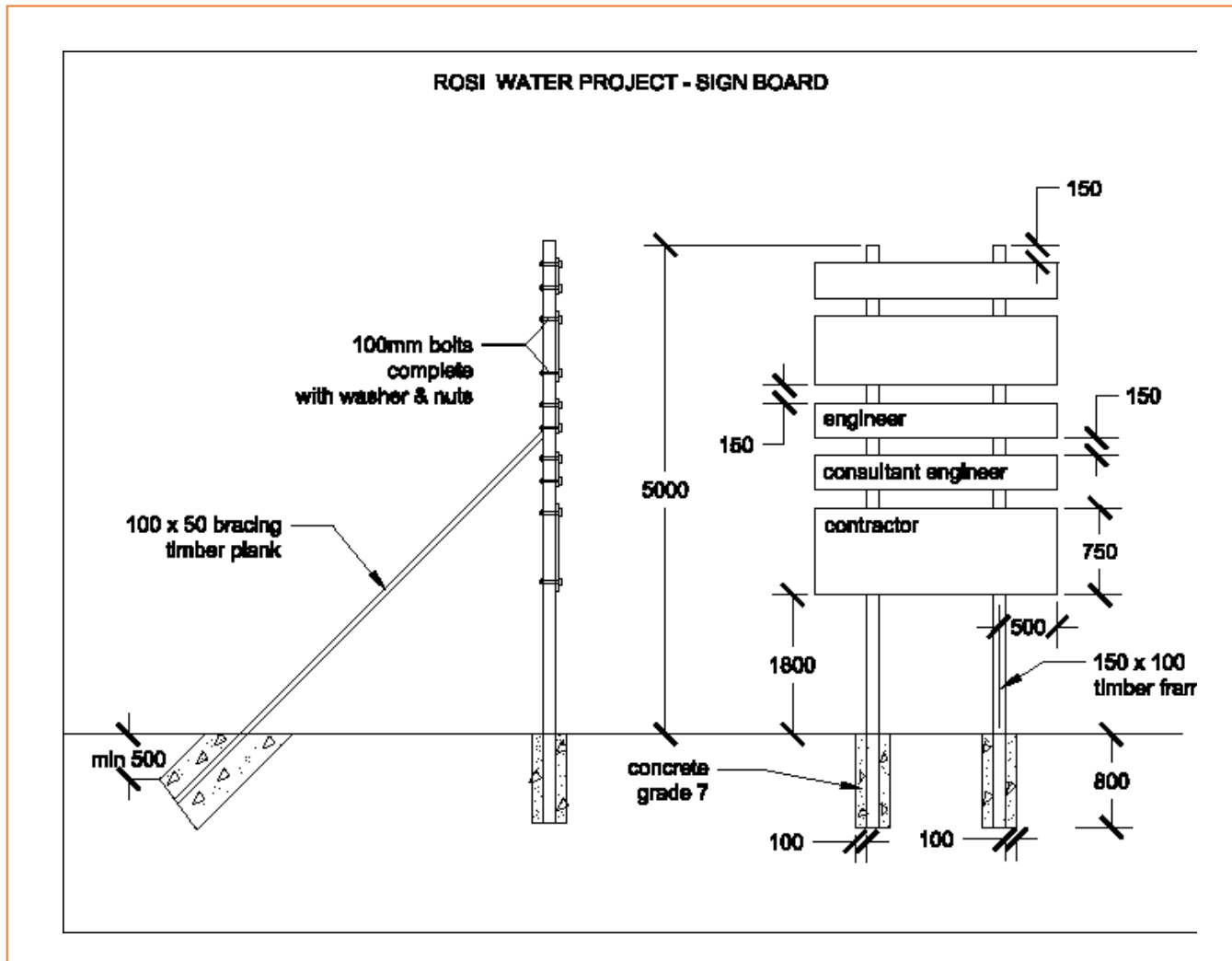
	as pipe anchorage along the pipe line as directed. Include for footing excavations and plain concrete under pipe footing for the anchorage pipes (260m)			
1	DN 50 (2") mm class "B" pipe	No.	15	
2	DN 40 (1½") mm class "B" pipe	No.	15	
	Total summary cost			
	Total – Pipework			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
4.0	BILL No. 4 - 100 m³ Storage Tank			
1	Excavate over site average 150 mm deep remove vegetable soil and deposit away from site	M ²	66	
2	Excavate foundation base not exceeding 1.5 m in normal soil	M ³	45	
3	Extra over excavation in hard material not exceeding 1.5m deep.	M ³	8.3	
4	Allow for keeping the whole of excavation free from all water	Item	1	
5	Allow for maintaining and upholding the sides of excavations and keeping excavations free from all fallen materials, rubbish, etc.	Item	1	
6	Provide approved hardcore fillings consolidated and rammed in 150 mm thick layers to make up levels under slab base to satisfaction of the Engineer	M ²	66	
7	Provide concrete (1:3:6) 100 mm thick blinding	M ²	66	
8	Provide, cut and fix 10 mm and 12mm reinforcement bars in floor @ 150 mm c/c both ways as indicated the design drawings.	Kg	375	
9	Provide V.R.C (1:2:4) 100 mm thick floor slab	M ²	64	
	NB: The slab shall be constructed according to type drawings provided.			
	WALLS			
10	Provide materials and construct 225mm thick reinforced masonry wall bedded in cement: sand motor (1:3) as per design drawing	M ²	75	
11	Provide, cut and fix 10 mm and 12mm reinforcement bars in floor @ 150 mm c/c both ways as indicated the design drawings.	Kg	440	
	TOTAL CARRIEDFORWARD TO SUMARY			
PROJECT	KIPCHERERE BoQ			

TITLE	100 M³ STORAGE FACILITIES			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
4.0	BILL No. 4 - 100 m³ Storage Tank			
12	Provide, cut and fix 10 mm and 8mm reinforcement bars in walling @ 150 mm c/c both ways as indicated the design drawings.	Kg	460	
	PLASTERING			
13	20mm thick cement: sand (1:3) mixed with water proof cement plaster on walls. Finish smooth. The internal plaster should be beveled at the bottom to receive bondex	M ²	75	
14	50mm thick cement: sand (1:3) mixed with water proof cement in floor screed. The edges of the floor screed should be beveled to ditto	M ²	61	
15	Finish the floor screed with a gentle slope	Item	1	
16	Provide pillar 300 x 300 mm in the middle of tank.	Item	1	
17	Provide Cross Beams 300mm x 300 mm on the roof of tank.	Item	1	
18	Cement grout mixed with water proof cement on floor screed and internal wall.	S.M	136	
19	Provide sawn formwork to sides and soffits of roof slab.	M ²	75	
	ROOF			
20	Provide and fix manhole cover and frame size 600 x 450 mm.	Item	1	
21	Fabricate and fix internal and external ladder using 25mm GS Class "B" Pipes as directed	Item	1	
22	Provide, cut and fix 10mm and 12 mm reinforcement bars in roof slab @ 150 mm c/c both ways.	Kg	440	
23	Provide V.R.C (1:2:4) 150 mm thick roof slab	M ²	64	
24	NB: The slab shall be constructed according to type drawings provided.			
	TOTAL CARRIEDFORWARD TO SUMARY			
PROJECT	KIPCHERERE BoQ			
TITLE	100 M³ STORAGE FACILITIES			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
4.0	BILL No. 4 - 100 m³ Storage Tank			
25	Rendering to roof slab	M ²	64	

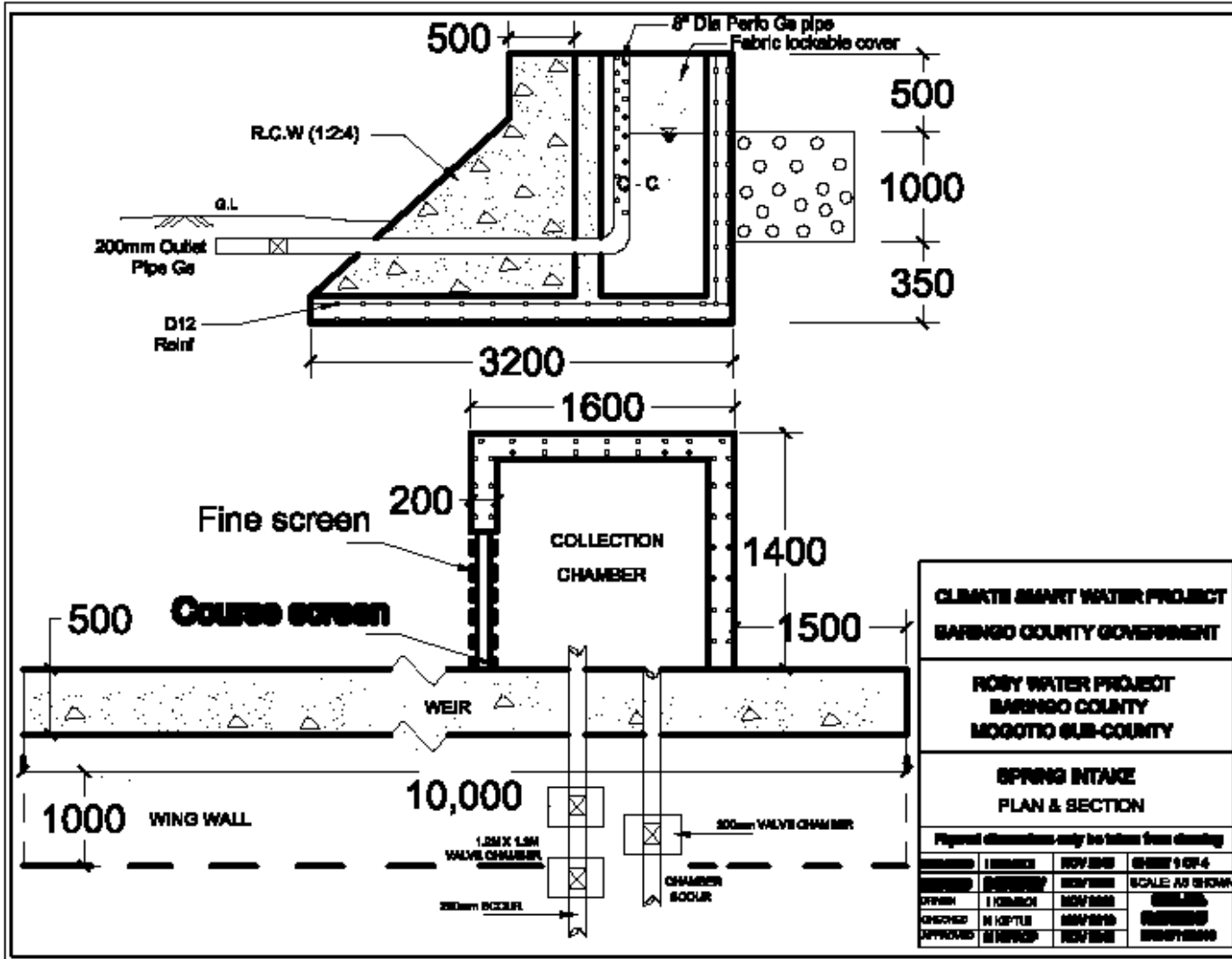
26	Rendering of external wall	M ²	76	
27	Provide bondex as tight sealing between the internal wall and slab as directed	Kg	20	
	PAINT WORK			
28	Apply 3 coat paint on walls and Roof.	M ²	142	
29	Provide for construction water at site. Include the price of filling the tank with water to overflow for testing on completion of the tank	Item	1	
30	Provide materials and construct masonry valve chamber of external dimensions 1.5mx1.2mx1.2m c/w steel lockable manhole cover for the gate valve	No.	1	
31	Provide and fix the following pipes and fittings: Include for any necessary pipe cutting, threading and welding to secure scour/off-take pipes in concrete slab			
(a)	100mm Ø Class "B" Scour and overflow Pipe. Provide endcap or plug at the end of pipe	No.	1	
(b)	75mm Ø Class "B" Off-take Pipe:	No.	1	
(c)	50mm Ø GI Vent pipes for roof, including for Bends and nipples	No.	4	
(d)	100mm Ø GI Bend	No.	1	
(e)	75mm Ø GI Bend	No.	1	
(f)	75mm Ø GI Flange	No.	2	
(g)	100mm Ø GI Nipple	No.	1	
(h)	75mm Ø GI Nipple	No.	1	
(i)	100mm Ø GI Plain Socket	No.	1	
(j)	75mm Ø Gate Valve – Pegler	No.	1	
	TOTAL CARRIEDFORWARD TO SUMARY			
	SUMMARY -100M³ TANK			
PROJECT	KIPCHERERE BoQ			
TITLE	WATER KIOSKS & CATTLE TROUGHS			
	ITEM DESCRIPTION	UNIT	QTY	RATE (Ksh.)
5.0	BILL No. 5 - 50M3 Tank			
5.1	Provide materials and construct standard 50m3 storage Tank	No.	1	

	Total Carried to Summary – Bill No.5			
6.0	BILL No. 6 - Cattle Troughs & CWP			
6.1	Provide materials and construct 10mx1.2m masonry Cattle Trough	No.	5	
6.2	Provide materials and construct Communal Water Points (Stand Pipes) as directed	No.	5	
	Total Carried to Summary – Bill No.6			

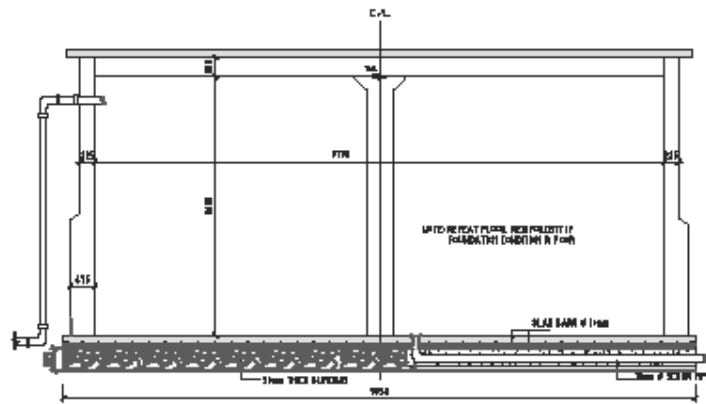
Annex 9: Designs -DESIGN DRAWINGS
SIGNPOST



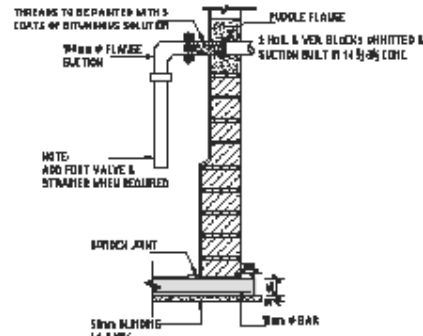
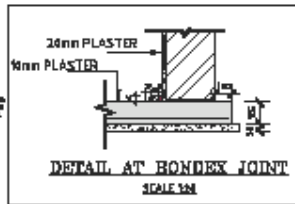
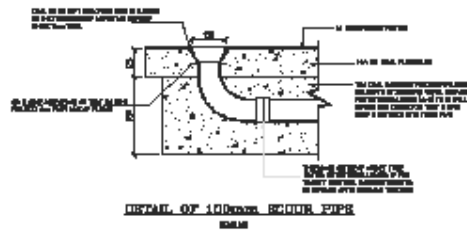
STREAM INTAKE WORKS



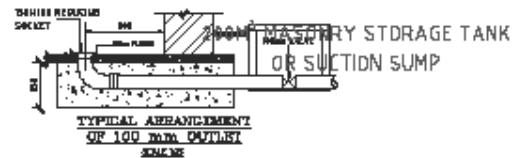
200M³ MASONRY TANK



SECTION THRO' TANK ON CENTRE LINE
SCALE 1/20



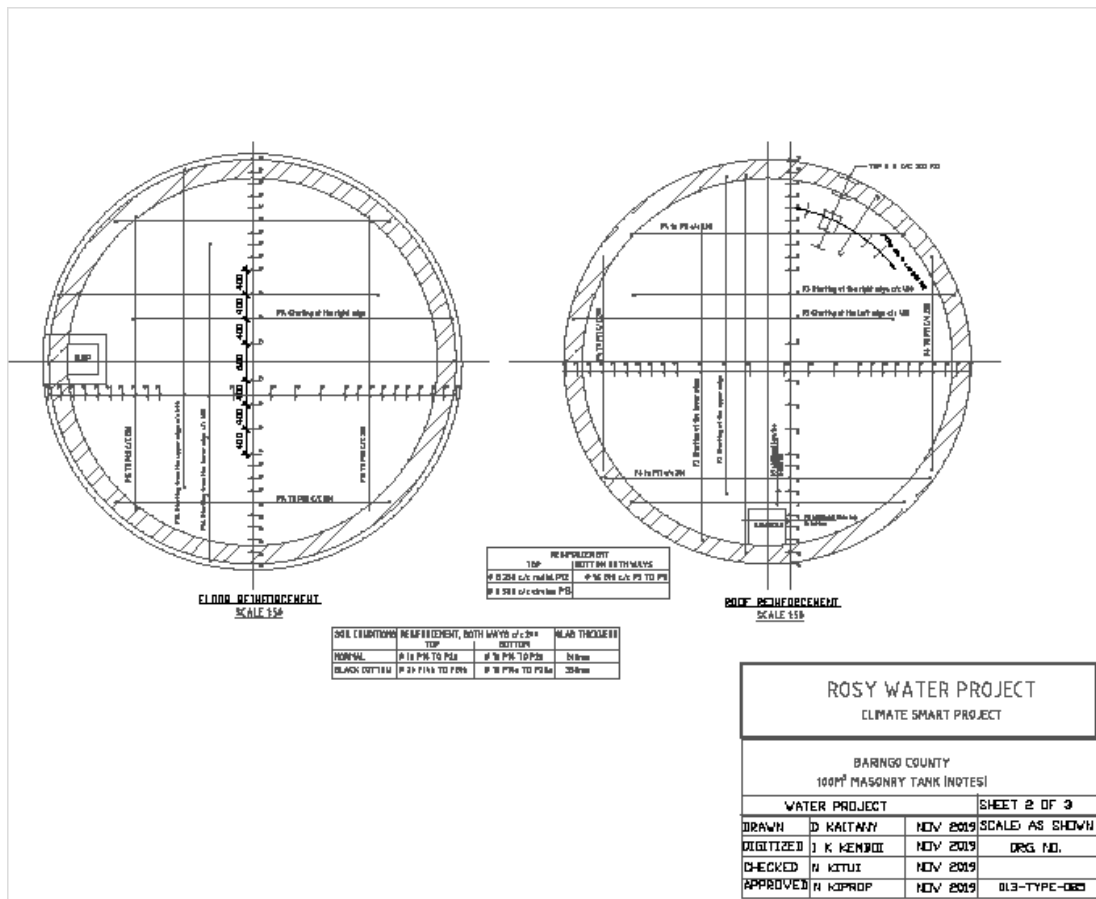
SUCTION PIPE ARRANGEMENT
SCALE 1/20



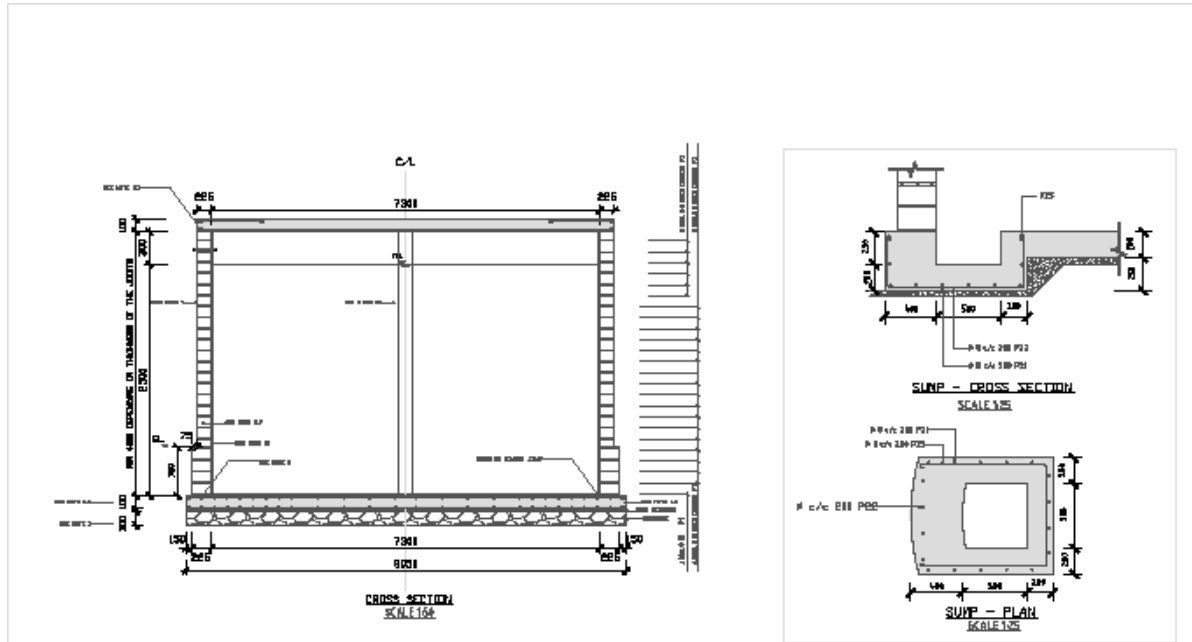
ROSY WATER PROJECT CLIMATE SMART WATER PROJECT			
BARINGO COUNTY			
DRAWN	(K)KEMBOI	NOV 2019	SCALE: AS SHOWN
DIGITIZED	(K) KEMBOI	NOV 2019	0715 113 229
CHECKED	(H) KIPTUI	NOV 2019	(H.W.)
APPROVED	(H) KIPROP	NOV 2019	MS-TYPE-02B

H. M. C. - PLANNING & DESIGN

100M³ MASONRY TANK

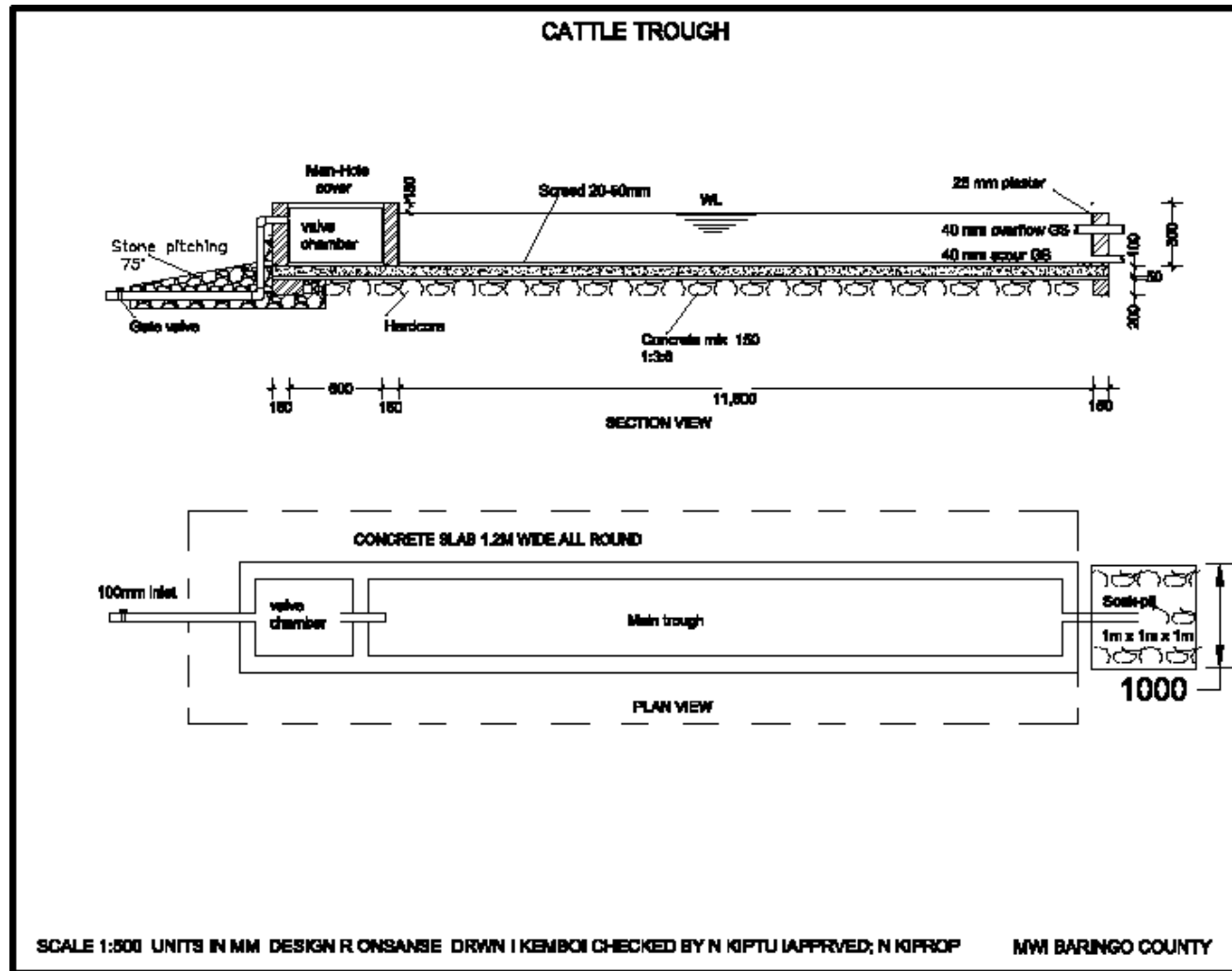


100M³ MASONRY TANK

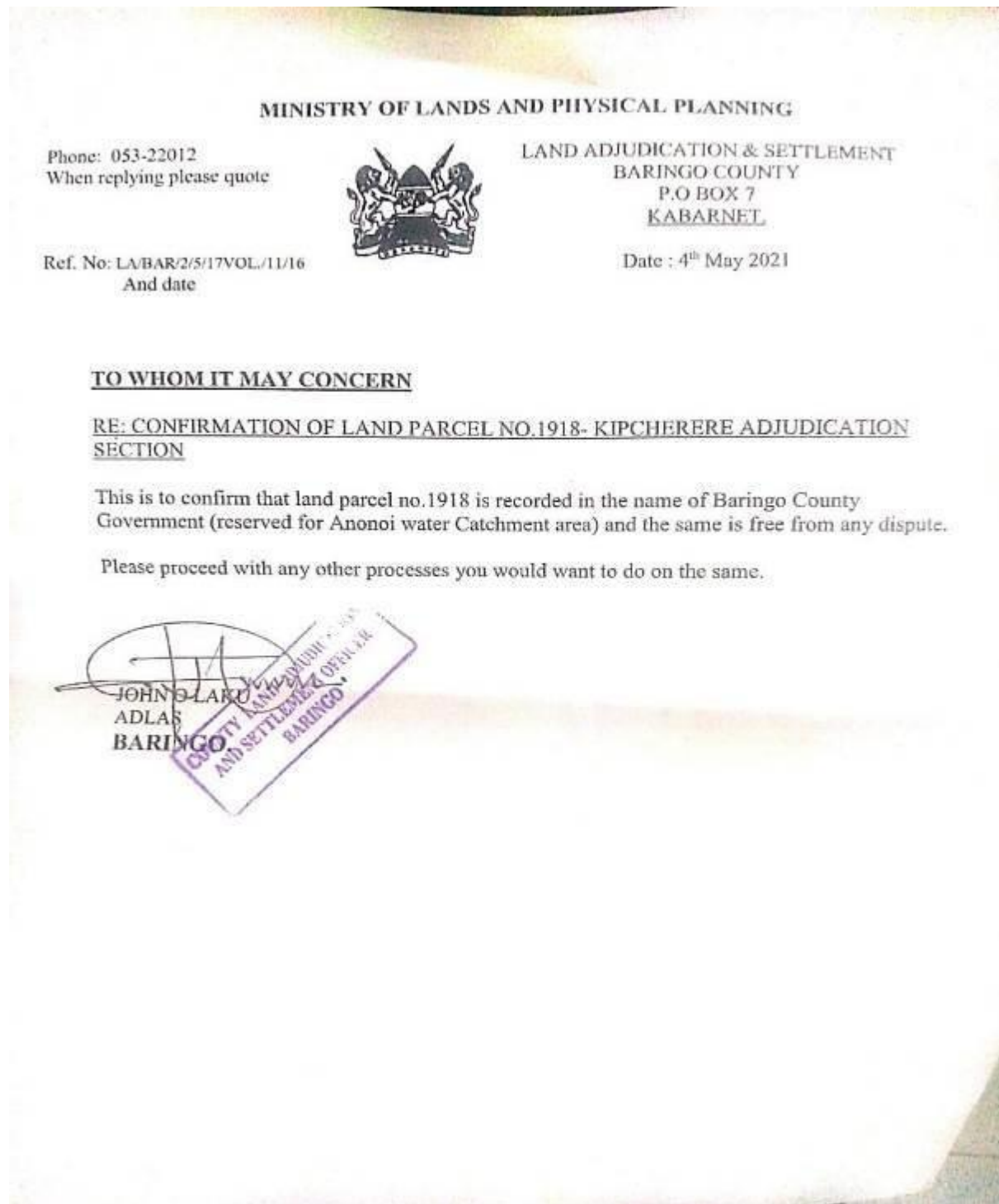


ROSY WATER PROJECT		
CLIMATE SMART PROJECT		
BARINGO COUNTY		
100M ³ MASONRY TANK		
DRAWN	D. KAITANY	NOV 2015
DRAWN	I. KEMBOI	NOV 2015
CHECKED	H. KIPITUI	NOV 2015
APPROVED	H. KIPROP	NOV 2015

CATTLE TROUGH



Annex 10: Land Document



pipeline consent form by the community

COMMUNITY LAND RESOLUTION AND AGREEMENT FORM

ITEM	DESCRIPTION
Project name	Kipcherere Water Project
Name of Investment)
Project Location:	Birigweny village, Kipcherere sub-location, Bar tum location Same soi Ward, Baringo North sub-county Baringo County
GPS coordinates	Lat: 0.606655 Long: 35 82988
Estimated cost of the investment	25,966,430
Source of Funding	KCSAP
Financial Year	

TERMS OF THE AGREEMENT

1. We the residents/users of the investment area KIPCHERE...discussed and agreed that PROPOSED PIPELINE...shall be site of the proposed KIPCHERE WATER PROJECT and that:
2. We all are aware of the Project and this proposed sub-project at KIPCHERE.....
3. We all are aware that the land set aside for the investment is community land and no one is claiming individual ownership because it belongs to all of us and negative impacts on particular individuals using the land will be addressed by the community, and no alternative claims will be made later on the land.
4. We all have no problem with the site of the investment and it's conversion to public land and the pipeline from passing through the individual land.
5. We have all agreed unanimously that the project implementation should continue as it is designed.
6. We will all allow other neighbouring and cross-border communities access to the investment as agreed between elders of both communities.
7. We all shall strive to peacefully resolve any conflicts with other communities concerning the investment and that we would strive to peacefully co-exist and resolve any conflict arising out of the investment facility following due process provided by the laws of Kenya.
8. The land to be piped was identified in consultation with all residents and users of the land?
9. We all understand the likely impacts of proposed activities on the individual land.
10. We all understand that the community could have refused this investment.
11. We all agreed to this investment and donation of the land without coercion, manipulation, or any form of pressure on the part of public or traditional authorities.
12. We all agreed that we not require any monetary or non-monetary benefits or incentives as a condition for the donation.
13. The land being donated will not reduce the remaining land area to a level below that required to maintain the livelihoods of occupiers and users of land at current levels and will not require the relocation of any household.
14. If any structure will be moved or any access to land be limited as a result of the project, the individual affected will be compensated so their livelihood will be unaffected.
15. The land is free of encumbrances or encroachment and is not claimed by any individual and its ownership is not contested.

We have been designated by the community of (KIPCHERE , SUB-LOCATION)

Confirm the above information to be true and that we have resolved to abide by ALL terms of this agreement. (Please attach minutes of community meeting, where the community agreed to the use and conversion of this land for this purpose).

S.No.	Name	Village/Location/Designation	ID/No.	Signature
1.	SYMON R. CHESUT	BIRINGWENY SECRETARY	12850326	
2.	THOMAS CHELAR	KAPICOLE V. CHAIR	1370444	
3.	EUNICE KIPTAI	KIPCHERE TREASURER	10745114	
4.	JACOB TULUH	USWONIN MEMBER	1371158	
5.	REV. REUBEN MUROP	KIPCHERE MEMBER	24190420	

Witnessed on this ...11... Day of ...8... in the Year...2021... by:

1. Area Chief

Name William B. Chesii

ID/No. 4842722

Signature
CHIEF
 BARTUM LOCATION
 P.O. BOX 100-30801, KABARTUNG
 Date 11/8/21

2. Ward Administrator

Name

ID/No. 8255370

3. Community Land Registrar

Name

ID/No.

4. County Government (Physical Planning Department)

Name

ID/No.

Signature & R-Stamp

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

Name Emily Rituel

ID/No. 10000329

Signature
EMILY RITUEL
 COUNTY LAND AND SETTLEMENT OFFICER
 KARIAKO
 Date 11/8/2021

KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
BARINGO COUNTY



DATE: 11th 8/12th 2021

ADVANCE LIST

VENUE: KIPCHEEROP

ACTIVITY: CONSENT to allow private individual land

S/N	NAME	ID/PPN	PHONE NO	GENDR	AGE IN YRS (8-35)	EDUCATION	ORGANIZATION	STATION/ PLOT NO.	SIGN
1	Symon R. CHEST	12850326	071391012	M	✓	member	Kipcheero		[Signature]
2	Priscilla Chemungat	27345423	072265349	M	✓	member	Kipcheero		[Signature]
3	Terenciah Kiplagat	0863318	072745823	M	✓	member	Kipcheero		[Signature]
4	Joseph Cheptu	0863425	071817260	M	✓	member	Kipcheero		[Signature]
5	Thomas Barbasaw	0862755	070729367	M	✓	member	Kipcheero		[Signature]
6	Andany Kipkwal	4551011	0712175247	M	✓	member	Kipcheero		[Signature]
7	James Mengel	25002586	072091932	M	✓	member	Kipcheero		[Signature]
8	Isiah Kemei	12851200	072800714	M	✓	member	Kipcheero		[Signature]
9	Vincent Rotich	12852887	070027882	M	✓	member	Kipcheero		[Signature]
10	Charles Kavie	22826005	0768431421	M	✓	member	Kipcheero		[Signature]
11	Job Chappagon	0862068	071514040	M	✓	member	Kipcheero		[Signature]
12	Mika Rotich	0497669	072294894	F	✓	member	Kipcheero		[Signature]
13	Dinah Kigau	13069705	072312219	F	✓	member	Kipcheero		[Signature]
14	Risper Chepte	2662534	070829040	F	✓	member	Kipcheero		[Signature]
15	Linda Cheptich	25321340	071259888	F	✓	member	Kipcheero		[Signature]
16	Grace Karuga	24151697	071009169	F	✓	member	Kipcheero		[Signature]
17	Grace Komen	12852054	0727073059	F	✓	member	Kipcheero		[Signature]
18	Jennifer Kanga	21514131	075871676	F	✓	member	Kipcheero		[Signature]

Annex 12: 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 heritage¹

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 heritage²

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.

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.

Annex 13. ESIA Practicing License

FORM 7

(r.15(2))



**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT**

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

License No : NEMA/EIA/ERPL/15469

Application Reference No: NEMA/EIA/EL/20485

M/S **Joel Sumukwo**
(individual or firm) of address
P.O Box 400 - 30300 Kapsabet

is licensed to practice in the
capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **11829**

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

Issued Date: 6/16/2021

Expiry Date: 12/31/2021

Signature.....

(Seal)

**Director General
The National Environment Management
Authority**

FOR KIPCHERIRE

P.T.O.



ISO 9001: 2015 Certified

Annex 14: Photo Gallery



Photo 1: Women FGD in progress



Photo 2: Men FGD



Photo 3: Youth FGD



Photo 4: Kipcherere Trading Center on a Market Day



Photo 5: Men FGD



Photo 6: Tank to be rehabilitated



Photo 7: Kipcherere in take project site

Annex 15: legal notice no. 31 showing sub project is low to medium risk

SPECIAL ISSUE

195

Kenya Gazette Supplement No. 62

30th April, 2019

(Legislative Supplement No. 16)

LEGAL NOTICE NO. 31

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

(No. 8 of 1999)

AMENDMENT OF THE SECOND SCHEDULE

IN EXERCISE of the powers conferred by section 58(4) of the Environmental Management and Coordination Act, 1999, the Cabinet Secretary for Environment and Forestry on the advice of the Authority amends the Second Schedule to the Act by deleting the undertakings specified thereunder and substituting therefor the following—

1. Low Risk Projects.

- (a) establishment of places of worship including churches, mosques and temples;
- (b) community based and social projects including sport facilities, stadia, social halls;
- (c) community water projects including boreholes, water pans, sand dams and sub-surface dams;
- (d) dispensaries, health centers and clinics;
- (e) livestock holding grounds and cattle dips;
- (f) expansion or rehabilitation of markets;
- (g) car and bus parks;
- (h) local roads and facility access roads;
- (i) business premises including shops, stores, urban market sheds;
- (j) cottage industry, jua kali sector and garages;
- (k) small scale rehabilitation, maintenance and modernization of projects;
- (l) schools and related infrastructure for learners not exceeding one hundred; and
- (m) standard warehouses not exceeding one thousand four hundred square meters.

2. Medium Risk Projects.

- (1) Urban Development including—

- (a) establishment of multi-dwelling housing developments of not exceeding one hundred units;
- (b) tourism and related infrastructure;
- (c) hotels with bed capacity not exceeding one hundred and fifty; and
- (d) shopping centers, commercial centers and complexes, business premises, shops and stores not exceeding ten thousand square meters.
 - (2) Transportation including—
 - (a) construction and rehabilitation of roads including collectors and access roads;
 - (b) construction of a light rail transit;
 - (c) construction of jetties, marinas, piers and pontoons;
 - (d) rehabilitation works of airports and airstrips;
 - (e) helipads;
 - (f) parking facilities; and
 - (g) construction of bridges.
 - (3) Water resources and infrastructure, including—
 - (a) drilling for purposes of utilizing ground water resources and related infrastructure;
 - (b) water abstraction works; and
 - (c) water supply and distribution infrastructures.

APPENDIX 1: Assessment of the Flow Availability of Kipcherere Spring



DATE: 26/01/2021

County Project Coordinator
Kenya climate smart Agr. project
Baringo County
P.O Box 4 -30400
KABARNET

RE: ASSESMENT OF FLOW AVAILABILITY ON KIPCHERERE SPRING

The spring is situated along kicherere/Bartum road. It is in Bartum, kipcherere sub-location and in Saimosoi division. It originates from a foothill in a well-conserved area and flows to the western side. It is one of the tributaries of Endao river. It was reported that the spring is perennial and the water is of good quality. The site GPs N00 606655 E35 82988 at altitude of 1766m.a.s. l

Hydrological Analysis

Spring yields.

The spring was measured using volumetric test and the yield was 0.097 l/s (8380.8 l/day). The flow was taken during dry season however the community leaving around the spring confirm that yield of the spring does not dry.

Water Balance

The yield of the spring was estimated to be 8380.8 l/day. Since this is the onset of dry season in county, the flow is sufficient to meet the current demand and balance for environment flows and downstream users. The applicant is applying for 3649 l/day of the available flow 8380.8 l/day.

1

SUB-REGIONAL MANAGER
WATER RESOURCES AUTHORITY
BARRINGO SUB-REGION
P.O. BOX 544-30400, KABARNET


Recommendations

Based on the hydrological analysis undertaken and the results there of, it is recommended that subject the applicant meeting the general and specific water permit conditions:

- a) The applicant be allocated 3649 l/day from the spring.
- b) The applicant should implement water demand management measures to improve water use efficiency by reducing wastage and thus minimize the water abstraction from the spring.

Pictorials.




Stephen Oscar Mutongoi
Water Rights Office.
Water Resources Authority-LBB Kabarnet

SUB-REGIONAL MANAGER
WATER RESOURCES AUTHORITY
BARRINGO SUB-REGION
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