



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SUMMARY  
PROJECT REPORT**

**FOR**

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**THE PROPOSED BARAN BAATE FAYO COMMUNITY WATER PROJECT IN ISIOLO  
COUNTY ON LR. COMMUNITY LAND IN BARAN BAATE FAYO VILLAGE, BULESA  
SUB-LOCATION, BULESA LOCATION, CHARI WARD, MERTI SUB-COUNTY, ISIOLO  
COUNTY**

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**GPS COORDINATES LATITUDE 1.1038770 N, LONGITUDE 38.389180E**



**PROJECT PROPONENT**

**BARAN BAATE FAYO COMMUNITY**

**PROJECT SPONSOR**

**Government of Kenya / County Government of Isiolo under Kenya Climate Smart  
Agriculture Project (KCSAP) With Support from the World Bank**




**@JUNE, 2021**


### CERTIFICATION

The Proposed Summary Environmental Impact Assessment (SPR) Report for the Proposed Baran Baate Fayo Community Water Project in Isiolo County. The SPR has been carried out according to the Environmental Management and Coordination Act, 2015, Environmental (Impact Assessment and Audit) Regulations, 2019 and the NEMA public notice 31 on processing of EIA reports of 12<sup>th</sup> March 2020. To my knowledge, all information contained in this report is accurate and a truthful representation of all findings as relating to the proposed infrastructural development.

#### CERTIFICATION BY EXPERTS

1. Name: BONFACE MATHARA Designation LEAD EXPERT  
 Signature:  Date 12/08/2021

#### THE PROPONENT

Name: HASSAN SONKOLU Designation Secretary  
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#### PROJECT SPONSOR

Name: Salad Tintona Designation Chief Officer  
 Signature:  Date 12/08/2021

CHIEF OFFICER  
 DEPARTMENT OF AGRICULTURE  
 COUNTY GOVT OF ISIOLO  
 Date: ..... Sign: .....

## **ACKNOWLEDGEMENT**

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We would like to express our special thanks of gratitude to the World Bank as well as Kenya climate Smart Agriculture project team who gave us the golden opportunity to carry out Summary Project Report for this wonderful project in Isiolo County. Special thanks also goes to the provincial administration and local communities who gave us security and support throughout our studies. Much gratitude to the county team, key informants and all stakeholders for their roles in making this study successful.

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## ACRONYMS AND ABBREVIATIONS

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2D	two-dimensional
3D	three-dimensional
BOP	Blow-out Preventer
CSR	Corporate Social Responsibility
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
SPR	Environmental and Social Impact Assessment
KCSAP	Kenya Climate Smart Agricultural Project
ESMP	Environmental and Social Management Plan
FGD	Focused Group Discussions
IFC	International Finance Corporation
MSDS	Material Safety Data Sheets
NADF	Non-Aqueous Drilling Fluids
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
OBM	Oil Based Mud
OSH	Occupational safety and health
PPE	Personal protective equipment
PSC	Production Sharing Contract
SBM	Synthetic Based Mud
SPR	Summary Project Report
GoK	Government of Kenya
VEC	Valued Environmental Components
Km	Kilometers
m	meters
m <sup>3</sup>	Cubic meters
ng/J	nanograms per joule
ppb	parts per billions
ppm	parts per million
ug	microgram

## EXECUTIVE SUMMARY

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The purpose of the proposed Baran Baate Fayo Borehole project at GPS Location Latitude 1.1038770N, Longitude 38.389180E is to increase food and nutrition security, livelihood improvement to the target community through improved productivity, creation of employment to the youths, improvement of social infrastructures, strengthen of resilience of the pastoralist beneficiary community against drought through provision of water for small scale irrigation to enable farmers to grow crops and minimize losses that would otherwise be experienced during drought in the semi-arid area.

The proposed project is supported by Kenya Climate Smart Agriculture Project (KCSAP) through the funding from the World Bank, the Government of Kenya and the County Government of Isiolo. The proposed borehole project will supply water for the production of green grams, livestock (sheep and beef) and high value horticultural crops hence fits into the KCSAP objectives of increasing agricultural productivity and building resilience to climate shocks of targeted rural communities in selected counties including Isiolo. The proposed project is set to benefit several beneficiaries totaling 2,700 (Males 1,890; Females 810). The specific activities shall involve drilling, equipping of borehole, with solar pump, construction of cattle watering trough and constructing water kiosk. The estimated project cost is Kshs. 16,431,986.08.

The Environmental and Social Impact Assessment Summary Project reports was based on the recommendation of the County Director of Environment as per the requirements Environmental Management and Coordination Act (EMCA) of 2015 schedule 31 and 32 that recommends preparation of a summary project report for low to medium risk project. The ESIA (SPR) relied on secondary information already available concerning environmental and socio-economic conditions in the area through literature review; primary information learned through engagement of the public and relevant stakeholders; and information so obtained such as socio-economic survey, ecological survey, and hydrological survey report provided to the team of experts. The aim of this ESIA Summary project Report was to examine both the positive and negative effects that the proposed borehole drilling project is likely to have on both the physical and the socio-economic environment.

The ESIA (SPR) methodology included environmental and social screening to determine the appropriate instrument, environmental and social scoping to map out the nature of the likely impacts, desk review for existing literature, field visits to assess the site, public participation and stakeholder consultation to get the views of the community on the proposed project and report preparation. Public participation methods included three (3) public meetings, focused group discussion and key informants interviews using structured questionnaire. The meetings were conducted on the 9<sup>th</sup> and 10<sup>th</sup> June 2021 where a total of 69 people participated including 41 male and 28 female. The issues and concerns during the meetings included employment opportunities, project management, water use conflict, health and safety issues, water quality concerns and spread of livestock diseases at the livestock watering points. Some of the

responses given to address the issues included giving priority to the locals during employment, establishment of a project management committee, putting in place a water use committee to handle water use, establishing a conflict redress committee among others.

The major negative impacts identified during construction phase included waste generation, disturbance of flora and fauna, oil and chemical spills , introduction of invasive species, air pollution , occupation and health safety, risk of spread of COVID-19. The major impacts during operations included water quality, excessive water extraction, ground water pollution, water use conflict, risk of spread of livestock diseases, gender based violence among others. Decommissioning phase impacts include waste generation, noise and vibration and occupation and health safety. Mitigation measure for the negative impact have been presented in chapter six in the environmental and social management and monitoring plan.

It is the view of the experts that the project is acceptable if the identified and developed management plans and practices are implemented accordingly. The experts therefore recommends the proposed project for National Environmental management Authority (NEMA) approvals subject to an annual environmental audit as stipulated in the EMCA Act. The experts further recommends appropriate monitoring of the project development and operational activities to ensure that adverse impacts that were unforeseen are identified and addressed in a timely fashion. Similarly the borehole should be lined with appropriate casings and screens, protected from possible sources of contamination by grouting at least 5 meters length of the borehole from the ground surface and properly gravel packed to enhance yield. The experts suggest that the drilling and test pumping must be supervised by a Hydrogeologist/ Licensed Water Resources Professional.

Upon completion, the borehole must be fitted with an airline/ piezometer and a master meter to facilitate monitoring of static water level and groundwater abstractions respectively. A two (2) liters water sample of this water is to be collected in a clean container and be taken to any competent water-testing laboratory for a chemical, physical and bacteriological analysis before the water is made available for use. It is a legal requirement, stipulated in the Water Act 2016, that the proponent applies for an authorization to drill from WRA. After drilling, the borehole completion record, test pumping results, completion certificate and water quality analysis results must be submitted to WRA for issuance of a permit. An authorization to drill does not constitute a permit to use the water.



# CHAPTER ONE

## INTRODUCTION

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### **1.1 Background Information**

The proposed Baran Baate Fayo borehole project in Baran Baate Fayo Village, Bulesa Sub Location, Bulesa Location of Charri Ward, Merti Sub County, Isiolo County was identified during the Participatory Integrated Community Driven Development (PICD) Process conducted by KCSAP in Chari Ward in Bulesa in March 2019. During that PICD process, water for livestock and domestic use ranked number one priority of the development needs of Baran Baate Community. The project is expected to ease the burden of going for long distances in search of water for both livestock and domestic use. The project is supported by Kenya Climate Smart Agricultural Project (KCSAP) through funding from the World Bank, the Government of Kenya and the County government of Isiolo. The project entails drilling of a borehole at a depth of 250 meters, equipping the borehole with solar pump, construction of two (2) cattle water trough of capacities 50M<sup>3</sup> and construction of water kiosk of 2M<sup>3</sup>. The estimated cost of the proposed project is Kshs. 16,431,986.08.

### **1.2 Project Justification**

The proposed borehole project is expected to improve access to grazing resources thus improving community resilience. It will also go a long way in availing portable water to the community which has suffered chronic water shortages for a long time. The project was also prioritized in the County Climate Smart Agriculture Investment Plan. The identification process involved the community opinion leaders, Administrative leaders (Chiefs, Ward Administrator), other Government agencies and development partners, after which they all agreed on the location of the borehole which is identified by the GPS Coordinates: Location of the project. Furthermore, the proposed project is set to benefit several beneficiaries totaling 2,700 (Males 1,890; Females 810). The direct beneficiaries are 500 (Males 150 Females 350) while indirect beneficiaries are 2200 (Males 1325 Females 875). The beneficiaries also include vulnerable beneficiaries (the poor, widows/widowers, orphans, physically challenged, elderly, HIV/AIDs affected/infected) who are 315 (Males 115; Females 200).

### **1.3 The Justification for Summery Project Report**

This Environmental and Social Impact Assessment(ESIA) Summery Project Report (SPR) was undertaken under requirements of Environmental Management and Coordination Act (EMCA) of 2015 schedule 31 and 32 that recommends preparation of a summery project report for low to medium risk project. This ESIA (SPR) have assessed both the positive and negative effects that the proposed project is likely to have on both the physical and the socio-economic environment and has proposed appropriate mitigation measure for each of the negative impacts.

### **1.4 Objectives of Environmental and Social Impact Assessment (ESIA)**

The specific objectives of the SPR are to:

- Collect and analyze baseline information for physical, biological and socio-economic environments in the project area

- Discuss the legal and regulatory issues associated with the proposed project;
- Predict and assess the potential impacts of the project
- Propose appropriate mitigation measures for any negative impacts and enhancement measures for the positive impacts resulting from implementing the project
- Conduct public participation so as to incorporate their views during project implementation
- Prepare an environmental and Social Impacts management plan
- Prepare a Summary Project Report (SPR) for submission to NEMA for approval

### **1.5 Approach and Methodology of Summery Project Report**

This study adopted an integrated approach which included Environmental and Social Safeguards (ESS) screening, desk review, field investigations, consultations among experts, interviews and discussions with stakeholders and affected parties.

- a) **Environmental and Social Screening:** This was conducted by the Environmental and Social safeguards officer to determine the ESS instrument hence the Summery Project Report (SPR)
- b) **Environmental and Social Scoping:** This was conducted to determine the environmental and social aspects that were likely to be affected by the proposed project. This was important for the identification of the likely impacts.
- c) **Desk review** entailed review of literature of the existing documents including ecological survey report, socio economic survey and hydrogeological survey report; regulations and guidelines such as Environmental Management and Co-ordination Act (EMCA) as well as other related statutes and international codes on water use.
- d) **Field visit:** This was undertaken for physical evaluation of areas of interest including intake, farms and general infrastructure. Information gathering was conducted through two site visits to the project, one transect walk and interview with the key informants of the project which included the area chief, assistant chief, project management committee and opinion leaders. A transect walk was carried out during the field visit to quantify the perceived impacts of project on land use, land conflicts and ownership, areas of insecurity, existing institutions in the area, vegetation cover and ecologically sensitive areas such as underground and surface waters; animal grazing areas and migratory routes. The information gathered also included the existing strategies towards environmental protection.
- e) **Public participation** meetings and consultative meetings at the administrative and community levels were held to collect information on the beneficiaries` perceptions on benefits and impacts of project implementation. Three (3) public participation meetings were conducted in full adherence to the government directive on the COVID-19 pandemic- social distancing, wearing of face masks, use of sanitizers and limiting the number of contact hours. The total number of participants during the public consultation were 69 people comprising of 41 male and 28 females (Appendix 4 showing list of participants). Two (2) focused group discussions were also conducted during the public participation targeting the youth, the women and differently abled persons. Relevant

stakeholders were also consulted including the Department of Agriculture and Irrigation (Annex 8). Detailed outcome of the public participation and stakeholder consultation is presented in chapter four of this ESIA summary project report.

- f) **Preparation of Draft ESIA(SPR):** This involved putting together information from the assessment

### **1.6 Organization of Summery Project Report**

This Summary Project Report is organized into nine substantive chapters. Chapter one present the introductory chapter, Chapter 2 gives nature of the project, Chapter 3 gives the location of the project, chapter 4 presents the outcome of the public consultation and participation process, Chapter 5 identifies and discusses the anticipated impacts and mitigation measures of the project , Chapter 6 presents the environmental and social management and monitoring plan (ESMMP), while Chapter 7 wraps with the conclusions and recommendation followed by references and annexes.

## **CHAPTER TWO**

### **NATURE OF THE PROJECT**

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#### **2.1 Introduction**

This Chapter provides a description of the key Project components and details regarding activities throughout the life of the Project.

#### **2.2 Project Design**

##### **2.2.1 Drilling design**

The borehole will be circular in shape. The maximum recommended depths by the hydrogeologist are 250 meters (design in annex 6). It will also entail installing a solar pump, constructing steel tank, cattle troughs, VIP latrines and bathrooms.

##### **2.2.2 Water Well Design**

For the purposes of monitoring of groundwater abstraction and the static water level measurements, a water meter and an airline respectively must be installed. An airline consists of an open tube or several pipes. These pipes are connected together and are normally attached to the pump's drop pipes.

##### **2.2.3 Casing**

The two main purposes of a well casing are to support the borehole and to help protect the aquifer from contamination. The casing serves as a housing for the pumping equipment and as vertical conduit for water flowing upward from the aquifer to the pump intake. The proposed project should have two casings of say 30.5 and 20-cm used in the well. The 30.5 and 20-cm casings will be cut off with the latter casing slightly below the outer casing. The 30.5 –cm pipe will serve as the protective casing, and will have a locking cap installed. The well will be flush-mounted at the ground surface, with a relief above existing grades and will have a minimum of 60cm stick-up in order to readily find it as well as prevent temporary flooding from making it inaccessible. An open borehole provides an avenue where vertical migration of contaminants may occur from contaminated fracture zones to clean fractures. To prevent this potential migration and cross- contamination, and still maintain the preliminary borehole a plug will be installed in the borehole.

##### **2.2.4 Grouting**

Grouting is the act of injecting certain substances into the void of earth materials to reduce or eliminate their permeability, consolidate them, or increase their strength. Though it is not always a part of a well, gravel packing is often used in addition to the well screen. Grouting or cementing well casing involves filling the annular space between the casing and the drilled hole with suitable slurry of cement or clay.

##### **2.2.5 Plumpness and Alignment**

Water well should be both straight and plumb, although in practice any borehole of substantial

depth may not be perfectly straight or perfectly plumb. A well bore may be straight but not plumb. A deviation from plumpness of two-thirds the well's inside diameter per 30 meters is reasonable, considering the difficulties of drilling in earth materials. Straightness of the well bore is important, because it determines whether or not the casings and a properly sized pump can be installed in the well to the desired depth.

### 2.2.6 Screens

The choice of material used to fabricate screens depends on the water quality, potential presence of iron bacteria and strength requirements. Water quality analysis show whether groundwater is corrosive or incrusting or both. It is therefore important to use a well screen fabricated from corrosion-resistant material.

### 2.3 Borehole development

All drilling methods cause some plugging of fractures or crevices in rocks. Borehole development is designed to maximize the well yield by repairing damage done to the formation by the drilling so that natural hydraulic properties are restored. Development also alters the basic characteristics of the aquifer near the borehole so that water will flow more freely to a well.

Development procedures have the following beneficial purposes:

Reduce the compaction and intermixing of grain sizes produced during drilling by removing fine materials from the pore space.

Increase the natural porosity and permeability of the previously undisturbed formation near the borehole by selectively removing the finer fraction of aquifer materials.

Remove the filter cake or drilling fluid film that coats the borehole, and remove much or all of the drilling fluid and natural formation solids that have invaded the formations so that the well will yield sand-free water.

### 2.4 Construction material

The proposed borehole development will take in a considerable amount of artificial and natural material in all its phases which will have both beneficial and adverse impacts on the environment. Both on-site and off-site impacts are anticipated from usage of construction materials. The most common of these impacts are income circulation in the economy, creation of employment opportunities, off-site depletion of raw materials, land degradation, pollution, excessive demand on raw materials and health hazards.

Table 2.1: Summary of the main construction material input into the proposed project

<b>Materials</b>	<b>Sources</b>	<b>Uses</b>
Sand	Suppliers near the proposed site	Preparation of concrete for grouting during sanitary sealing
Hardcore	Suppliers near the proposed site	Preparation of aggregate for making a firm base during sanitary sealing
Cement	Hardware near the proposed site	Mixed with sand to prepare concrete for grouting

<b>Materials</b>	<b>Sources</b>	<b>Uses</b>
PVC or metal pipes	Hardware near the proposed site	For water piping systems and casing of the borehole
Water	Nearby stream	Input in the drilling process

## **2.5 Project activities**

### **2.5.1 Preconstruction Phase**

- a) Conducting a ground water survey. This has already been carried out. A report on this survey was submitted to the Water Resources Authority (WRA) in order to seek authority to sink the borehole. This is documented in the attached hydro-geological survey report.
- b) Carrying out of the EIA process and production of the Summary Project Report
- c) SPR review, decision-making and licensing

### **2.5.2 Construction Phase**

- a) Site preparation and mobilization of construction personnel, equipment and construction material
- b) Removal of vegetation, rubbish and unwanted and/or old structures from the construction and material mobilization areas
- c) Contract works including drilling and borehole development; plumbing; drainage works; and installation of a piping system and water tanks
- d) Use of construction material, energy, machinery, hand tools and equipment; and employment of human labour
- e) Disposal of construction waste and general environmental management

### **2.5.3 Operations and maintenance Phase**

- a) Commissioning the completed project for use of the water from the borehole
- b) Extraction and usage of water from the borehole
- c) Environmental management including landscaping, waste water management and pollution control
- d) Repair and maintenance of the borehole

### **2.5.4 Decommissioning Phase**

- a) Application for approval and facilitation of the decommissioning from relevant authorities and appropriate professional personnel incorporating environmental experts; water experts; planners; public works officers and public health officers
- b) Abandonment of the borehole and the site, change of use and removal of borehole components from the site
- c) Rehabilitation and/or restoration of annihilated components of the environment

## **2.6 Project Cost**

The estimated cost of the project is **Kshs 16,431,986.83** including the cost of implementing the ESMMP

## CHAPTER THREE LOCATION OF THE PROJECT

### 3.1 Introduction

This chapter describes the location of the project, description of the site, Proof of land ownership, any environmentally sensitive area to be affected, Availability of supportive environmental management infrastructure; and Conformity to land use plan or zonation plan of the project site.

### 3.2 Project Location

#### 3.2.1 Physical Location

The proposed project site is located Baran Baate Fayo area, Bulesa Sub-location, Bulesa Location, Chari Ward, Merti Sub-county, Isiolo County. The project located along Merti-Kom road

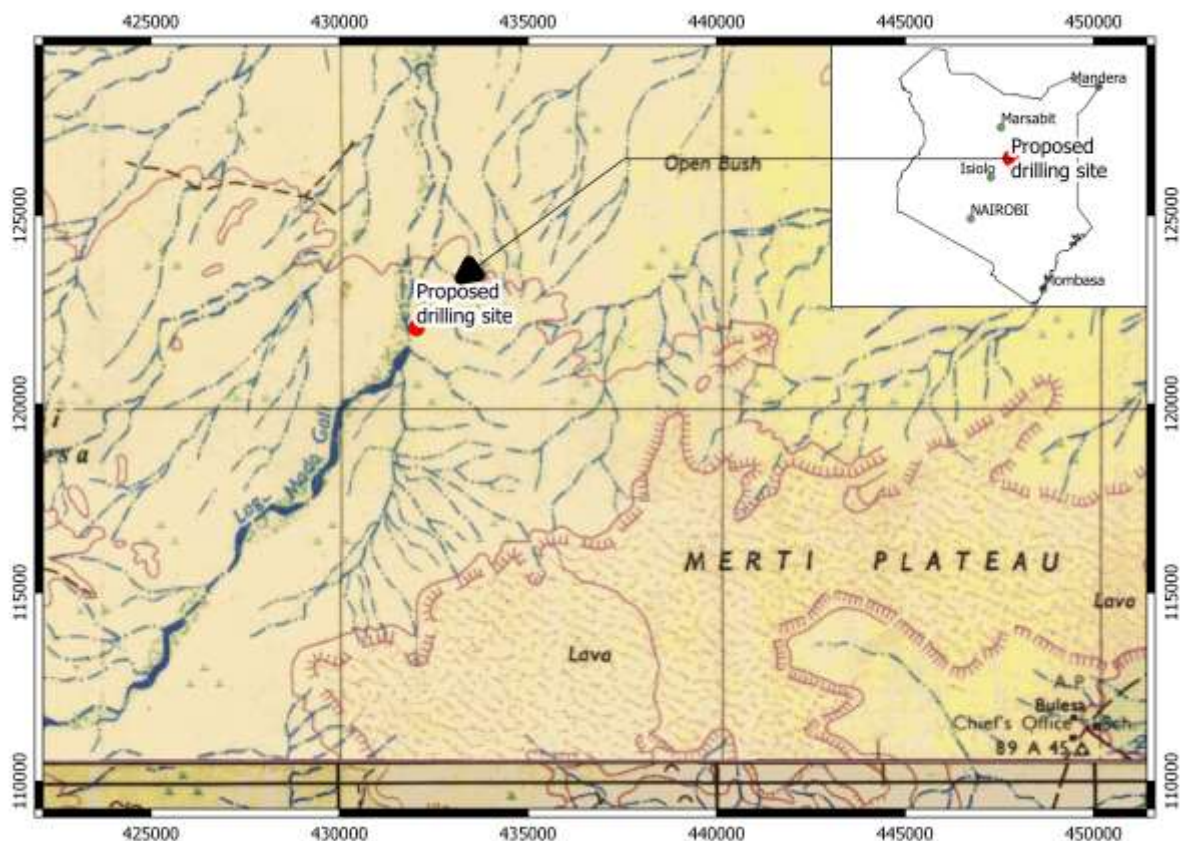


Figure 1 Map extract of the proposed project site (Source Hydrological survey report, 2019)

#### 3.2.2 Geographical Location

The GPS coordinates Latitude 1.1038770N, Longitude 38.389180E. The elevation of approximately 430 meters above sea level (WGS 1984).

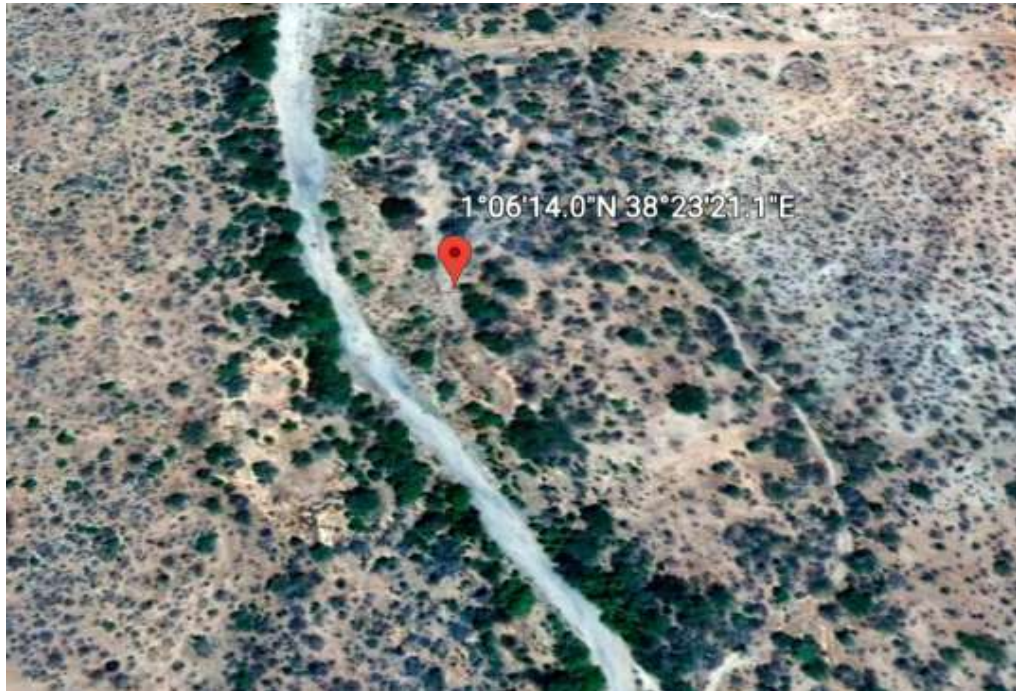


Figure 2: Coordinate of Baran Baate fayo Borehole Project (Source Google Earth, June 2021)

### 3.2.3 Geology of the project area

The geology of the area is composed of superficial deposits, alluvium, basalts and Basement rocks. The basement is composed of gneisses which displays distinct foliation property with layers that doesn't have constant thickness characterized by alternating darker and lighter colored bands. The main soil types in the area include red sandy soil, grey sandy soil and alluvium. There are no boreholes drilled within the 10km radius of the project area (Hydrological survey report, 2019) hence there will be little interference with the aquifer characteristics.

### 3.3 Land Ownership

The site is within community owned land which was set aside for implementation of a water project. The site measures approximately one acre. There are no cultural or environmental sensitive areas within the proposed site. A letter of no objection from the community is annexed in the report (annex 2). More than 80% of the land is communally owned and is under the trust ship of the county government.

### 3.4 Supportive social and environmental management infrastructure

In Merti, Solid waste is handled through open burning and dumping into pits. Organic waste is sometimes taken to *shambas* as a form of manure. The transport network is not well developed in the area but is adequate to allow for transportation of equipment to the site as well as waste for disposal to designated sites. The Bulesa heath facility would handle any minor injuries during the drilling process as well as any ill health.



### **3.5 Conformity to land use plan and zonal plan**

The site is within community owned land which was set aside for implementation of a water project. The site measures approximately one acre. There are other boreholes within the area therefore the project is not out of character with the surrounding and therefore conforms to the land use plan. There are no cultural or environmental sensitive areas within the proposed site. All the land in the Baran Baate is owned communally. The livestock land carrying capacity is 25 acres, which implies that only 25 Tropical Livestock Units (TLU) can sustainably be kept under one hectare of land.

## **CHAPTER FOUR**

### **PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATION**

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#### **4.1 Introduction**

Stakeholder engagement is a key part of this SPR process. One of the aims of the stakeholder engagement exercise is to ensure all relevant stakeholders are provided with the opportunity to express their concerns and opinions and in turn have them reflected in the SPR and ESMMP. The stakeholder engagement exercise also provides NEMA with the necessary information to assist it in making an informed decision about the Project.

EMCA amendment Act 2015 and World Bank Environmental and Social Safeguard Policies call for effective stakeholder participation and public consultation in the ESIA process, in this case an SPR. This chapter describes the Stakeholder Engagement Exercise that was carried out for the proposed Baran Baate Fayo Community Livestock Water borehole drilling project on Baran Baate Fayo Village, Bulesa Sub-location, Bulesa Location, Chari Ward, Merti Sub-county, Isiolo County.

#### **4.2 Objectives of Public Consultation**

The main objective of the exercise was to inform stakeholders about the project and its likely effects, which in turn would incorporate their inputs, views, and concerns, and thus enable their views to be considered during the decision-making. The specific objectives of the consultations were to:

- Obtain local and traditional knowledge that may be useful in decision-making including any Indigenous Knowledge Systems (IKS) (if any).
- Facilitating consideration of alternatives, mitigation measures and trade-offs (if any).
- Ensuring that important impacts are not overlooked, and benefits are maximized.
- Reducing chances of conflict through early identification of contentious issues.
- Provide an opportunity for the public to influence the project design and operational plan in a positive manner
- Improving transparency and accountability of decision-making; and
- Increasing public confidence in the SPR

#### **4.3 Categorization of Community Participants and stakeholders**

The stakeholders consulted included the local residences/ communities, National Government, Isiolo County Government, Local Government, non-governmental organization (NGOs) as in annex 8

#### **4.4 Approach and Methodology of Public Participation and Stakeholder Consultation**

The methods used included public meetings, focused group discussion, key informants interviews using structured questionnaires. Three (3) public meetings were conducted on the 9<sup>th</sup> and 10<sup>th</sup> June 2021 where the community gave their views on the proposed project. Focused group discussions involved meetings with representatives from different sectors from the

National Government, County Government, Local Government, NGOs, Community Based Organizations (CBOs). The FGD and Community Baraza's were held to obtain information on community expectations and social risk associated with the project, insight on the challenges faced in the County, Environmental and Socio-economic baseline characteristics of the project area as well as to assess impact of the project on the environment and communities, both positive and negative impacts and establish mitigation measures for the negative impacts. Similarly data was collected from the key informants using structured questionnaires. A total of 10 questionnaires were administered and the outcome of the analysis presented below. See sample of duly filled questionnaire (annex 6)



**Baran Baate Fayo Public Participation Meeting**

#### **4.6 Summary of the key issues, concerns and Responses**

Communities raised concerns that the project might have both environmental and socio-economic effects to the surrounding communities. Generally there was consensus that the proposed project will improve the livelihoods of the community members in the area, and it has potential to create employment and improve accessibility in the area. Additionally, it was agreed that continuous stakeholder consultations was necessary during all phases of the project. Some of the issues raised and concerns included:

- a) **Employment Opportunities:** Community members raised issues on the criteria that shall be used for employment during the construction/drilling phase of the borehole. It was agreed after discussion that the first consideration should be given to the local residence.
- b) **Land ownership:** There was a concern that most community members did not have land ownership documents and requested that the proposed project site be demarcated and proper consultation and agreement be signed before commencement of the proposed project.
- c) **Project management:** Community members raised a concern on who will manage the

project during implementation and once it is complete. After deliberations it was agreed that a project management committee be established with representatives from the beneficiary community to oversee the implementation of the project. The concerned officers told them that the management committee would collaborate with the community and relevant stakeholders to make sure that activities at the borehole are well done and maintenance is done.

- d) Water Use Conflict:** Community members raised a concern on how the water shall be utilized by community members without conflict. After deliberations it was agreed that once the drilling is complete a water use subcommittee be established to manage use of water. There were also suggestions of water meter and user fee as well as establishment of a grievance resolution committee to handle any conflict that may arise from community members
- e) Health and Safety Issues:** Communities wanted confirmation that their safety will be always considered during project operation. It was agreed that the drilling works shall be confined within the borehole and that laborers will be equipped with personal protective equipment (PPE) for the work. The experts further committed to include comprehensive mitigation measures in the ESMMP section
- f) Water quality and safety:** Community members were concerned about the water quality as a result of the drilling process. They were assured that from the hydrological survey report the water from the borehole shall be of good quality and further that periodic tests shall be carried out to ascertain the quality and safety.
- g) Spread of livestock diseases at the community cattle watering trough:** It was agreed that sensitization should be conducted on control of livestock diseases as well as regular surveillance as well as routine vaccination against the common livestock diseases.

## CHAPTER FIVE

### ANTICIPATED IMPACTS AND MITIGATION MEASURES

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#### **5.1 Introduction**

This chapter outlines the potential negative and positive impacts that maybe associated with the project. The impacts are related to activities to be carried out during the life cycle of the project: that is, preparation, design, construction, operation, and decommissioning phase.

#### **5.2 Environmental and Social impacts during Construction Phase**

##### **5.2.1 Positive Impacts**

###### **a) Creation of employment and business opportunities**

The design phase of the sub project will create employment and business opportunities for various professionals/consultants involved in the planning stage of the project. They include sub project managers, engineers, surveyors, environmentalists, among others. They may be employed directly in the project or be consultants whose services will be procured. At the local level there will be several employment opportunities, for example, during the sub project construction phase. The employment opportunities will be either directly in the sub project or indirectly through associated businesses (supply food stuffs in the camp), including the generation of employment for skilled and unskilled labour in the short to medium term. Setting up the drilling pad will require extra hands; therefore, employment opportunities will be available for the locals to carry out manual work.

###### **b) Infrastructural development**

The roads leading to the site will be modified to ease access of transportation of civil engineering staffs, drilling rig and other construction materials to the site. The roads to the site will also serve other residents who are set to benefit from this infrastructure development brought by the sub project. This will enhance the ease of access to the sub project site especially to people neighboring the sub project.

###### **c) Improved economic growth**

The resources and raw materials needed for the success of the sub project such as fuel/oil, food, water, among other; will attract taxes including VAT which will be payable to the government hence increasing government revenue while the cost of these raw materials will be payable directly to the producers.

The locals may also indirectly benefit by providing goods and services through associated businesses to the camp.

##### **5.2.2 Negative Environmental and Social impacts during Construction Phase**

###### **a) Vegetation Loss/Biodiversity Flora**

Due to varying soil types, Baran Baate Fayo is sparsely populated with scrub bushes and indigenous trees, and scrubs. Grassy open plains dominate the area of Baran Baate Fayo village. The borehole site is largely covered by shrub and bush. Vegetation will be lost or altered to pave way for construction activities for access roads and the borehole.

**Mitigation measures:**

- Clearing vegetation only in construction areas and demarcating areas where no clearing will happen.
- Sensitizing construction workers on the importance of flora and fauna in the areas, including the appropriate regulatory requirements.
- Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re-establishment of plant cover is desirable to prevent erosion if it was necessary.
- Implement a tree planting program within the borehole to offset loss of trees due to the construction phase.

**a) Disturbance of Soil**

Activities such as movement of truck transporting drilling materials to site and the construction of the borehole will lead to disturbance of the topsoil which will cause soil erosion. Due to the heavy nature of drilling equipment's to be transported by road the roads will be upgraded; and where necessary bridges and drainage and culverts will be strengthened and reinstated. These activities will lead to the disturbance of topsoil leading to an increase in dust levels.

**Mitigation measures:**

- Work areas should be clearly defined and demarcated, where necessary to avoid unnecessary disturbance on areas outside the development footprint.
- Providing soil erosion control structures on the steeper areas of the site & controlling activities during the rainy season.
- Manage storm and flood flash water effectively to avoid movement of loss soils.
- Vehicles coming into the site must use designated roads.
- Sprinkling water periodically when operations are under way to prevent raising of dusts.
- Impose and enforce speed limits and provide driving guidelines for vehicle operators; for example, 40 Km/hr.

**b) Fauna Disturbance**

Short-term disturbance of local habitats from base camp lights, drilling noise, vehicular traffic and other activities will lead to changes in – animal habitat, food supplies, migration routes of birds or changes in herbivore grazing patterns (livestock) etc. From the socio-economic survey conducted, Consultant majority of the respondents practice livestock keeping. Livestock grazing is practiced in and around the area. Depending on the location of the proposed project site this will affect grazing patterns but at a minor level. Other wild species such as dik dik, wild dogs will be affected by the light and noise pollution from the proposed projects.

**Mitigation Measures**

- Educate workforce on environmental concerns and implement policies to protect biodiversity.
- Schedule operations during least sensitive periods such as species migration periods, nesting and mating seasons. Keep the workforce within defined boundary and to the agreed access routes for vehicles.

- Implement a tree planting program within the borehole to offset loss of trees due to the construction phase.
- Ensure protection of important resources by establishing protective buffers to exclude unintentional disturbance.

### **c) Noise Pollution and Vibrations**

During the construction phase of the proposed project, there will be an increase in the noise levels within the area due to machinery/ equipment including generators, vehicular traffic, and other construction activities. Elevated noise levels within the site will affect project workers and the residents, passers-by, and other persons within the vicinity of the project site. The estimated average level of noise generated during the construction phase is about 65 dBA covering 500 feet from the source. Machinery should be maintained regularly to reduce noise resulting from friction during operations.

#### **Mitigation Measures**

- Using modern machinery equipment with noise suppressing technologies to reduce the noise-rating as much as possible.
- Natural gas or diesel engines can be replaced with electric motors
- Locate all stationary construction equipment (i.e., compressors and generators and exploratory wells) as far as practicable from nearby residences and other sensitive receptors.
- Vehicle movement should be limited to daytime hours, except in emergency cases, to reduce generation of noise.

### **d) Waste Generation**

The main sources of waste generated during the drilling campaign will be the drilling mud and cuttings; drilling rig waste; and domestic waste from the people living in the borehole. Domestic waste: containers, packaging, drinking water bottles, and miscellaneous waste form equipment. Drilling waste: drilling mud, drilling cuttings, plastics, and scrap metal. Typically, the solid medium used in most drilling fluids is barite (barium sulphate) for weight, with bentonite clays as a thickener. Drilling fluids also contain several chemicals that are added depending on the down hole formation conditions. These cuttings contain a proportion of residual drilling fluid. These spent fluids are then contained for reuse or disposal (NADFs are typically reused). Produced water: -the produced water will contain a complex mixture of inorganic (dissolved salts, trace metals, suspended particles) and organic (dispersed and dissolved hydrocarbons, organic acids) compounds, and in many cases, residual chemical additives (e.g., scale and corrosion inhibitors) that are added into the hydrocarbon production process.

#### **Mitigation Measures**

- Storage in dedicated storage tanks or lined pits prior to treatment, recycling, and / or final treatment and disposal.
- Recycling of spent fluids back to the vendors for treatment and re-use or sprayed on the unpaved roads for dust control

- Adequate well management during well completion activities to minimize water production.
- Recompletion of high-water producing wells to minimize water production.
- Use of downhole fluid separation techniques, where possible, and water shutoff techniques, when technically and economically feasible.
- To minimize environmental hazards related to residual chemical additives in the produced water stream where surface disposal methods is adopted, production chemicals will be selected carefully by considering their volume, toxicity, bioavailability, and bioaccumulation potential.
- Before disposal of the water on surface water or land, the produced water will be treated to achieve the expected standards.

**e) Oil and chemical spills**

This includes spills from domestic products used in cleaning; fuel stored on site used in vehicle, machinery used on site such as the drilling rig, generator. This will pose risk of soil pollution.

**Mitigation measures**

- Requirements of oil spill and emergency plans must be met before operations commence.
- Apply spill prevention practices and response actions in refueling and vehicle-use areas to minimize accidental contamination of habitats and soil.
- Address spills immediately per the appropriate spill management plan, and initiate soil clean-up and soil removal if needed.
- Containerize spent oils and lubes for appropriate disposal or recycling. Containerize contaminated soils that cannot be treated in situ and remove off-site for treatment.
- Conducting maintenance and repair activities in well-established zones having paved surfaces to collect the oil and prevent soil pollution.
- The borehole should be cordoned off to protect the general public from dangers associated with operations work.
- Providing firefighting equipment and in easily accessible areas as well as ensuring site personnel are well trained to use them as well as maintaining them regularly.

**f) Introduction of Invasive species**

During movement/transportation of drilling equipment and materials to the project site will create the risk of introducing invasive species from one area to another. For example, invasive species are introduced into new areas through foods, stowaway's that attach themselves to shipping ballast tanks, shipping crates and passengers.

**Mitigation measures**

- Develop a plan for control of noxious weeds and invasive plants that could occur because of new surface disturbance activities at the site. The plan should address monitoring, weed identification, the way weeds spread, and methods for treating infestations.

**g) Air Pollution**

Air pollution because of fumes and gases from vehicles and machinery such as generators or



fossil fuel using machines, will generate emission such as oxides of Carbon, Sulphur, and Nitrogen, which will pose risks to environmental and human health. Such emissions will contribute to both regulated pollutants and greenhouse gases in the project site. Raised dust because of anthropogenic movements such vehicle movements, throughout the drilling program will also contribute to air pollution.

#### **Mitigation measure**

- Use of low Sulphur fossil fuel
- Regular maintenance and services of machines and engines.
- Educate and raise awareness to construction workers on emission reduction and emissions that are likely to occur.
- Sensitize truck drivers to avoid unnecessary racing of machinery engines at loading, offloading sites, and parking areas and encourage them to keep the vehicle engines off at these points.

#### **h) Traffic Impacts/Traffic Congestion**

Activities related to construction works will undoubtedly induce uncharacteristic levels of additional vehicular traffic along access roads. There will be approximately 5 – 10 trucks transporting material to the project site. The trucks will carry approximately 150-210 truckloads of equipment's: carrying loads weighing approximately 24-80 tons. This is significantly more compared to the current modes of transport. Others such as: police van, ambulance and power contractor's vehicles found stationed at certain areas. Boda Boda transporting passengers from one village to another. Donkeys/camels transporting goods within villages. Though the vehicle movements are not that frequent. Most common transport means in the area are land cruisers and boda bodas. The drilling rig and ancillary drilling equipment will be transported by trucks and lorries from Isiolo to Baran Baate Fayo village in Merti sub-County by road.

#### **Mitigation Measures**

- Issue notices/advisories of pending traffic inconveniences and solicit tolerance by local communities before the commencement of construction works.
- Flagmen/ road marshals should be employed to control traffic and assist mobilization vehicles as they enter and exit the project site. Ensuring that all drivers for the project comply to speed regulations, i.e., 40 kmph.
- Ensure all vehicles and machinery used for the project are in good working conditions both legally and are commensurate to the intended use.

#### **i) Health Risk from fumes and dust**

The health effects of exposure to fumes and dust generated from construction activities of the borehole, vehicle movement transporting drill rig to site can include irritation of the upper respiratory tract (nose and throat), tightness in the chest, wheezing, lung damage, bronchitis, sight problems.

#### **Mitigation measures**

- Provide workers with appropriate PPE such as dust masks.

#### **j) Occupational Health and Safety (OHS)**

Below are some of the hazards that will lead to health and safety risk if proper HSE procedures are not followed: Working in confined spaces; Injuries caused by moving objects; Working at heights; Fire risks Workers will also be exposed to biota in the area that can pose health and safety risks such as snakes, scorpions, mosquitos, among others.

#### **Mitigation measures:**

- Provide workers with appropriate PPE such as goggles, gloves, hard hats, overalls, earmuffs, among others.
- Employing an Occupational safety and health (OSH) plan that will outline all OSH risks and provide a strategy for their management.
- Maintain on site a record of incidents and accidents. Provision of warning signs warning of construction activity and heavy machinery turning.
- Providing firefighting equipment and in easily accessible areas as well as ensuring site personnel are well trained to use them as well as maintaining them regularly.
- Raising awareness, educating workers on risks and use of equipment; animal species and habitats found in the area and their risks; first aid training.

#### **k) Risk of Spread of COVID-19 by workers on site**

There is of workers and the community contracting COVID-19 disease because of the interaction which will take place during construction of the various components of the project.

#### **Mitigation Measures**

- Sensitizing the community on COVID-19 prevention measures
- Mandatory wearing of face mask by all workers on site
- Avoid concentrating of more than 15 persons or workers at one location and where more than one person are gathered, maintain social distancing of at least 2 meters.
- Conducting rapid Covid-19 screening which may include temperature check and other vital signs for persons visiting the site
- Provide hand washing and sanitizing facilities during at the entrance of the site

#### **l) Sexual Abuse and Exploitation of local community members by the Workers**

Because of the influx of workers to the site during borehole drilling there is a risk of sexual abuse and exploitation by construction workers. Appropriate measure should be put in place to prevent this from happening.

#### **Mitigation Measures**

- Sensitize both the local community and the workers.
- Contractor to ensure all workers / employees sign a code of conduct form;
- Identify hospitals/facilities that can help victims of SEA/Sexual harassment.

- Report such cases to the right offices.

### **5.3 Environmental and social Impact during operation phases**

#### **a) Water quality concerns**

Poor water quality could be of great concern to human and animal health. The water that seeps into the ground may be contaminated to some degree and eventually affects the quality of the ground water including the borehole water. Percolation of water from sanitary systems such as soak pits, pit latrines and refuse disposal sites poses a serious threat to the quality of groundwater. An open borehole provides an avenue where vertical migration of contaminants may occur from contaminated fracture zones to clean fractures. Protection of groundwater quality depends on the well design and the methods and materials used to construct the well. Some of the deficiencies in well construction are insufficient or substandard well casing; inadequate seal between the well casing and the borehole; poor welding of casing joints; lack of sanitary protection at wellhead and use of well pits.

#### **Mitigation measures**

- Water quality will be determined before commissioning the borehole for use and this will be followed by periodic water quality testing at WRA laboratories.
- Groundwater quality must be safeguarded by a correct territorial planning and protection of surface waters since these are strictly linked to ground water resources.
- Screens will be installed to prevent entry of contaminants.

#### **b) Excessive water extraction**

Excessive abstraction of water from a borehole in such a way that is beyond the permitted limit results in depletion of ground water resource.

#### **Mitigation Measures**

- For the purposes of monitoring of ground water abstraction and the static water level measurements, a water meter and an airline respectively must be installed on completion of the drilling.
- The proponent will adhere to the regulations set by WRA on the amounts to be extracted from a borehole and the number of pumping hours.

#### **c) Ground water pollution**

Groundwater can be polluted by poisonous or pathogenic substances or by other detrimental changes in its quality especially through: Poisonous substances such as compounds of lead, cadmium, chromium cyanide, fluoride and/or mercury; Chemicals for plant protection, herbicides, pesticides and plant growth regulators; Sewerage, refuse or garbage; Detergents, fats and petroleum products; Colouring agents such as dyes, paints and aromatic substances; and Metabolic and decomposition products of microorganisms and fertilizers Acids, alkalis and salts.

#### **Mitigation Measures**

- Waste water from water collection areas to be handled by designing and construction of channels to direct waste water into drainage lines and a soak pit that is found at the site.

These must be designed to prevent ponding and flooding by keeping them open and ensuring that no obstructions are found in them.

- Ensure that all potential sources of pollution are eliminated for example by ensuring that the sewage disposal system are well protected and does not leak even during exhaustion.
- To prevent potential migration and cross-contamination and still maintain the preliminary borehole, a plug will be installed in the borehole. Casing will also be done using either steel or thermoplastic materials.
- A borehole should certainly be located as far away as possible from all the sources of dangers such as hospitals, sanatoriums, hotel refuse disposal sites and cemeteries; sewage systems, septic tanks, soak pits, injection of sewerage or other dissolved and un-dissolved substances into the ground surface water;

#### **d) Risk of spread of livestock diseases**

Since livestock will be drinking water from the community cattle trough, there is a higher risk of spread of livestock diseases

#### **Mitigation Measures**

- Sensitizing the community on prevention of livestock diseases
- Conducting routine vaccination on all livestock
- Regular surveillance on the possible outbreak of livestock diseases
- Construction of several livestock drinking points

#### **e) Water Use conflict**

Since the borehole is a community shared resource conflict on who and how to use the water is likely to arise. Proper measure must be put in place to mitigate this risk.

#### **Mitigation measures**

- Sensitise all the community on the use of the facility after completion
- Establish a water use committee to manage the use of water from the borehole by community members
- Maximize on other sources of water such as rain water harvesting and storage in larger tanks so as to reduce overdependence on the borehole as a source of water.
- Construct bigger storage facilities to be able to cope with potential stresses in supply.
- Fix and use self-closing taps with shorter hand-wash cycle.
- Water meters to be installed for monitoring water use at the site
- Establish a grievance redress mechanism to address any issues arising from water use

#### **f) Occupational Health Hazards**

During operation occupation health hazards may include fire outbreaks, falls from slippery flow and injurie from equipment / machine handling.

#### **Mitigation Measures**

- Ensure workers are provided with personal protective equipment and first aid kit
- Ensure all equipment are inspected before use for appropriate safeguards and that the machine operators are trained on machine safety

- Ensure the working hours are controlled and that employees are not allowed to extend the working hours beyond an acceptable limit for purposes of gaining extra pay
- Ensure firefighting equipment are in place and in proper working condition at all times
- Ensure appropriate floor surface in the working areas of the premise
- Ensure proper sanitation and hygiene in the premise

**g) Risk of Spread of COVID-19 at the premise**

During operation phase there will be a lot of interaction between the employees and the farmers delivering milk as well as the transporters and buyers of processed milk. This poses risk to the persons involved hence appropriate measure need to be put in place to mitigate the risk.

**Mitigation Measures**

- The project managers shall develop SOPs for managing the spread of Covid-19 during project operations
- Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including employees and visitors;
- Avoid concentrating of more than 15 persons or workers at one location. Where more than one person are 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
- Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation sections and meetings and ensure they are used
- Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of work stations, surfaces, door knobs, hand rails.

**h) Gender Based Violence at Community level**

There is likely to be increased cases of GBV arising from sharing of the proceeds from the increased returns from milk sales at household level

**Mitigation Measures**

- Sensitizing the community against GBV
- Have deterrent/punitive measures for any offenders reported.

**5.4 Anticipated negative Impacts during decommissioning phase**

Decommissioning aims at restoring the project site back to its original state or to a stable environmental condition for future use. However, some of the decommissioning activities to be carried out onsite may result in negative impacts to the bio and socio-economic environment.

**a) Generation of Waste**

The waste generated will contain materials that were used in construction of the borehole. These include concrete, metal, wood and waste in form of debris and pieces of steel.

**Mitigation measures**

- The contractor should prepare a site waste management plan prior to commencement of demolition activities.

- Some of the solid waste produced can be recycled for use in future projects or sold off as scrap.
- Identifying all sources of wastes, and ensuring wastes are handled by licensed NEMA waste handler

**b) Noise and vibration**

Noise will be generated from bringing down the drilling rig, auxiliary equipment and camp; vehicle movement transporting the rig and auxiliary equipment from the site.

**Mitigation measures**

- Selecting equipment with lower sound power levels
- Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas
- Developing mechanism to record and respond to complaints
- All workers exposed to noise should have appropriate PPEs

**c) Occupational Health and safety**

These are related to the presence of heavy machinery and increased vehicular traffic which increases the likelihood of accidents occurring.

**Mitigation measures**

- Provision and Use of Personal Protective Equipment (PPE) e.g., dust masks, overalls, gloves,
- Raising awareness among the workers on the likely risk and hazards and ensure they have adequate training on the use of machines and equipment.

## **CHAPTER SIX**

### **ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN**

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#### **6.1 Introduction**

In this part of the report, environmental and social management and monitoring control measures are articulated. The control measures seek to avoid, minimize, and manage all the environmental, social, health, and community related risks and negative impacts identified in the study. The chapter also covers monitoring indicators that the contactor and its contractors will use in evaluating the performance of the control systems. All these measures lie within the Kenyan legislations and international best practices as well as the contactor Internal Environmental, Social and Health (ESH) management systems.

This ESMMP set a benchmark for successful implementation of the project as well as respect and conservation of both the social and environmental set up within which the project will operate. Some aspects of the ESMMP recommend training and re-training of the responsible persons to ensure that they have the capacity to implement the recommendations on the control mechanisms. This implies that training and capacity building forms a key pillar in the implementation of the ESMMP.

## 6.2 Environmental and Social Management and Monitoring Plan

### 6.2.1 Environmental and Social Management and Monitoring Plan during the Construction Phase

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timelines	Estimated Cost (KES)
Vegetation Loss/Biodiversity Flora	<ul style="list-style-type: none"> <li>○ Clearing vegetation only in construction areas and demarcating areas where no clearing will happen.</li> <li>○ Sensitizing construction workers on the importance of flora and fauna in the areas, including the appropriate regulatory requirements.</li> <li>○ Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re-establishment of plant cover is desirable to prevent erosion if it was necessary.</li> <li>○ Implement a tree planting program within the borehole to offset loss of trees due to the construction phase.</li> </ul>	<p>No harm to Species and Habitat</p> <p>Acres of landscaped areas or vegetated areas</p> <p>No of trees planted</p> <p>No of workers sensitized on the importance of flora and fauna</p>	Contractor Supervising Engineer	<p>Tree planting Plan/program</p> <p>Revegetation Report</p> <p>Attendance list</p> <p>Photos</p>	6 Months	30,000
Soil Disturbance	<ul style="list-style-type: none"> <li>○ Work areas should be clearly defined and demarcated, where necessary to avoid unnecessary disturbance on areas outside the development footprint.</li> <li>○ Providing soil erosion control structures on the steeper areas of the site &amp; controlling activities during the rainy season.</li> <li>○ Manage storm and flood flash water effectively to avoid movement of loss soils.</li> <li>○ Vehicles coming into the site must use</li> </ul>	<p>No of soil erosion structures.</p> <p>Amount of vegetated/ landscaped areas.</p> <p>Demarcation of land for operation activities.</p>	Contractor Supervising Engineer	<p>Site Report</p> <p>Photos</p>	6 Months	40,000



<b>Environmental and social Impact</b>	<b>Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Responsibility</b>	<b>Means of Verification</b>	<b>Timelines</b>	<b>Estimated Cost (KES)</b>
	<p>designated roads.</p> <ul style="list-style-type: none"> <li>○ Sprinkling water periodically when operations are under way to prevent raising of dusts.</li> <li>○ Impose and enforce speed limits and provide driving guidelines for vehicle operators; for example, 40 Km/hr</li> </ul>					
Fauna Disturbance	<ul style="list-style-type: none"> <li>○ Educate workforce on environmental concerns and implement policies to protect biodiversity.</li> <li>○ Schedule operations during least sensitive periods such as species migration periods, nesting and mating seasons. Keep the workforce within defined boundary and to the agreed access routes for vehicles.</li> <li>○ Implement a tree planting program within the borehole to offset loss of trees due to the construction phase.</li> <li>○ Ensure protection of important resources by establishing protective buffers to exclude unintentional disturbance.</li> </ul>	<p>Complaints from community members.</p> <p>Record of species found within 500 m of the project site.</p> <p>Timing of the activities</p> <p>No of workers educated on environmental concern</p>	Contractor Supervising Engineer	<p>Operation schedule</p> <p>Site Plan</p> <p>Site Report</p> <p>Photos</p>	6 Months	
Noise and Vibration	<ul style="list-style-type: none"> <li>○ Using modern machinery equipment with noise suppressing technologies to reduce the noise-rating as much as possible.</li> <li>○ Natural gas or diesel engines can be replaced with electric motors</li> <li>○ Locate all stationary construction equipment (i.e., compressors and</li> </ul>	<p>No of equipment with noise suppressing technologies</p> <p>No of operation hours per day</p> <p>No of stationery machine</p>	Contractor Supervising Engineer	Equipment inventory and maintenance schedule		

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timelines	Estimated Cost (KES)
	<p>generators and exploratory wells) as far as practicable from nearby residences and other sensitive receptors.</p> <ul style="list-style-type: none"> <li>○ Vehicle movement should be limited to daytime hours, except in emergency cases, to reduce generation of noise.</li> </ul>					
Waste Generation	<ul style="list-style-type: none"> <li>○ Storage in dedicated storage tanks or lined pits prior to treatment, recycling, and / or final treatment and disposal.</li> <li>○ Recycling of spent fluids back to the vendors for treatment and re-use or sprayed on the unpaved roads for dust control</li> <li>○ Adequate well management during well completion activities to minimize water production.</li> <li>○ Recompletion of high-water producing wells to minimize water production.</li> <li>○ Use of downhole fluid separation techniques, where possible, and water shutoff techniques, when technically and economically feasible.</li> <li>○ To minimize environmental hazards related to residual chemical additives in the produced water stream where surface disposal methods is adopted, production chemicals will be selected carefully by considering their volume, toxicity, bioavailability, and bioaccumulation</li> </ul>	<p>Amount of waste generated. Frequency of waste collection, segregation, transportation, and disposal.</p>	Contractor Supervising Engineer	Waste Management Log Book indicating: Type of waste weight and Mode of disposal and frequency	6 Months	50,000

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timelines	Estimated Cost (KES)
	<p>potential.</p> <ul style="list-style-type: none"> <li>○ Before disposal of the water on surface water or land, the produced water will be treated to achieve the expected standards.</li> </ul>					
Oil and chemical spills	<ul style="list-style-type: none"> <li>○ Requirements of oil spill and emergency plans must be met before operations commence.</li> <li>○ Apply spill prevention practices and response actions in refueling and vehicle-use areas to minimize accidental contamination of habitats and soil.</li> <li>○ Address spills immediately per the appropriate spill management plan, and initiate soil clean-up and soil removal if needed.</li> <li>○ Containerize spent oils and lubes for appropriate disposal or recycling. Containerize contaminated soils that cannot be treated in situ and remove off-site for treatment.</li> <li>○ Conducting maintenance and repair activities in well-established zones having paved surfaces to collect the oil and prevent soil pollution.</li> <li>○ The borehole should be cordoned off to protect the general public from dangers associated with operations work.</li> <li>○ Providing firefighting equipment and in</li> </ul>	<p>Availability of a response plan.</p> <p>Availability of reserve containers for collecting emergency spills.</p>	Contractor Supervising Engineer	Incidence report Site Report	6 Months	20,000

<b>Environmental and social Impact</b>	<b>Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Responsibility</b>	<b>Means of Verification</b>	<b>Timelines</b>	<b>Estimated Cost (KES)</b>
	easily accessible areas as well as ensuring site personnel are well trained to use them as well as maintaining them regularly.					
Introduction of Invasive species	<ul style="list-style-type: none"> <li>○ Develop a plan for control of noxious weeds and invasive plants that could occur because of new surface disturbance activities at the site. The plan should address monitoring, weed identification, the way weeds spread, and methods for treating infestations.</li> </ul>	No. of invasive species found in the area.	CPCU/Contractor	C-ESMP adopted	6 Months	5,000
Air pollution	<ul style="list-style-type: none"> <li>○ Use of low Sulphur fossil fuel</li> <li>○ Regular maintenance and services of machines and engines.</li> <li>○ Educate and raise awareness to construction workers on emission reduction</li> <li>○ Sensitize truck drivers to avoid unnecessary racing of machinery engines at loading, offloading sites, and parking areas and encourage them to keep the vehicle engines off at these points.</li> </ul>	<p>No of workers sensitized on emission reduction</p> <p>No of times vehicle/trucks serviced</p>	Contractor Supervising Engineer	Fueling Records Attendance list Photos Vehicle maintenance records	6 Months	5,000
Traffic Impacts and Traffic congestion	<ul style="list-style-type: none"> <li>○ Issue notices/advisories of pending traffic inconveniences and solicit tolerance by local communities before the commencement of construction works.</li> <li>○ Flagmen/ road marshals should be employed to control traffic and assist mobilization vehicles as they enter and exit the project site. Ensuring that all drivers for</li> </ul>	Issue notices / advisories of	Contractor Supervising Engineer	No accident / incident reported.	6 Months	40,000

<b>Environmental and social Impact</b>	<b>Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Responsibility</b>	<b>Means of Verification</b>	<b>Timelines</b>	<b>Estimated Cost (KES)</b>
	<p>the project comply to speed regulations, i.e., 40 kmph.</p> <ul style="list-style-type: none"> <li>○ Ensure all vehicles and machinery used for the project are in good working conditions both legally and are commensurate to the intended use.</li> </ul>					
Health Risk from fumes and dust	<ul style="list-style-type: none"> <li>○ Issue notices/advisories of pending traffic inconveniences and solicit tolerance by local communities before the commencement of construction works.</li> <li>○ Flagmen/ road marshals should be employed to control traffic and assist mobilization vehicles as they enter and exit the project site. Ensuring that all drivers for the project comply to speed regulations, i.e., 40 kmph.</li> <li>○ Ensure all vehicles and machinery used for the project are in good working conditions both legally and are commensurate to the intended use.</li> </ul>				6 Months	
Occupational Safety and Health (OSH)	<ul style="list-style-type: none"> <li>○ Provide workers with appropriate PPE such as goggles, gloves, hard hats, overalls, earmuffs, among others.</li> <li>○ Maintain on site a record of incidents and accidents. Provision of warning signs warning of construction activity and heavy machinery turning.</li> <li>○ Raising awareness, educating workers on</li> </ul>	<p>No. of Incidences reported</p> <p>No of workers having appropriate PPEs</p> <p>No of workers sensitized on OHS</p>	Contractor Supervising Engineer	Incidence report Attendance List Photos	6 Months	40,000

<b>Environmental and social Impact</b>	<b>Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Responsibility</b>	<b>Means of Verification</b>	<b>Timelines</b>	<b>Estimated Cost (KES)</b>
	risks and use of equipment; animal species and habitats found in the area and their risks; first aid training.					
Risk of Spread of COVID-19 by workers on site	<ul style="list-style-type: none"> <li>○ Sensitizing the community on COVID-19 prevention measures</li> <li>○ Mandatory wearing of face mask by all workers on site</li> <li>○ Avoid concentrating of more than 15 persons or workers at one location and where more than one person are gathered, maintain social distancing of at least 2 meters.</li> <li>○ Conducting rapid Covid-19 screening which may include temperature check and other vital signs for persons visiting the site</li> <li>○ Provide hand washing and sanitizing facilities during at the entrance of the site</li> </ul>	<p>No of people sensitized on Covid-19</p> <p>No of handwashing facilities on site</p> <p>No of workers wearing masks on site</p>	Contractor Supervising Engineer MOH	Sensitization posters Photos Daily monitor report Site Screening Register	6 Months	50,000
Sexual Abuse and Exploitation of local community members by the Workers	<ul style="list-style-type: none"> <li>○ Sensitize both the local community and the workers.</li> <li>○ Contractor to ensure all workers / employees sign a code of conduct form;</li> <li>○ Identify hospitals/facilities that can help victims of SEA/Sexual harassment.</li> <li>○ Report such cases to the right offices.</li> </ul>	<p>-no. of cases reported.</p> <p>-No. of workers who signed a code of conduct form.</p>	Contractor Engineer Gender Officer	No. of cases reported and resolved.	6 Months	30,000

### 6.2.2 Environmental and Social Management and Monitoring Plan during the Operations and Maintenance Phase

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timelines	Estimated Cost (KES)
Water quality concerns	<ul style="list-style-type: none"> <li>○ Water quality will be determined before commissioning the borehole for use and this will be followed by periodic water quality testing at WRA laboratories.</li> <li>○ Groundwater quality must be safeguarded by a correct territorial planning and protection of surface waters since these are strictly linked to ground water resources.</li> <li>○ Screens will be installed to prevent entry of contaminants.</li> </ul>	<ul style="list-style-type: none"> <li>No of tests conducted</li> <li>No of screens installed</li> <li>No of incidences reported</li> </ul>	Project management Committee County Government	Test report Monthly Report Incidence report	O&M	
Excessive water extraction	<ul style="list-style-type: none"> <li>○ For the purposes of monitoring of ground water abstraction and the static water level measurements, a water meter and an airline respectively must be installed on completion of the drilling.</li> <li>○ The proponent will adhere to the regulations set by WRA on the amounts to be extracted from a borehole and the number of pumping hours.</li> </ul>	<ul style="list-style-type: none"> <li>No of static water level, an airline and water meter installed</li> <li>Level of adherence to WRA regulation son extraction</li> </ul>	Project management Committee County Government	Water extraction report	O&M	
Ground water pollution	<ul style="list-style-type: none"> <li>○ Waste water from water collection areas to be handled by designing and construction of channels to direct waste water into drainage lines and a soak pit that is found at the site.</li> <li>○ Ensure that all potential sources of pollution are eliminated for example by</li> </ul>	<ul style="list-style-type: none"> <li>Methods used to handle waste put in place</li> <li>Distance from other sources of contaminants</li> <li>Level of casting done</li> </ul>	Project management Committee County Government	Waste management plan Site Plan Design Reports Monthly reports	O&M	

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timelines	Estimated Cost (KES)
	<p>ensuring that the sewage disposal system are well protected and does not leak even during exhaustion.</p> <ul style="list-style-type: none"> <li>○ To prevent potential migration and cross-contamination and still maintain the preliminary borehole, a plug will be installed in the borehole. Casing will also be done using either steel or thermoplastic materials.</li> <li>○ A borehole should certainly be located as far away as possible from all the sources of dangers</li> </ul>	<p>during borehole construction</p>				
Water Use conflicts	<ul style="list-style-type: none"> <li>○ Sensitise all the community on the use of the facility after completion</li> <li>○ Establish a water use committee to manage the use of water from the borehole by community members</li> <li>○ Maximize on other sources of water such as rain water harvesting and storage in larger tanks so as to reduce overdependence on the borehole as a source of water.</li> <li>○ Construct bigger storage facilities to be able to cope with potential stresses in supply.</li> <li>○ Fix and use self-closing taps with shorter hand-wash cycle.</li> <li>○ Water meters to be installed for</li> </ul>	<p>No of people sensitized on use of the borehole</p> <p>Water use committee established</p> <p>No of self-closing taps installed</p> <p>No of water meters installed</p> <p>No of incidences of conflict reported</p>	<p>Project management Committee</p> <p>Water Use Sub Committee</p> <p>County Government</p>	<p>Attendance list</p> <p>Photos</p> <p>Monthly Report</p> <p>Conflict Incidence Register</p>	O&M	



<b>Environmental and social Impact</b>	<b>Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Responsibility</b>	<b>Means of Verification</b>	<b>Timelines</b>	<b>Estimated Cost (KES)</b>
	<ul style="list-style-type: none"> <li>○ monitoring water use at the site</li> <li>○ Establish a grievance redress mechanism to address any issues arising from water use</li> </ul>					
Risk of spread of livestock	<ul style="list-style-type: none"> <li>○ Sensitizing the community on prevention of livestock diseases</li> <li>○ Conducting routine vaccination on all livestock</li> <li>○ Regular surveillance on the possible outbreak of livestock diseases</li> <li>○ Construction of several livestock drinking points</li> </ul>	<ul style="list-style-type: none"> <li>No of community members sensitized on prevention of livestock diseases</li> <li>No of livestock vaccinated</li> <li>No of surveillance conducted</li> <li>No of livestock drinking points constructed</li> </ul>	Project management committee Water Use sub committee	Sensitization Report Vaccination schedules and report Surveillance Report	O&M	50,000
Occupation health hazards	<ul style="list-style-type: none"> <li>○ Ensure community members are sensitized on use of the borehole</li> <li>○ All workers on site should be provided with personal protective equipment and first aid kit</li> <li>○ Ensure all workers operating the borehole are trained</li> </ul>	<ul style="list-style-type: none"> <li>No of workers with PPEs</li> <li>No of incidences of accidents report</li> <li>No of workers trained on borehole operations</li> </ul>	Project management committee	Machine inspection schedule	O&M	40,000
Gender based violence at community level	<ul style="list-style-type: none"> <li>○ Sensitizing the community against GBV</li> <li>○ Have deterrent/punitive measures for any offenders reported.</li> </ul>	<ul style="list-style-type: none"> <li>No of community members sensitized on GBV</li> </ul>	Project management Gender Officer	Sensitization report	O&M	20,000
Risk of spread of covid-19	<ul style="list-style-type: none"> <li>○ The project managers shall develop SOPs for managing the spread of Covid-19 during project operations</li> </ul>	<ul style="list-style-type: none"> <li>No of people sensitized on Covid-19</li> <li>No of handwashing</li> </ul>	Project management MOH	Sensitization posters Photos	O&M	50,000

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timelines	Estimated Cost (KES)
	<ul style="list-style-type: none"> <li>○ Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including employees and visitors;</li> <li>○ Avoid concentrating of more than 15 persons or workers at one location. Where more than one person are 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</li> <li>○ Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation sections and meetings and ensure they are used</li> <li>○ Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of work stations, surfaces, door knobs, hand rails.</li> </ul>	<p>facilities on site</p> <p>No of workers wearing masks on site</p>		<p>Daily monitor report</p> <p>Site Screening Register</p>		

### 6.2.3 Environmental and Social Management and Monitoring Plan during the Decommissioning Phase

Environmental and social Impact	Mitigation Measures	Monitoring Indicator	Responsibility	Means of Verification	Timing/Frequency	Estimated Cost (KES)
Generation of waste	<ul style="list-style-type: none"> <li>○ The contractor should prepare a site waste management plan prior to commencement of demolition activities.</li> <li>○ Some of the solid waste produced can be recycled for use in future projects or sold off as scrap.</li> <li>○ Identifying all sources of wastes, and ensuring wastes are handled by licensed NEMA waste handler</li> </ul>	<p>Volume of waste generated</p> <p>Level of waste recycling</p>	Contractor New User	Waste management plan	3 Months	n/a
Noise and Vibration	<ul style="list-style-type: none"> <li>○ Selecting equipment with lower sound power levels</li> <li>○ Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas</li> <li>○ Developing mechanism to record and respond to complaints</li> <li>○ All workers exposed to noise should have appropriate PPEs</li> </ul>	<p>No of operating hours during the day</p> <p>No of complaints reported</p> <p>No of workers with appropriate PPEs</p>	Contractor New User	Complaint register Site Report	3 Months	n/a
Occupation health and safety	<ul style="list-style-type: none"> <li>○ Provision and Use of Personal Protective Equipment (PPE) e.g., dust masks, overalls, gloves,</li> <li>○ Raising awareness among the workers on the likely risk and hazards and ensure they have adequate training on the use of machines and equipment.</li> </ul>	<p>No of workers provided with PPEs</p> <p>No of workers aware of the risks and hazards</p> <p>No of workers trained on use of machines</p> <p>No of incidences reported</p>	Contractor New User	Site Report Incidence report	3 Months	n/a



## **CHAPTER SEVEN**

### **CONCLUSION AND RECOMMENDATION**

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#### **7.1 Conclusion**

Based on the assessment several measures has been proposed to reduce negative impacts including amelioration of social negative impacts, noise abatement, waste management, , reduction of soil erosion prevention of accidents and health hazards. Monitoring has been identified as an important process in the protection of environment of the project area since it will reveal changes and trends brought about mainly by construction activities.

The proponent should adopt a participatory and collaborative approach during all the phases of the project. This will ensure active participation of all key stakeholders towards success and sustainability of the project. The proponent needs to support the implementation of environmental and social management plan in order to protect the environment of the project area from the negative impacts of project implementation

#### **7.2 Recommendation**

It is in the opinion of the experts that the anticipated negative impacts can readily be mitigated and that the proposed Baran Baate Fayo Borehole project does not pose any threat to the environment. The experts therefore recommends that the project proceeds upon approval by the National Environmental Management Authority (NEMA) subject to annual environmental audits.

Upon approval the proponent should share the ESMMP with the contractor for implementation of the contractors specific ESMMP. The County Project Coordination Unit (CPCU) in consultation with relevant stakeholders and institution like NEMA, WRA shall monitor and report on the implementation of the ESMMP.

## REFERENCES

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- 4) CSAG, 2012: Current state of knowledge on climate trends and variability, and downscaled climate change projections, for Eastern Africa, report prepared for WWF CEAI by the University of Cape Town Climate Systems Analysis Group (CSAG), 99p.
- 5) DevQuest Consulting Limited key informants survey data collected from Merti Sub-County, Isiolo County
- 6) EMCA (Air Quality) Regulations, 2014. The Act prohibits any person, operator, or owner of any facility from causing or allowing fugitive emissions to cause the ambient air quality at its property boundary to exceed the limits prescribed under the First Schedule of this Act.
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- 14) Kenya Soil Survey, 1985, An Assessment of the Soil Conditions in the proposed extension of Lake Kenyatta settlement scheme (Lamu and Tana River Districts). Site evaluation report No. P62, June, 1985
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ANNEXES

Annex 1: Duly filled ESS screening checklist

*Baran Babate Borehole*

**KCSAP ISIOLO COUNTY -ESS SCREENING CHECKLIST**

**ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST**  
**ESM SUB-PROJECTS SCREENING CHECKLIST**  
**(SUB-PROJECTS SCREENING PROCESS BY BENEFITTING COMMUNITIES/AGENCIES)**

**Section A: Background information**

Name of County.....	<i>Isiolo County</i>	
Name of CSU/Monitoring Officer/Researcher .....	<i>BULESA</i>	
Sub-project location.....	<i>KAYO FARM IRRIGATION</i>	
Name of CBO/Institution.....	<i>KAYO FARM IRRIGATION</i>	
Postal Address.....	<i>KAYO FARM</i>	
Contact Person.....	<i>ABDULLAH GUYO</i>	Cell phone: <i>0748787017</i>
Sub-project Name.....	<i>KAYO FARM, Baran Babate Borehole</i>	
* Estimated cost (KShs.).....		
Approximate size of land area available for the sub-project.....	<i>170 Acres</i>	
Objectives of the subproject.....	<i>is to help the community for better farming to improve, planting crops, raise productive purposes, so that to reduce poverty among the community. Livestock to use the borehole.</i>	
Activities/enterprises undertaken.....		
How was the sub-project chosen?.....	<i>by community</i>	
Expected subproject duration:.....	<i>Three Months</i>	

**Section B: Environmental Issues**

	Yes	No
Will the sub-project:		
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	<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 checked="" type="checkbox"/>	<input type="checkbox"/>

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**KCSAP ISIOLO COUNTY -ESS SCREENING CHECKLIST**

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 checked="" type="checkbox"/>	<input 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 ESMP with sub-project application.*

**Section C: Socio-economic Issues**

Will the sub-project:	Yes	No
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 checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>
Increase exposure of the community to communicable diseases such as HIV/AIDS?	<input type="checkbox"/>	<input checked="" 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 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>

**Section D: Natural Habitats**



**KCSAP ISIOLO COUNTY -ESS SCREENING CHECKLIST**

Will the sub-project:	Yes	No
Be located within or near environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands) or threatened species? <b>NB: If the answer is yes, the sub-project should not proceed.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Adversely affect environmentally sensitive areas or critical habitats - wetlands, woodlots, natural forests, rivers, protected areas including national parks, reserves or local sanctuaries, etc.)? <b>NB: If the answer is yes, the sub-project should not proceed.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Affect the indigenous biodiversity (flora and fauna)? <b>NB: If the answer is yes, the sub-project should not proceed.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cause any loss or degradation of any natural habitats, either directly (through project works) or indirectly? <b>NB: If the answer is yes, the sub-project should not proceed.</b>	<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 they depend on?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Increase human-wildlife conflicts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Use irrigation system in its implementation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

**SECTION E: Pesticides and Agriculture Chemical**

Will the sub-project:	Yes	No
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 checked="" type="checkbox"/>	<input 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"/>

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

**KCSAP ISIOLO COUNTY –ESS SCREENING CHECKLIST**

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

	Yes	No
Are there:		
People who meet requirements for OP 4.10 living within the boundaries of, or near the project?	<input type="checkbox"/>	<input checked="" 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 subproject?	<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**

	Yes	No
Will the sub-project:		
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 checked="" type="checkbox"/>	<input 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"/>
Adversely 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'	<ul style="list-style-type: none"> <li>If all the above answers are 'No', there is no need for further action;</li> </ul>

**KCSAP ISIOLO COUNTY -ESS SCREENING CHECKLIST**

<input checked="" type="checkbox"/> There is at least one 'Yes'	<ul style="list-style-type: none"><li>• If there is at least one 'Yes', please describe your recommended course of action (see below).</li></ul>
-----------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------

**(iii) Recommended Course of Action**

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

- CPCUs and CDE will provide detailed guidance on mitigation measures as outlined in the ESMF; and
- Specific advice is required from CDE<sup>1</sup>, Lead Officer 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 NPCU 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: <u>ABDULLAH Kuyo Wako</u>
Position / Community: <u>Beleia youth representative</u>
Date <u>9/6/2021</u>

<sup>1</sup> County Director of Environment and the County Technical Team

KCSAP ISIOLO COUNTY -ESS SCREENING CHECKLIST



Recommendation by County director of Environment (CDE)  
 The Project is Scheduled as  
Scheduled as  
 Name of CDE Mungu  
 Signature: Mungu Date 13/6/2021

NATIONAL ENVIRONMENT  
 MANAGEMENT AUTHORITY  
 ISIOLO COUNTY  
 COUNTY DIRECTOR  
 OF ENVIRONMENT  
 13 JUL 2021

Note:

Project category	Characteristics
A	Full and extensive ESIA needed- irreversible environmental impacts; impacts not easy to pick or isolate and mitigation cost expensive; ESMP 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 ESMP design readily done; need an ESIA and future EAs
C	Have minimal or occasionally NO adverse environmental impacts; exempted from further environmental processes save environmental audits

**Annex 2: Land ownership documentation**

Kenya Climate Smart Agriculture Project  
 (KCSAP)  
 Office of the County Coordinating unit

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**COMMUNITY RESOLUTION FORM FOR SITE IDENTIFICATION AND NO OBJECTION FOR LAND USE**

Name of Project: Baran Baate Fayo Borehole

We, the beneficiaries of Baran Baate Fayo borehole have discussed and agreed that Baran Baate Fayo will be the site for the drilling and equipping of a borehole for livestock water, in Merti Sub County, Chari ward, Bulesa location, Godhe Sub-location.

We have allocated ½ acre piece of land for the development of the borehole and associated infrastructure.

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

Names of three (3) Beneficiaries' representatives

S/NO.	NAME	ID/NO.	SIGNATURE
1	ABDI ROBA	0008967	<i>[Signature]</i>
2	HAWO GUYO	0010898	HAWO
3	WARIO KIJIROLE	4296573	WARO

Witnessed By: HASSAN GUYO WAIKO

CHIEF OFFICER'S NO OBJECTION  
 Date: .....

**Chief Officer (Stamped)**

NAME	P/NO.	DESIGNATION	SIGNATURE

**CDLPO'S OFFICE (Stamped)**

NAME	P/NO.	DESIGNATION	SIGNATURE

**County Government (stamped)**  
 (County Executive Committee Member for Agriculture, Livestock and Fisheries, Isiolo County)

NAME	ID/NO.	SIGNATURE

## **Annex 3: Minutes of Public Participation**

### **1<sup>st</sup> Public Participation for Baran Baate Borehole 9<sup>TH</sup> JUNE 2021**

#### **Attendance**

(See copy 23 people 13M, 10F)

#### **Agenda**

- 1) Brief of the Project
- 2) Issues and Concerns
- 3) AOB

#### **Opening Remarks**

The meeting started at 8.00 a.m. with a word of prayer from Halima Sora Dambe Thereafter the chairperson of the proposed project thanked member for availing themselves on time to the meeting. He then called the meeting to order and invited the CPC.

#### **Minute 1/9/6/2021 Brief of the Proposed Project**

The County Project Coordinator who was present took time to explain Kenya climate smart agriculture project and its objective which include increasing agricultural productivity and building the resilience to climate change risks in the targeted smallholder farming and pastoral communities in Kenya, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response. He informed participants that it was important to conduct the public participation during the environmental and social impact assessment to get the views of the community as well as other stakeholders on the proposed project. He further stated that public participation was a requirement in the EMCA act, the constitution of Kenya 2010 and the County government Act.

#### **Minute 2/9/6/2021 Issues and Concerns**

- **Land ownership:** There was a concern that most community members did not have land ownership documents and requested that the proposed project site be demarcated and proper consultation and agreement be signed before commencement of the proposed project.
- **Management of the borehole:** The community members asked about the running of the borehole who will run the bore. The concerned officers told them that the management committee would collaborate with the community and relevant stakeholders to make sure that activities at the borehole are well done and maintenance is done.
- **Water quality and safety:** Community members were concerned about the water quality as a result of the drilling process. They were assured that from the hydrological survey report the water from the borehole shall be of good quality and further that periodic tests shall be carried out to ascertain the quality and safety.

**Minute 3/9/6/2021 AOB**

The participants agreed to that plans of drilling Baran Baate borehole should continue since it will benefit the community. They insisted that the process should start immediately because of the drought.

The meeting ended with a word of prayer from Ali Roba at 11.00 a.m and participants dispersed.

**Signed by**

Chairperson.....  
Secretary.....  
Member.....  
Member.....  
Member.....

**2<sup>ND</sup> Public Participation for Baran Baate Borehole 9<sup>TH</sup> JUNE 2021**

**Attendance**

(See copy 23 people 11M, 12F)

**Agenda**

- 1) Brief of the Project
- 2) Issues and Concerns
- 3) AOB

**Opening Remarks**

The meeting started at 2.00PM with a word of prayer from Rufo Buke Thereafter the Chairperson thanked member for availing themselves on time to the meeting. He then called the meeting to order. He then invited the CESSCO.

**Minute 1/9/6/2021 Brief of the Proposed Project**

The CESSCO explained about Kenya climate smart agriculture project and its objective. She then informed participants that it was important to conduct the public participation during the environmental and social impact assessment because it is a requirement in the EMCA act, the constitution of Kenya 2010 and the County government Act to get the views of the community as well as other stakeholders on the proposed project

**Minute 2/9/6/2021 Issues and Concerns**

Community members present raised the following key issues

- **Employment Opportunities:** Community members raised issues on the criteria that shall be used for employment during the construction/drilling phase of the borehole. It was agreed after discussion that the first consideration should be given to the local residence.
- **Conflict on use of water:** Community members raised a concern on how the water shall be utilized by community members without conflict. After deliberations it was agreed that once the drilling is complete a water use subcommittee be established to manage use of water. There were also suggestions of water meter and user fee as well as establishment of a grievance resolution committee to handle any conflict that may arise from community members

There being no other business, the meeting ended with a word of prayer from Hussein Abdi at 4.30 a.m.

**Signed by**

Chairperson.....

Secretary.....

Member.....

Member.....



## **Public Participation for Baran Baate Borehole 10<sup>TH</sup> JUNE 2021**

### **Attendance**

(See copy 23 people 10M, 13F)

### **Agenda**

- 1) Brief of the Project
- 2) Issues and Concerns
- 3) AOB

### **Opening Remarks**

The meeting started at 2.00PM with a word of prayer from Boru Abduba. Thereafter the Chairperson thanked member for availing themselves on time to the meeting. He then called the meeting to order. He then invited the CESSCO.

### **Minute 1/10/6/2021 Brief of the Proposed Project**

The CESSCO explained about Kenya climate smart agriculture project and its objective. She then informed participants that it was important to conduct the public participation during the environmental and social impact assessment because it is a requirement in the EMCA act, the constitution of Kenya 2010 and the County government Act to get the views of the community as well as other stakeholders on the proposed project

### **Minute 2/10/6/2021 Issues and Concerns**

- **Water quality and safety:** Community members were concerned about the water quality as a result of the drilling process. After discussion the expert explained the highlights of the hydrological report and assured community members that the water from the borehole shall be of good quality and further that periodic tests shall be carried out to ascertain the quality and safety.
- **Spread of livestock diseases at the community cattle watering trough:** After long deliberation, it was agreed that sensitization should be conducted on control of livestock diseases by the livestock department. It was further agreed that regular surveillance were necessary to help in early identification of the impending outbreaks so as to enable timely vaccination.
- **Health and Safety Issues:** Communities wanted confirmation that their safety will be always considered during project operation. It was agreed that the drilling works shall be confined within the borehole and that laborers will be equipped with personal protective equipment (PPE) for the work.

There being no other business the meeting ended with a word of prayer from Amina Halake at 12 pm

### **Signed by**

Chairperson.....  
Secretary.....  
Member.....

#### Annex 4: List of Attendance during Public Participation



Kenya Climate Smart Agriculture Project  
(KCSAP)  
Office of the County Coordinating unit

LIST OF ATTENDANCE

Activity

Public Participation - Baram Bate B/hote - Kiya 1019 gals

Date

9/12/2021

S/No	NAME	ID NO	GENDER	CONTACT Telephone: Email:	SIGN
1	HASSAN SONKOLD	0185833	male	071207960	HASSAN
2	MOHAMED BORU	4912729	male	0797097086	Mohamed
3	HALIMA SORA DAMBE	0083175	female	0701191337	Halima
4	OSMAN HASSAN	22891373	male	0703054471	OSMAN
5	IBRAHIM SORA HALAKE	3587373	male	0778458455	IBRAHIM
6	WARE KIYA MAKI	0366653	female	0726395475	WARE
7	FATUMA KIYA MAKI	7872628	female	0714086006	FK
8	DAMBALA DIDO ABUDO	0083102	Female	0759414265	DA

9	ASINA SHAMO	30741265	Female	0703494104	ASINA
10	ROBA ELEMA KARA	0083537	male	0701167255	ROBA
11	HUSSEIN MOHAMED	22469789	male	0706843412	HUSSEIN
12	MADINA MOLLO DAUDI	25712933	female	0721373370	MM
13	GUYO ABGUDO	21093531	male	0721373166	Abgudo
14	BONE ROBA KOTORO	0083805	female	0115452106	BONE
15	GUYO BAWACHA HAPPI	8053459	male	0796234231	GB
16	IBRAHIM GOLICHA	25504210	male	0796389392	IBRAHIM
17	KABALE MOLU DAUD	25894017	female	0703944210	KABALE
18	ALI ROBA	0431912	male	0707035223	ALI ROBA
19	KABALE GODANO HULUFO	0010829	female	0726251571	KABALE
20	JIRMA GUYO ADANO	0009482	male	0714035263	JIRMA
21	HALKANO WAKO ADANO	8053517	male	0704249942	HALKANO
22	ASHA HAPPI	7767958	female	0721373140	ASHA
23	DAUDI WAKO BORU	25843028	male	0702803933	DAUDI



Kenya Climate Smart Agriculture Project  
(KCSAP)  
Office of the County Coordinating unit

LIST OF ATTENDANCE

Activity: Public Participation Barotia Gate / Kayo Balesa Irrigation  
Date: 9/6/2021

S/No	NAME	ID NO	GENDER	CONTACT Telephone: Email:	SIGN
1	KASIM GUFU	7872591	M	0724283316	
2	AL GODANA	26687316	M	0710747606	
3	HALKANO OTONA	25219355	M	0727619197	
4	SALAD GALMA	85569820	M	0704765976	
5	GALGALO DUBA	0625727	M	0791955399	
6	HASSAN BANATA	12876247	M	0768085478	
7	ABDUBA JARSO	3053520	M	0742922520	
8	RUFU BUKE	24563742	M	0769038173	

9.	DENGE HALAKE	24374609	M	0757642288	
10.	GOLICHA WARIO	0367151	M	0718958303	
11.	HADIJA ISSACK	26675561	F	0759414257	
12.	HUSSEIN ABDI	25891366	M	0796862167	
13.	HALKANO WARIO	25907678	M	0701564129	
14.	HABIBA GALMA	31288248	F	0708377242	
15.	ROBA WARIO	23707629	M	0729781055	
16.	RUKIA MOWU	29824375	F	0759414280	
17.	ABDI HASSAN	25893891	M	0723737798	
18.	OSMAN ABDI	33048845	M	0794039419	
19.	KABALE BABAJA	12542568	F	0708723756	
20.	GOLICHA MEJA	0008786	M	0707484686	
21.	DIRAMU BUKE	8053520	F	0742922520	
22.	MADINA JARSO	22092527	F	0742922520	
23.	GUYO GALMA	32397278	M	074521706	



Kenya Climate Smart Agriculture Project



Kenya Climate Smart Agriculture Project  
(KCSAP)

Office of the County Coordinating unit

LIST OF ATTENDANCE

Activity: Public Participation Boma Bate / Butees Workshop School

Date: \_\_\_\_\_

S/No	NAME	ID NO	GENDER	CONTACT Telephone: Email:	SIGN
1.	NUSIA dila Wako	24413924	F	0716513298	<u>IVURIG</u>
2.	Mohamed Abdulba Kala	5379197	M	07966458985	<u>MAYI</u>
3.	Abdullahi Mohamed Abdulba	26026639	M	0703740972	<u>At</u>
4.	NASIBO Abdi Mohamed	24574803	F	0721374454	<u>NA</u>
5.	Boru Abduba	0009007	M	070589894	<u>BORU</u>
6.	NURIS Male Kiplichu	8053507	F	0705253038	
7.	HAKIMO Boru dabaso	1090563	M	0706060720	<u>HAKIMO</u>
8.	KUMBALO BONAYA WAKO	0010727	F	0790845523	<u>WAKO</u>

9.	HAWO FAYO BORU	25782009	F	0702808913	<u>HAWO FAYO</u>
10.	Abdiaziz Hawan Bonaya	2490235765	M	0769038229	<u>ABDIAZIZ</u>
11.	Fatuma idiris Kiyana	24412789	F	0798937351	<u>FIK</u>
12.	Roge Duba Sala	8053526	F	0748751971	<u>R</u>
13.	HAWARI Abdulba Jillo	0185699	F	0795195012	<u>HAWARI</u>
14.	Hadija Boru	9853735	F	0792355581	<u>Hadija</u>
15.	Amins Okie Halake	8053474	F	0793047768	<u>AMINA</u>
16.	Ali Okie Halake	29891056	M	0728684185	<u>ALIB</u>
17.	HAWAN BARISSA DIBA	20924692	M	0708887637	<u>HAWAN</u>
18.	Jattani Jillo	0076899	M	0712866796	<u>JATTANI JILLO</u>
19.	Fatuma Jattani	30735436	F	0723276151	<u>FATUMA J</u>
20.	Adan Komba	0008670	M	0721373199	<u>ADAN KOMBA</u>
21.	Salado Bagajo	25778044	F	0716513651	<u>S.B.</u>
22.	Habiba Riba	11274084	F	0721375438	<u>HABIB</u>
23.	Abdulrahim diba	0082082	M	0729957603	<u>AD</u>

**Annex 5: Sample of duly filled public participation questionnaire**

SILOLO COUNTY

ENVIRONMENTAL IMPACT ASSESSMENT (ESIA)

MAIN HH QUESTIONNAIRE

This is an exercise commissioned by the Kenya Climate Smart Agriculture Project (KCSAP) towards the drilling of the Borehole, Stabilization, casing, pumping, reticulation and eventual distribution of this water by use domestically and by livestock. We are hereby calling upon you to interact with us by responding to our questions many of which are in this questionnaire but others will be follow-up questions to ensure the team captures everything that will make this report a success.

**SECTION A: BIODATA**

1. Name of Respondent Bona Tatemani
2. Sex (M/F) M Age 68 (years)
3. Marital Status m..... Tick appropriately (single, married, divorced, widowed, separated)
4. Number of family members living with you (including yourself) 11
5. Last completed level of education..... (standard 8; Form 2; Form 4; college; form 6; university 4<sup>th</sup> year , etc.)
6. Contact Telephone Number 0792694302
7. County Mt Kenya Sub-county Mt Kenya Ward Bulasa
8. Location Chamboni Project Site Name..... Name of Borehole Darbata 6470
9. What position do you have within the borehole..... (member, chairman, secretary, treasurer, committee member)-tick appropriately
10. Enumerators Name Eric Enumerator's Telephone Number 0708618113

**SECTION B: PROJECT INITIATION, USE AND MANAGEMENT**

11. Do you belong to any community group (Yes/No) No
12. If yes Name it..... how many are you? Males....., females..... youth(girls)..... youth(boys).....
13. What main activity as a group are you involved in?  
.....
14. Do you have a committee? (Yes/No).....
15. How many members in that committee? ..... Males..... Females ..... (youth boys..... Youth girls.....)
16. Are you aware of this proposed borehole? Yes (Yes/No)
17. If it is yes, how do you think this borehole will assist you as a family member? Access of water for my health and livestock.  
.....  
(explain)

18. How many livestock do you have?

- a) Camels.....—
- b) Cattle.....4
- c) Goats.....40
- d) Sheep.....60
- e) Donkeys.....2
- f) Chicken.....10
- g) Dogs.....—
- h) Bee hives.....—
- i) Any other.....—

19. Currently where do you water your livestock? (Name).....Shada Ngro

20. How many kilometers from your home/manyatta to the watering point?.....5

21. Is the current water point enough for the year?.....no.....(January to December)

22. If it is not sufficient where else do you take your livestock?

(Name).....Yantche, Sabarwaka (Distance).....100, 150 km

23. For your domestic use where do you draw your water from? (Name).....community 6H

(Distance).....6 from the household.

24. Is the water you draw for domestic use clean? (Yes/No).....Yes

25. If No explain.....—

26. What do you think of the water quality from this borehole water?

(Explain).....clean in reference to the old one.

27. As a community how did you select this site of the borehole?

(Explain).....center for irrigating and in terms of security.

28. As a community would you have gone for another borehole site? (Yes/No).....—

29. If yes to the above question name the site.....— and why

30. For this proposed site how many people will be served by this borehole (population/HHs).....— or estimated manyattas to be served.....—

31. And the estimated livestock to be served.....—

32. How will schools be served by this borehole? .....

Number of schools.....3 Primary.....2 Secondary.....1 and Churches.....1 mosque 3

33. Kindly name them:

Primary Schools.....Bulese Pri, Bulese Takwel

Secondary schools.....Bulese day

Churches.....Catholic, — mosque → Jamia/Takwel, our MSIKHI

34. In your own opinion if this borehole is completed will the water supply be enough? (Yes/No)

.....Can't tell

35. As a community when the contractor is on the ground what is your role?

(explain).....supervision

36. Does this proposed borehole have a committee? (Yes/No).....Yes

37. If yes how many committee members.....11 total, males adults.....7 female adults.....2 total youth boys.....1 total youth girls.....1
38. Kindly give us the names of the committee members.....Dina Isamu, waario kilibole, Niba Kiyane, Bashi waario
39. Before today how many more meetings have you had to discuss this borehole?.....5
40. Can you give us copies of the minutes of the previous meetings?.....YES
41. As a community how do you expect to manage this project when it is completed?.....have water engineer
42. As a community what method will you use to pump the water from the borehole? (tick)
- a) Engine
  - b) Solar
  - c) Wind
  - d) National grid power
  - e) I don't know
  - f) Not sure
43. If the borehole committee is present is it affiliated to WRUA?.....no (Yes/No)
44. If yes which WRUA are you affiliated to.....—
45. Which catchment is this WRUA associated with?.....—
46. If the answer is No? Why.....explain.....They are corrupt
47. Were you involved in writing the proposal of this borehole?.....Yes (Yes/No).
48. Kindly mention a few items you would like to be included in the borehole?.....soak net works
49. If the borehole is done/completed, list some of the expenses which the community will be expected to meet?.....water use charges
50. What will be some of the expenses to be met by the county government /and the project?.....water bottle
51. Is this borehole a cross-border (many communities/wards) project or cross community project? (Yes/No).....Yes
52. Are you anticipating resource conflict? (Yes/No).....no
53. Using your borehole committee how do you intent to solve the resource conflict? (Explain).....talk to each other and solve
54. What other challenges do you anticipate as a community when this borehole is completed?.....none

SECTION C: INFRASTRUCTURAL DEVELOPMENT

- 55. Have you proposed cattle water troughs? (Yes/No) Yes How many? 4
- 56. Have you proposed VIP latrines on the site (Yes/No) Yes how many? 4
- 57. Have you planned for bathrooms? (Yes/No) Yes how many? 2
- 58. Have you planned for shades/bench? (Yes/No) Yes how many? 2
- 59. Have you chosen the VIP Latrine designs? (Yes/No) Yes
- 60. Have you planned for water kiosks? (Yes/No) Yes how many 10 where? around the borehole (list all)
- 61. Have you planned for the parameter fence? (Yes/No) Yes type of the fence (barbed wire, chain link, thorn bushes, walling)

**SECTION C: LABOR**

- 62. When the contractor comes on sight what employment opportunities will you be looking for as a community? health man
- 63. What will you wish the contractor to do for you in terms of employment? employ local staff
- 64. Is gender based violence an issue when the contractor is on site? (Yes/No) No if yes why?
- 65. If no why? we are united with one govt.

**SECTION D: SECURITY**

- 66. Is security an issue? (Yes/No) No
- 67. If yes explain
- 68. As a community how will you ensure the security of the borehole installations? cover area and also home guards

**SECTION E: SUSTAINABILITY**

- 69. As a community member are you prepared for this project? (Yes/No) Yes
- 70. Behold the support of the project how will you manage this borehole? we will organize

**SECTION F: CHALLENGES**

- 71. As a community do you foresee any challenges posed by this borehole? (Yes/No) No
- 72. List and explain these challenges
- 73. Does this project have positive impact Yes (yes/No)



74. list the positive impacts and

explain..... access easy access of water  
for both livestock and family

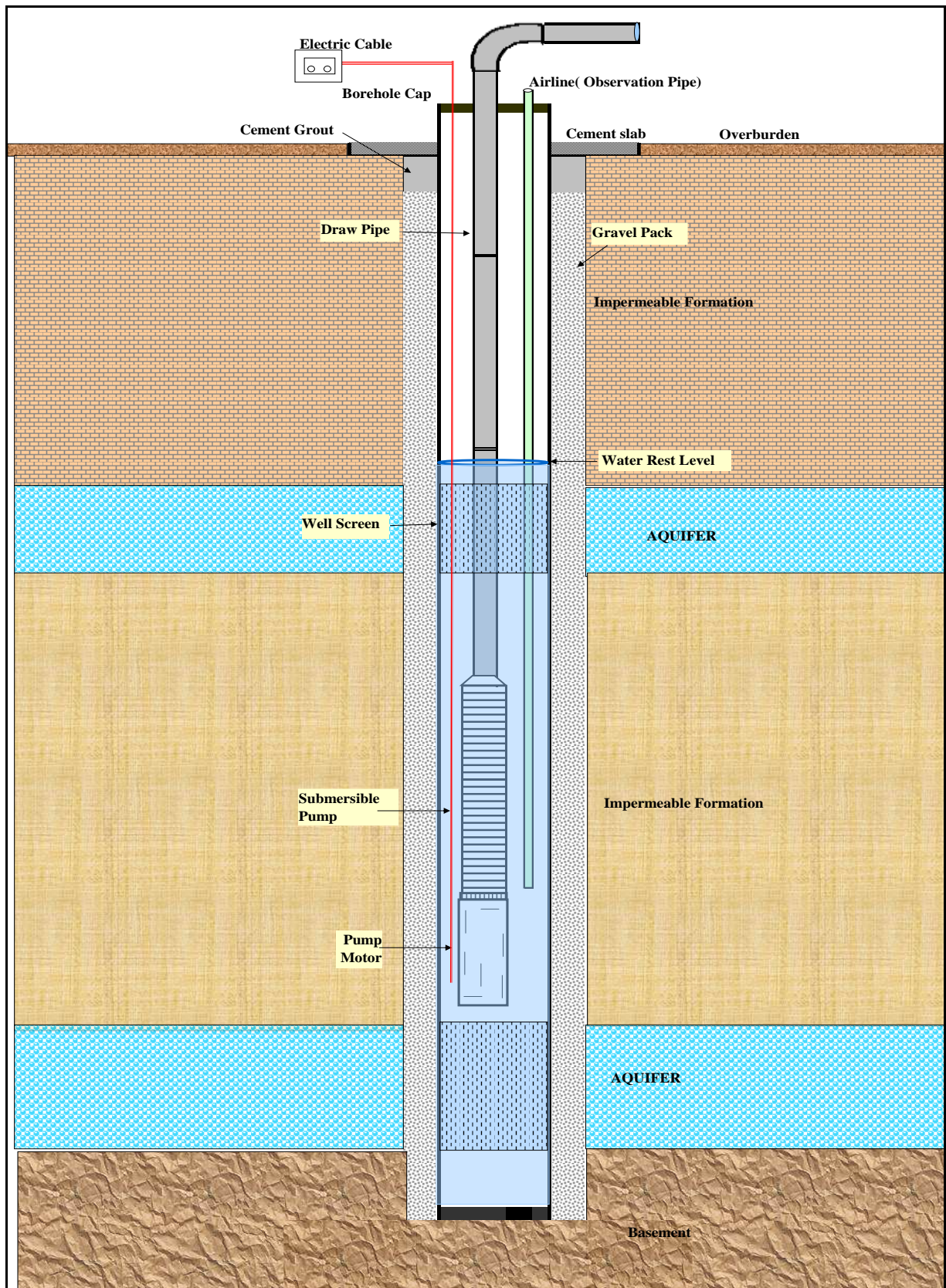
75. Do you anticipate negative impacts of this project? (Yes/No)..... No

76. For each of the negative impact what will be your proposed mitigation  
measure?.....

## Annex 6: BQ for the Proposed Project

No.	Activity	Budget item	No.	Unit Cost	Total Cost	County/Community Contribution	KCSA P Grant	Total Amount
1	Community mobilization	Travel costs	3	120,000	360,00		360,000	360,000
2.	Stake holder consultation		3	150,000	450,000		450,000	450,000
4.	Hydrological Survey & Design and BQ development		1	300,000	300,000	300,000	0	300,000
	EIA		1	200,000	200,000	200,000	0	200,000
5.	Evaluation & Award of contract		1	150,000	150,000		150,000	150,000
6	Preliminaries & General	Mobilization & Supervision	1	1,900,000	1,900,000	0	1,900,000	1,900,000
	Borehole drilling	Construction of civil works		2,683,000	2,683,000	0	2,683,000	2,683,000
	Borehole equipping and solar pump installation	Construction of civil works	1	2,105,800	2,105,800		2,105,800	2,105,800
	Construction of 50m3 elevated steel tank	Construction of civil works	1	3,253,000	3,253,000	0	3,253,000	3,253,000
9	Construction of 2 no. cattle trough	Construction of civil works	2	325,800	651,600		651,600	651,600
	Construction of water kiosk (2mx2mx2m)	Construction of civil works	1	319,467	319,467	0	319,467	319,467
	Construction of VIP latrine & bathroom	Construction of civil works	2	410,332	820,665	0	820,665	820,665
	Add 10% Contingency			1,173,353.20	1,173,353.20	0	1,173,353.20	1,173,353.20
	Add 16% V.A.T			2,065,101.63			2,065,101.63	2,065,101.63
						500,000	15,931,986.83	16,431,986.83
Total project cost:								
Community contribution:								500,000
Total KCSAP grant applied for:¹								15,931,986.83

## Annex 7: Standard Borehole Design



**Annex 8: List of Stakeholders Consulted**

No.	Institution	Contact Person	Position Role
1.	Baran Baate Fayo Community		Secretary
2.	Lands Commission Isiolo	Paul Kasimbu	County Coordinator
3.	County Lands Office Isiolo	Elizabeth Ekiru	County Surveyor
4.	Public Health Isiolo	Martin Mzee	Deputy county Public Health Officer
5.	National Draught Management Authority Isiolo	Lordman Lekalkuli	County Draught Coordinator
6.	NEMA Isiolo	Murethi Hunyu	Environmental Officer

**Annex 9: Valid Expert 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/14707

Application Reference No: NEMA/EIA/EL/19234

M/S **BONFACE MANYARA KOOME**  
(individual or firm) of address

P.O. Box 06-60300 ISIOLO

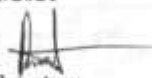
is licensed to practice in the


capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**  
registration number **2534**

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

Issued Date: **4/9/2021**

Expiry Date: **12/31/2021**

  
Signature.....

(Seal)  
 **Director General**  
**The National Environment Management  
Authority**

