




**ENVIRONMENTAL AND SOCIAL IMPACT ASSESMENT**  
**SUMMARY PROJECT REPORT**  
**FOR**  
**THE PROPOSED REHABILITATION OF THE INTAKE WEIR, MAIN CONVEYANCE,**  
**STORAGE TANKS AND DISTRIBUTION PIPELINES FOR NGANYUTHE IRRIGATION**  
**WATER PROJECT, KIENI WEST SUBCOUNTY.**



<b>Sponsor</b>	Government of Kenya / County Government of Laikipia with support from the World Bank 
<b>Client</b>	Kenya Climate Smart Agriculture Project (KCSAP)
<b>Proponent</b>	Nganyuthe Irrigation water Project

**APRIL 2021**

**DECLARATION**

This Environmental Summary Project Report (SPR) for the proposed upgrading of the intake, construction of storage tanks and distribution lines on plot L.R NYERI/ENDARASHA/3275 and NYERI/ENDARASHA/3756 Gitegi Sub Location Dam, Endarasha Location, Gatarakwa and Endarasha/Mwiyogo Wards, Kieni West Sub County, Nyeri County has been prepared in accordance with NEMA regulations and World Bank environmental and social safeguards policies under the guidance and supervision of a registered NEMA Lead Expert. It meets statutory provisions stipulated in EMCA 1999, the Legal Notice No. 32 and the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019; world bank KCSAP triggered policies OP 4.01, OP 4.10, OP 4.11, OP 4.12 and OP 4.09.I hereby certify that the details herein are correct and true to the best of my knowledge

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## **ACKNOWLEDGEMENT**

The Lead assessment team wishes to thank the membership and entire leadership of Nganyuthe Irrigation Water Project who participated in conducting of this ESIA Report by providing necessary assistance, information and relevant documentation. We also wish to thank all the other stakeholders and technical staff under the line ministries and agencies, for their immense assistance including in literature review and cooperation during our field visits and assistance in availing the various relevant information. In particular; we thank the World Bank, the national PoE, KCSAP and Kieni West Sub-County technical officers and the local administration their support, who graciously provided pertinent data, information, and documents and also actively participated and interacted with the SPR Consultancy Team.

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## **EXECUTIVE SUMMARY**

This report presents the Summary Project Report findings for the Proposed Nganyuthe Irrigation Project which is located in Gitegi sub location, Enderasha location, Gatarakwa and Enderasha/Mwiyo go Wards in Kieni West Sub-county. The project was proposed by the Nganyuthe community due to their increasing need for irrigation water. The community has envisioned the implementation of the project but due to lack of financial resource the project has been dormant. The project was selected because of its relevance to KCSAP triple objective of: increasing agricultural productivity, increasing resilience to climate change (adaptation), and decreasing incidences of greenhouse gas emission (mitigation).

The objective of the proposed project is to upgrade the intake, construction of tank and fencing and distribution lines and appurtenance. This will increase water supply for the purpose and support agricultural production through irrigation. The targeted agricultural value chains include onions and potatoes (as cash crops) dairy, fodder and vegetables. The main objective of the SPR was to identify existing and potential environmental and social impacts and concerns that the interested and/or affected parties have with the proposed development intervention, as well as the associated prevention and mitigation measures for the negative impacts as stipulated in the proposed Environmental and Social Management Plan.

The study involved the use of several techniques and methodologies. The techniques and methodologies used were necessary for collecting baseline information, analysing the legal and policy framework, assessing and predicting the potential positive and negative impacts, analysing the impacts in order of importance and thus formulating the order in which the impacts are to be avoided, minimized and or mitigated accordingly. The team was guided by the requirement of the National Environmental Management Authority; Environmental Impact Assessment Guidelines, section 58 of EMCA 1999 and Environmental (Impact Assessment and Audit) Regulations and the World Bank Environment and Social Safeguards policies; Environmental Assessment (OP 4.01).

The proposed project involves construction of two storage tanks, (walling, roofing, and fencing), intake construction (site clearance, river diversion and excavation) and distribution lines and appurtenance (main gravity mainline, excavation and back filling of trenches, site clearing) ensure increased supply of water for irrigation. The main works include site clearance, excavation and earth works (excavation, trenches), concrete, masonry and auxiliary works (fencing). The project sites are located on a parcel land owned by the irrigation project.

Public participation and consultations were carried out on 14<sup>th</sup> April 2021 through questionnaires survey and consultative meetings. Twenty questionnaires were disseminated for public participation but twelve were dully filled. From the dully signed questionnaires four were females and eight were males. Other relevant stakeholders from various departments were consulted on the suitability of the project. Some of the stakeholders include department of; environment and climate change, water and irrigation, agriculture, social development, occupational safety and health, administration and vulnerable and marginalized groups. The main issues/concerns raised during the public participation and stakeholders consultation meeting was: possible contamination of water downstream during upgrading phase; interference with the natural environment at the point of intake; minimal reduction of water volume for users downstream and minimal loss of vegetation during intake upgrading and laying of pipeline. The information gathered during the consultative public participation indicated that the general take of stakeholders is that the

positive impacts of the project over-weigh the negative impacts. The negative impacts cited were considered insignificant and can therefore be mitigated and positive ones maximized.

The report discusses in details the anticipated positive and negative environmental and social impacts and their proposed mitigation measures. Some of the positive impacts include; creation of employment opportunities to the community, new business opportunities for the host community, livelihood diversification, increased household income, reduced land degradation, food and nutrition safety, reliable sources of water and improved wellbeing of women and children. However, some of the negative impacts include; disturbance of vegetation, noise, water and air pollution, generation of solid waste, sexual exploitation, gender-based based violence, child abuse, grievances and occupational and public safety and health impacts.

The total of the project cost is estimated to be Kshs.68, 990,663.58. For preliminary and general items Kshs. 925,000, intake works Kshs. 1,436,000.00, mainline works Kshs. 28,786,039.00, distribution lines Kshs. 18,146,710.00, masonry tanks Kshs.7,348,831.94 and 5% contingencies Kshs.2,832,129.05. The total cost of implementing the ESSMMP in relation to the total project cost is Kshs.730,000, this will include all phases of the project. The report finally proposes environmental and social management and monitoring plans. The potential negative impacts are categorized in three project phases; construction, operational and decommissioning phases. For ease of implementation the ESSMP should be shared with the contractor.



## ABBREVIATIONS AND ACRONYMS

AIPCEA	African Independent Pentecostal church of East Africa
IPF	Investment Project Financing
FDGs	Focus Group Discussions
BP	Bank Procedure
CPCU	County Project Coordinating Unit
SEA	Sexual Exploitation and Abuse
C-ESMP	Construction – Environmental and Social Management Plan
COVID- 19	Corona Virus Disease of 2019
EMCA	Environmental Management and Coordination Act
ERP	Emergency Response Plan
ESMP	Environnemental and Social Management Plan
GBV	Gender Based Violence
GHGs	Green House Gases
HIV	Human Immunodeficiency Virus
KCSAP	Kenya Climate Smart Agricultural Project
AIDS	Acquired Immunodeficiency Syndrome
NEMA	National Environment Management Authority
PAPs	Project Affected Persons
SPR	Summary Project Report
PCEA	Presbyterian Church of East Africa
PCR	Physical Cultural Resources
CBD	Conservation of Biological Diversity
SH	Sexual Harassment
BD	Biodiversity
WRA	Water Resource Authority
WRUA	Water Resource Users Association
SDGs	Sustainable Development Goals
GRM	Grievance Redress Mechanism
WB	World Bank
SAIC	Social Accountability Integrity Committee
PMC	Project Management Committee
ITCZ	Intertropical Convergence Zone
GPS	Global Positioning system
NAROWASCO	Narumoru Water and Sanitation Company
KNBS	Kenya National Bureau of Statistics
LPG	Liquefied Petroleum Gas
TV	Television
NEMA	National Environment Management Authority
OP	Operational Policy
EIA	Environmental Impact Assessment
BoQs	Bill of Quantities
KIHBS	Kenya Integrated Household Budget Survey
PP	Public Participation
GI pipes	Galvanized iron pipes
MTP	Medium-term Plans
ASALs	Arid and Semi-Arid Lands
SGBV	Sexual and Gender based Violence
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment

DOSH	Directorate of Occupational Safety and Health
CCA	Climate Change Act
STIs	Sexually Transmitted Infections
CoC	Code of Conduct
SLM	Sustainable Land Management
ER team	Emergency Response team
uPVC	Unplasticized Polyvinyl chloride
EMMP	Environmental Mitigation and Monitoring Plan
EMP	Environmental Management Plan
SOPs	Stand Operating procedures
OSHA	Occupational Health and Safety Administration
LPOs	Local Purchase Orders

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background Information**

The proposed irrigation project stretches through two ward Gatarakwa and Endarasha/Mwiyogo wards. The project source of water is the Ewaso Ng'iro River which is the main river that drains Ewaso Ng'iro North catchment. The proposed projects stretch from Manoro Village, Gitegi sub location, Endarasha Location, Kieni West Sub County. The project location has been under severe irrigation water shortages for ages. The area depends on rain fed agriculture which due to the intensified climate change effect is no longer reliable. The project area practices large scale agricultural production of onions and potatoes with incorporation of livestock keeping and vegetable farming.

### **1.2 Project Justification**

The SPR was as a result of the recommendation of the County Director Environment(CDE) based on the screening report, but also because NEMA Public Notice on ESIA and Legal Notice No 31 which identifies the proposed project as Low risk, thus requiring only SPR. The project was also selected after a feasibility study conducted in the area because of its relevance to KCSAP triple objective of: increasing agricultural productivity, increasing resilience to climate change (adaptation) and decreasing incidences of greenhouse gas (GHG) emission (mitigation). This will increase water supply for agricultural production through irrigation particularly during 5 months of drought every year. The targeted agricultural value chains include dairy, onions (main cash crop in the area), potatoes, fruits, fodder and vegetables. The proposed project aims at ensuring food security for the community and agriculturally based economy.

### **1.3 The Objectives of the SPR report**

- To comply with the Environmental (Impact Assessment and Audit) Regulations, 2003, Regulation 6, which requires that an application for an Environmental and Social Impact Assessment (ESIA) license and applicable World Bank Policies.
- Study the nature of the project supported by design and plan drawn to scale
- Study any environmentally sensitive areas to be affected by the project
- Availability of supportive environmental management infrastructure
- Conformity to land use plan or zonation plan
- Potential environmental and social impacts of the project cycle phase: planning, construction, operation and decommissioning
- Mitigation measures for all potential environmental and social impacts
- Environmental management plan for the entire project life cycle
- Conduct comprehensive public consultation
- To prepare an ESIA report for the client

### **1.4 The SPR Approach and methodology**

The SPR began with environmental and social screening, followed by scoping for the actual SPR study. The study involved the use of several techniques and methodologies. The techniques and methodologies used were necessary for collating baseline information, analysing the legal and policy framework, assessing and predicting the potential positive and

negative impacts, analysing the impacts in order of importance and thus formulating the order in which the impacts are to be avoided, minimized and or mitigated accordingly. The team was guided by the requirement of the National Environmental Management Authority (NEMA); Environmental Impact Assessment Guidelines, section 58 of EMCA 1999 and Environmental (Impact Assessment and Audit) Regulations and the World Bank Environment and Social Safeguards policies; Environmental Assessment (OP 4.01), Pest Management (OP 4.09) Physical Cultural Resources (OP 4.11) and among others. The methods used in the study are as discussed in the sections that follow

#### **1.4.1 Desktop Study**

This involved documentary / literature review on the nature of the proposed activities, project documents, designs, BoQs, policy and legislative framework as well as the environmental status of the project area, beneficiary and adjacent villages, land use/economic practices in the area, development strategies and plans. Key documents reviewed are.

- The KCSAP sub projects checklist
- EMCA 1999 and EMCA Amendments 2015
- 2019 Census Reports Volumes I and II
- The World Bank Environment and Social Safeguard Framework
- Socio-economic survey reports (2015/16 Kenya Integrated Household Budget Survey (KIHBS)
- Hydrology Assessment Study Report
- Bill of Quantities for the proposed project

#### **1.4.2 Reconnaissance and Field site Assessment**

Field site visits were meant for physical inspections of the site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts, establish part of the environment to be affected and extent of the impacts. Field site visits were enhanced using observation checklist besides seeking clarification from the local community in the proposed project area. The purpose of the field site visits was:

- Obtain available and relevant information and data from the local public offices including Agriculture, Environment and Livestock and the Local administration;
- Evaluate the environmental setting around the proposed project site.
- Observe the topography, land cover, flora and fauna, climate, hydrology of the area and public amenities among others;
- Evaluate and social, economic and cultural setting in the entire project area; undertake a comprehensive consultative public participation exercise to a large section of the affected persons as well as stakeholders.

#### **1.4.3 Public Participation, Stakeholder's Consultation and Disclosure**

Structured stakeholder and community engagement was undertaken following the Government COVID-19 regulations which included;

- Social distancing.
- Cleaning of hands frequently with soap and water for more than 20 seconds or sanitizing using alcohol-based sanitizers.
- Wearing of masks when in the public.

The PP was to capture the views and concerns of potentially interested and affected parties. Consultations and Public Participation were held to:

- Ensure a sense of responsibility and commitment towards implementing the proposed ESMP.
- Solicit issues and concerns from the affected communities about the forthcoming upgrading and rehabilitation of the project.

Several methodologies were employed to collect the required data, including; structured checklists for community consultations, semi-structured checklists to conduct personal interviews and systematized questionnaires to survey affected households. Seventeen stakeholders were consulted in relation to the project. Questionnaires were disseminated to the community members but only twelve were dully signed and submitted. The collected data was then collated, analyzed and synthesized for the report compilation.

### **1.5 Structure of the Report**

- Introduction
- Nature of the project
- The location of the project
- Public participation and stakeholder consultations
- Anticipated impacts and mitigation measures
- Environmental and social management and monitoring plan (ESMP)
- Conclusion and recommendations
- References
- Annexes

## CHAPTER TWO: NATURE OF THE PROJECT

### 2.1 Introduction

This chapter describes the proposed project activities as per the project bill of quantities. Most of the proposed structures have been supported with engineers' designs.

### 2.2 Project Description

#### 2.2.1 Site Description

The project site is on an existing stretch across two wards Gatarakwa and Endarasha /Mwiyogo. The project supplies area is in three villages namely Gitegi, Ndunyu Guathi and Karaguriro. The proposed source of water is Ewaso Ng'iro river and the point is marked by the GPS coordinates S00.29744° E 036.73594° at an altitude of 2572 masl. This is in Manoro Village, Gitegi sub-location, Endarasha Location, Kieni West Division, Kieni West Sub County in Nyeri County. The proposed abstraction will upgrade an existing concrete intake which has been constructed across the river with side screened collection box to the left bank of the River. This is the intake used to abstract water for irrigation purposes with permit no WRMA/50/NUK/5BB/13/S. The water will be conveyed through gravity mains to a storage tank to the distribution lines.



**Plate 1:** Water abstraction point along River Ewaso Ng'iro

#### 2.2.2 Project Activities

The activities to be undertaken in the upgrading of the intake, construction of storage tanks and distribution lines and appurtenance will comprise:

- Site clearance of all sizeable bushes/shrubs
- Construction of the intake at the river

- Construction of a 225m<sup>3</sup> storage tanks
- Excavation and digging of trenches for the pipelines
- Laying of pipes for the main line
- Laying of pipes for sub-mains, branch lines and feeders
- Installation of infield system at farm level
- Site landscaping
- Fencing the sites
- Excavation of a river diversion

#### **2.2.2.1 Pre-excavation Phase**

A meeting will be conducted at the site before any activity is commenced. Representatives from the Government (National and County), local administration, representatives from various departments, KCSAP project coordinators hosted by the community were present. The aim of the activities was to understand the setting and the layout of the project area.

#### **2.2.2.2 Mobilization of Machinery**

This will be done by the contractor who will have been appointed through the Government and World Bank tendering and awarding process. The type and the quantity of mechanical equipment to be used depend largely on availability and the structure type and dimensions. The following items are useful: bulldozer for the site preparation, excavator for the excavation of foundations for the dam area; loaders and dump trucks to loads of soil desilted and excavated to the temporary holding site; motorized rollers and compactors.

#### **2.2.3 Site Layout**

The site layout has been provided in the documents for the Engineer and site engineer usage during supervision and carrying out of site activities. It must be done with sufficient accuracy to ensure that it is appropriate to the actual plan design.

##### **2.2.3.1 Excavation Phase**

Excavation of the expansion of the existing intake will be carried out to pave way for reinforcement of the same. Excavation of spillway, inlet and outlet will also be carried out. The soils excavated depending on the quality and quantity should be used for reinforcement of the embankment (the soils to be tested following the engineer's instructions), some to be used for access road as marram and the top soil to be used for landscaping (grass and tree planting) around the dam's site. Excavation of pipelines both mainlines and distribution lines will be carried out. The site should be rehabilitated to the best environmentally friendly state as possible. For the area excavated for the storage tanks will involve supply and application of anti-termite chemical.

##### **2.3.2.2 Site Clearing**

From the site visits conducted at the intake site, clearing of vegetation will include clearing of short bushes and shrubs will be necessary. Few trees will also be affected. The cleared vegetation should be disposed-off or used for other purposed e.g., donation to children's home to avoid wastage. (in case of any hindrance during clearing the site engineer should contact the county forester).

##### **2.3.2.3 Back-filling and Compacting of the Embankment**

Back-filling, compaction and trimming will be done using a dozer. Excavators can also be used for trimming slopes. Material originally excavated or imported material from a borrow

pit will be used for back-filling the embankment through placing and compacting as directed by the Engineer. Backfilling will be done for all trenches (distribution)for the mainlines and the feeder lines. All the soils used should be tested as per engineers' instructions to prevent over-topping of the embankment.

#### **2.3.2.4 Construction**

As per the designs and the bill of quantities for the project the construction will be done for the intake and the storage tanks with walling and roofing. All the material specification, qualities and quantities have been specified in the BoQ

#### **2.3.3 Ancillary Structure**

##### **2.3.3.1 Slanting Grass Cover and Trees**

Protection activities including soil conservation, erosion control, drainage work and planting of trees, shrubs and grasses is important. It is essential that a good creeping grass type. It is established on all bare earth surfaces as soon as possible after project completion.

##### **2.3.3.2 Fencing**

In the storage tank area, definitely no human activities such as farming, grazing and hunting will be allowed. A chain-link fence will be erected for safety purposes. Fencing of the pan will prevent access and reduce the risk of small children and livestock falling into the dam. This will prevent both human and animal accidents. All the equipment needed have been specified in the BoQ

#### **2.3.4 Materials and Equipment**

The inputs to implementing the proposed project are human labor (skilled and unskilled), plant and machinery, GI pipes, wire mesh screens, water pumps, concrete fencing poles, chain link, barbed wire, construction material (sand, stones, cement) metals and gate. All the materials needed have been specified in the BoQ.

#### **2.3.5 Project Cost**

The cost is estimated to be Kshs.68,990,663.58. For preliminary and general items Kshs.925,000, intake works Kshs.1,436,000.00, mainline works Kshs.28,786,039.00, distribution lines Kshs.18,146,710.00, masonry tanks Kshs.7,348,831.94 and 5% contingencies Kshs.2,832,129.05.

#### **2.3 Designs and plans**

The designs of the intake and the tanks have been prepared by the engineer and have been attached below.



BAR BENDING SCHEDULE										
DESTINATION	BAR MARK	TOTAL No.	BAR DIA. mm	LENGTH PER BAR (mm)	TOTAL LENGTH PER BAR MARK (mm)					BENDING
					∅ 6	∅ 8	∅ 10	∅ 12	∅ 16	
BOTTOM RADIAL	b	37	10	5100			183,60			
	c	60	10	3400			122,40			
	d	72	10	2800			201,60			
TOP RADIAL	u	18	16	1900				34,20		STRAIGHT
	v	36	16	1000				36,00		
	w	18	16	1700				30,60		
BOTTOM LOOP	a	32	8	6,283 7,069 30,630		641,90				
NOTE: an, as, ax, ay, az, each										
TOP LOOP	b	12	16	785 12,567					73,95	
at MANHOLE	e	1	8	1700		1,70				
	f	1	8	2000		2,00				
	g	2	10	2000			4,00			
COLUMN	b	12	16	4,450					53,40	
	l	16	6	800	12,80					
COLUMN TOP	k	3	6	2060 3750 4010 1750		9,20				
	l	12	12				21,00			
COLUMN BOTTOM	m	26	16	2350					61,10	
TOTAL LENGTH					2200	685,60	511,60	121,80	186,45	(IN METERS)

Figure 1: designs of the proposed tanks

**80mm O/FLOW DETAIL**

80mm

2% slope to be done

END IF A PIPE IS TO BE JOINED TO ANOTHER PIPE

ALTERNATIVELY, END OF PIPE CAN BE END IN CHANNEL THROUGHT WITH CARE, COVERED TO MATCH TO DETAILS OF WALL

OFFSET	No	BAR MARK	BAR DIA.	LENGTH	REMARKS	REMARKS
FLUME SLAB	1	b	10	250		
	2	c	10	375		
	3	d	10	475		
	4	e	10	575		
	5	f	10	675		
	6	g	10	775		
	7	h	10	875		
	8	i	10	975		
	9	j	10	1075		
	10	k	10	1175		
	11	l	10	1275		
	12	m	10	1375		
WALL	1	b	10	375	FOR THE BAR OF 400 LENGTH TO LAP WITH	CONCRETE
	2	c	10	475	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	3	d	10	575	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	4	e	10	675	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	5	f	10	775	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	6	g	10	875	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	7	h	10	975	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	8	i	10	1075	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	9	j	10	1175	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	10	k	10	1275	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	11	l	10	1375	FOR THE BAR OF 400 LENGTH TO LAP WITH	
	12	m	10	1475	FOR THE BAR OF 400 LENGTH TO LAP WITH	

**MINISTRY OF WATER & IRRIGATION- MAJI HOUSE**

**225M<sup>3</sup> MASONRY STORAGE TANK OR SUCTION SUMP**

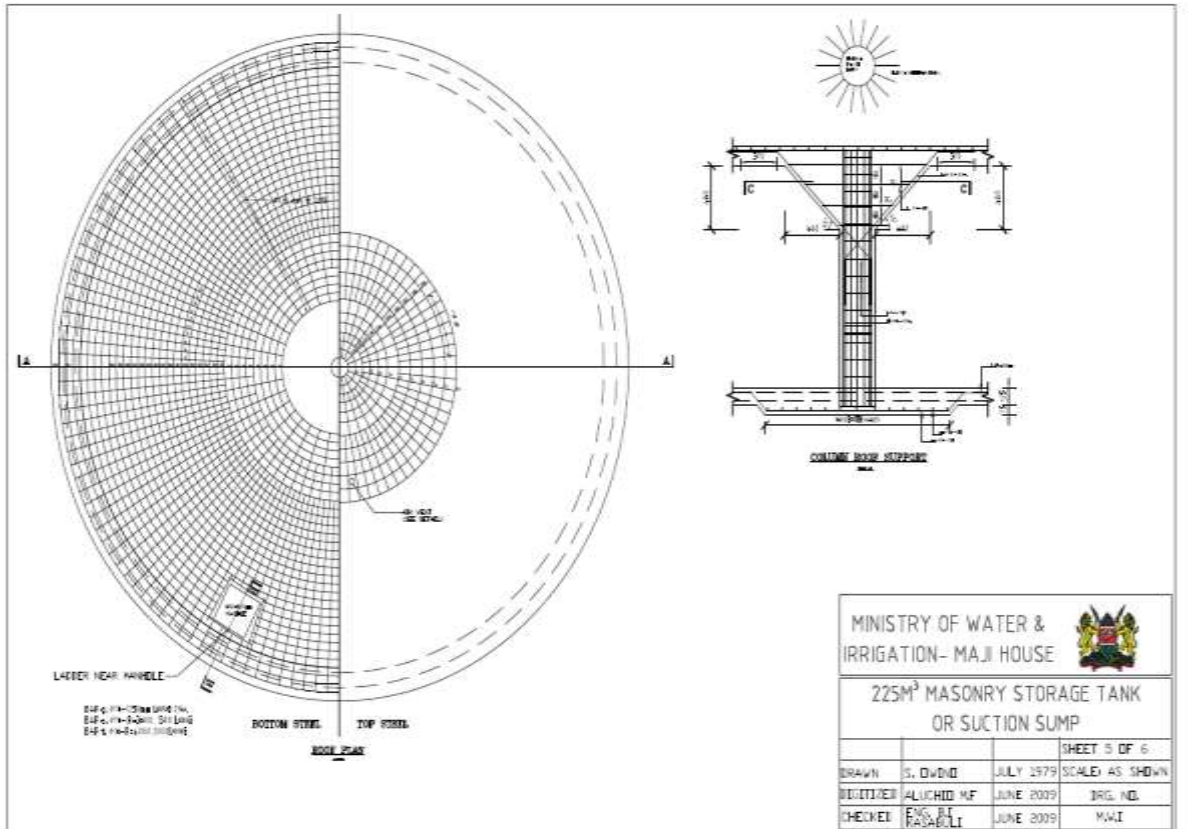
SHEET 3 OF 6

DRAWN: S. DVINO JULY 1979 SCALE: AS SHOWN

DESIGNED: ALUCHO MF JUNE 2009 DRG. NO.

CHECKED: [Signature] JUNE 2009 R.M.I

Figure 2: designs of the proposed sanction pump



**Figure 3:** proposed storage tank designs

## CHAPTER THREE: THE LOCATION OF THE PROJECT

### 3.1 Introduction

This chapter gives a description of the sitting, proof of land ownership, any environmental sensitive area, availability of supportive environmental management infrastructure and conformity to land use plan and zonation.

### 3.2 Location description

The project site is on an existing stretch across two wards Gatarakwa and Endarasha/Mwiyogo. The project supplies area is in three villages namely Gitegi, Ndunyu Guathi and Karaguriro. The proposed source of water is Ewaso Ng'iro river and the point is marked by the GPS coordinates S00.29744° E 036.73594° at an altitude of 2572 masl. This is in Manoro Village, Gitegi sub-location, Endarasha Location, Kieni West Division, Kieni West Sub County in Nyeri County.



**Figure 4:** Google map of the proposed project sites

### 3.3 Proof of land ownership

The project site committee has acquired land for the construction of the tanks LR No. NYERI/ENDARASHA/3275 and LR No. NYERI /ENDARASHA/3756. The off-take pipeline and the distribution line are either on the parcels of land belonging to the members of the project, those that are not members and public land. In all these cases, the project will seek written consent to pass their pipeline on these parcels of land. The proposed project has 3694 beneficiaries, 2135 males and 1499 females.

### 3.4 Environmental management infrastructure

#### 3.4.1 Water Resources

The sub-project site is relatively water-scarce with these conditions worsening during dry seasons. The dam is the main source of livestock and irrigation water in the area; there are however other water projects in the area including boreholes and water intakes from the

existing rivers. The water from the dams is used for domestic purposes and drinking water for livestock. The main rivers in the area include River Ewaso Ng'iro and other small tributaries both seasonal and permanent. The area does not have any water service provider and therefore depends on piped water for domestic use. The area does not have any water service provider.

### **3.4.2 Biological Environment**

The site environment dominantly consists of ingenuous tree species and some exotic trees planted on neighboring farmlands. Major crops grown include onions, potatoes, vegetables and other staple foods. There are also native grasses in the area with some papyrus reeds in the marshy areas. There also exist cypress, *mitarakwa spp*, *Olea Africana spp*, cypress bottle brush, *Croton Spp* and *Gravellea spp*. The vegetation forms a vegetation cover which form an important habitat for birds and other animal life forms. The project site is not in a protected area and does not have plants that have been marked for protection.

### **3.4.3 Transport and Communication Infrastructure**

The proposed sub project is accessed through Endarasha-Mweiga Road which is being upgraded to an all-weather road. Mobile network coverage is fairly good because of transmission boosters near Endarasha and Mweiga Towns which are in close proximities with the project area. The main mobile network providers in the sub project area are Safaricom, Telkom Kenya and Airtel Kenya.

### **3.4.4 Educational Institutions and Literacy**

There exist various learning institutions in the area ranging from kindergarten to secondary schools. The levels of enrolment in learning institutions are relatively lower than other parts of the county due to the fact that the population is relatively sparse. Most learners commute to school on foot while a few use schools' buses yet others use motorbikes and taxi. Some of the schools in the immediate project area include; Nganyuthe Primary School, Hill stead academy, Endarasha primary school and Endarasha Boys Secondary School. During the implementation of the project mitigation measure should be put in place to safeguard against child labor and possible accidents that may occur as a result of project activities.

### **3.4.5 Community Management Structure of the Project**

The Nganyuthe irrigation project proposes to upgrade the intake, construction of water tanks and distribution of water. The mandate of the project is to supply sustainable water to the community for domestic and minor irrigation the water project is run by a committee comprising of Seven (12) members including the Chairperson, Vice Chairperson Secretary, Vice Secretary, Treasurer and 7 other members. Out of the twelve, four (4) are female while eight (8) are male. The committee members are democratically to oversee the implementation of the projects. The committee representation is organized in zones whereby each zone has a representative in the management committee. The total membership of Nganyuthe irrigation Project is 3634 (males -2135 females-1499). Two thirds (2/3) of this membership are female while a third (1/3) are male.

A section of the Project committee will be integrated in the KCSAP Project Management Committee (PMC) charged with the role of overseeing the day-to-day implementation of the project both during the construction phase and implementation phase.

### **3.5 Land Use**

As per the land use zonation the proposed area of the project is under agricultural zone. The livelihoods of the residents within the project area are both livestock and crop farming. Most of the residents are moving towards keeping few but improved livestock such as grade dairy cattle in order to adapt to the changing climate in the area. The proposed Water Sub-project area falls within the agricultural area, where the livelihood of the people relies on both small-scale crop farming and livestock keeping. The livestock kept are mainly indigenous and crossbreeds' cattle and sheep while the crops that are grown include Irish potatoes, wheat, maize, and beans, horticultural crops (cabbages, leafy vegetables and sorghum). Owing to its location in the Aberdare ranges catchment, tourism is also significant the project area with several tourist destinations. Land preparation is done using hand tools due to the sloping terrain and the small size of the land.

## **CHAPTER FOUR: CONSULTATIVE PUBLIC PARTICIPATION**

### **4.1 Introduction**

This chapter discussed the objectives of community and stakeholders' consultations, categorization of the stakeholders, methodology of public participation and summary of the issues raised and responses.

### **4.2 Objectives of community and stakeholders' consultations**

- i. To inform all neighbours of the proposed upgrading Water intake and associated pipeline connections within their locality.
- ii. To explain to the neighbours the nature of the proposed upgrade water intake, its objectives and scope.
- iii. To give neighbours an opportunity to present their views, concerns and issues regarding the proposed project
- iv. To obtain suggestions from neighbours on possible mitigation measures of potential negative impacts of the proposed project.
- v. To obtain information from the project members and the neighbors on the existence of indigenous people and their contribution to the development of the project.

### **4.3 Methodology of public participation and consultation**

The public consultations were in the form of:

- i. Questionnaire survey- Respondents were purposively selected from the six sub locations to fill a questionnaire. The wards representatives, local chiefs, Sub County Environmental officer and Sub County Water officer also filled the questionnaire (*Duly filled questionnaire annexed*). Twenty questionnaires were disseminated for public participation but twelve were dully filled. From the dully signed questionnaires four were females and eight were males. Other relevant stakeholders from various departments were consulted on the suitability of the project.
- ii. Consultative meeting- one consultative meetings was held on 5<sup>th</sup> March 2021 Hillstead Academy, Nganyuthe Location (*The minutes, Photos and lists of attendance are annexed*).

### **4.4 Issues raised by the community and stakeholders and responses**

#### **4.4.1 positive and negative impacts raised**

The community members highlighted the various impacts the would be brought by the project

#### **Positive impacts**

- i. Employment opportunities to the neighboring community

- ii. Improve access water supply for irrigation and livestock
- iii. Reduced conflicts over water use in the area
- iv. Improved livelihoods
- v. Increased coverage of water supply to neighboring areas
- vi. Lower operating costs.
- vii. Improved food security

The community members also raised their concerns about possible negative impacts as follows:

- i. Possible contamination of water downstream during upgrading phase.
- ii. Interference with the natural environment at the point of intake.
- iii. Minimal reduction of water volume for users downstream.
- iv. Minimal loss of vegetation during intake upgrading and laying of pipeline

*The information gathered during the consultative public participation indicated that the general take of stakeholders is that the positive impacts of the project over-weigh the negative impacts. The negative impacts cited were considered insignificant and can therefore be mitigated and positive ones maximized.*

#### 4.4.2 Issues raised and addressed during the public participation

1. Labour distribution  
The community raised issues on how labour will be distributed during the project implementation  
The project committee will be involved when the labour was needed. The community especially the youth will be involved in activities of the project implementation.
2. Land  
The committee should ensure that the members where distributions lines will be located have signed agreements to ensure there are no conflicts on land and human displacements.
3. Project costs  
The community enquired on the specific cost of the project as in the BoQ. The KCSAP team has revised the community BoQ to fit all the project cost materials while ensuring quality and quantity without compromising the project objectives.  
The committee will be issued with the revised BoQ for their perusal and reference.
4. Corporate Social Responsibility (CSR) by the contractor  
Upon project implementation the community should discuss on the most appropriate CSR to benefit the project area.
5. Environmental and soil conservation  
The community through the Sub County Environmental and Agricultural officers should create awareness to the community on the most appropriate conservation method

#### 4.4.3 Key stakeholders consulted and analysis

Organization	No. of representatives	Key concerns raised	Summary of responses
Local administration	4	-covid 19 guidelines -collaboration	-all MOH covid il guidelines and directives should be

		between the two wards that is Gatarakwa and Endarasha/Mwiyogo members and beneficiaries	adhered. -the proposed project has incorporated members from the two wards. The members have been registered under the project. Beneficiaries of the project hail from the mentioned wards. All the members and beneficiaries' lists have been documented for reference.
<b>Water &amp; irrigation</b>	2-County Director Sub County Officer	-The sustainability of the project in terms of continuous water supply -The measures to be put in place in the management of the proposed water systems -The measures to be put in place in the management and resolutions of water conflicts	-The proposed project has conducted a Hydrological survey and design reports. From the report's findings have stipulated that the supply will be efficient with a number of prescribed measures such as water rationing, farming as per the stipulated acreage. - the project has a Social Accountability and Integrity Committee is operational to address any issues raised
<b>Environment &amp; climate change</b>	2- County Director Sub County Officer	-Riparian conservation -Indiscriminate cutting of trees -alternative sources of energy	-the committee will liaise with the department in supply of bamboo and other agroforestry trees. -the community should acquire a tree felling permit before tree felling activities -adopt renewable energy technologies
<b>Occupation safety and health</b>	1-DOSH	-Open trenches -PPEs	-warning signs to be erected in all open trenches refilling. -all trenches to be refilled to avoid any accidents -any person engaged during the project implementation should wear the most appropriate PPEs including masks for Covid 19 prevention.



<b>Water Resource Authority</b>	<b>1-Regional officer</b>	Water abstraction permit	-The community should acquire permit which is to be renewed annually.
<b>Agriculture department</b>	<b>3-Director, Sub county and Ward officers</b>	-soil and water conservation -safe use of chemicals -Sustainable land management -climate smart agriculture	-Recommended structures to be in place -Adopt integrated pest management (IPM) -Adopt conservation agriculture technologies -adopt climate smart agricultural technologies
<b>Vulnerable and Marginalized Groups</b>	<b>4-2 male 2 female representatives</b>	-agricultural value addition -use of information technology -mechanization	-training on value addition technologies -setting of small-scale cottage industries -use of ICT in marketing and advertising of agricultural produce
<b>Total stakeholders</b>	<b>17</b>		

## **CHAPTER FIVE: ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS AND THEIR MITIGATION MEASURES**

### **5.1 Introduction**

This chapter discusses the potential positive and negative environmental and social impacts and mitigation measures for the potential negative impacts for the three project phases i.e. construction, operational and decommissioning Phases.

### **5.2 Anticipated Positive Environmental and Social Impacts**

#### **a) Creation of Employment Opportunities to the Community**

The proposed project activities are expected provide short term employment opportunities to the host community. The proposed upgrading of the water intake of the Nganyuthe irrigation project will create employment opportunities for both skilled and unskilled workers. This will be beneficial both from the economic and social point of view. Economically, people employed will earn income which will improve their livelihoods and those of their families. Socially, the workers who will be engaged in productive employment will translate into reduced social ills at the same time fostering healthy interaction thus social integration.

#### **b) New Business Opportunities for the Host Community**

In the construction phase the local community will benefit from supply of essential items to the workers on site such as foodstuffs and construction material. This will contribute to increased household income. Farmers with farm produce will particularly benefit from the new market created for them during the construction stage. Market will be created for local transporters who will get the opportunity to ferry construction materials to the site and for the vehicle fuel filling stations that will get the business opportunity to sell fuel to vehicles and for machinery attached to the construction.

#### **c) Livelihood Diversification**

One of the objectives of the project is to increase water for minor irrigation. This will contribute to the introduction of various irrigated crops including grains and assorted horticultural crops. These are likely to contribute to livelihood diversification.

#### **d) Increased Household Income**

Beside household income obtained from the local supply of foodstuffs and construction materials the proposed project will also benefit households through higher crop, beef and dairy yield attained by introducing improved fodder for better livestock nutrition. This will result in increased household income for the households in the project area.

#### **e) Reduced Land Degradation**

Excessive surface water runoff is a contributor to soil erosion and land degradation. Harnessing surface run-off water in the project area into the water intake will convert it from destructive water to useful input for livestock and crop production. Therefore, beside increased agricultural productivity soil erosion in the area will also be checked both on the upper and lower sides of the project area. The landscaping that will be done after the upgrading process will also ensure soil erosion is minimized.

#### **f) Riparian conservation**

Conservation will be done along the river using appropriate riverine vegetation. The project will also advocate for environmental stewardship by training the local community on best environmental conservation practices.

#### **g) Food and Nutrition Security**

The main objective of the project is to support micro irrigation. This will lead to increased availability of food crop products (maize, beans, potatoes, cabbage, carrots, tomatoes and

onions) and milk. This is expected to contribute to food and nutrition security in the area. Crop production will no longer be solely reliant on prevailing rainfall thus farmers will have harvest at closer intervals.

**h) Source of Revenue for Government**

The supply of construction materials to the project and fuel will contribute revenue to the county and national government in form of VAT, Cess, fuel levies among others.

**i) Reliable Source of Water**

Considering the size of the water tanks there will be enough capacity to hold enough water which will enable reliable water supply throughout the year. Water from the dam will be a source of irrigation and watering for livestock.

**j) Market for Construction Materials**

The construction works will provide ready market for locally available construction materials such as cement, sand, timber, and steel, building stones and fencing materials. This will result in a boost in the local economy.

**k) Improved Well-being of Women and Children:**

In most cases, at the household level, women and children bear the burden of fetching water. Other than the time spent in getting water from long distances, these practices have far reaching consequences on their health and well-being. Improved water accessibility would translate to time saving by the women and children. Time saved thus would be invested in agricultural production and other engagements that could bring financial benefits to the family and increased time for studies for the children. This will also reduce exposure to security risks paused by travelling long distances in search for water.

**5.3 Anticipated Negative Impacts and Mitigation Measures in Preparatory Phase**

**a) Risk of Spread of Communicable diseases (Such as COVID-19) among community members during consultations**

This may occur when the Covid 19 rules and guidelines are not followed e.g., not wearing masks, no social distances during consultations and community meetings

**Mitigation Measures**

- Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible.
- Avoid concentrating community members at one location. In cases where a larger group must be engaged, then social distancing, hand washing and wearing of face masks should be maintained.
- The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet.
- Hold meetings in small groups, mainly in form of Focus Group Discussions (FGDs) if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration.

## **5.4 Anticipated Negative Impacts and Mitigation Measures during Construction phase**

### **Environmental impacts**

#### **a) Soil Erosion and Soil Quality Degradation**

Construction activities associated with heavy machines have the potential to loosen soils as a result of removal of vegetation and excavations. Disposal of excavated and other construction wastes may also result in soil degradation in the neighborhoods.

#### **Mitigation Measures:**

- Site clearing to commence only when the contractor is ready to undertake excavation and clearing should be minimal
- Excavated materials not reusable are not disposed on productive land that may result in degradation.
- Contractor should ensure proper compaction of intake area.
- Vehicles supplying materials to use marked routes to prevent loosening the soil.

#### **b) Dust Generation**

Dust will be emitted during excavation, movement of vehicles and related earthworks. Particulate matter pollution is likely to occur during excavation and related earthworks. This is likely to affect site workers and the project neighbors. Long hours of exposure might lead to respiratory and eye related complications.

#### **Mitigation Measures**

- Construction workers will be provided with proper PPEs including dust masks to mitigate against occupational health risks of inhaling dust
- Routine sprinkling of water on bare surfaces and dusty grounds;
- Contractor to enforce strict use of personal protective clothing.

#### **c) Water pollution**

Construction activities at the intake which will include excavation may lead to pollution of the water. The topography of the site is very steep and therefore any disturbance and uncontrolled excavation will lead to soil erosion and pollution.

#### **Mitigation measures**

- Controlled excavation should be taken to prevent any possibility of soil erosion
- Compacting of soils around the river should be carried out.
- Farmers around the intake should practice sustainable farming to avoid soil erosion and pesticides being drained to the river.
- Planting of bamboos and other riparian friendly trees should be planted immediately after the construction of the intake with advise from the sub county forester.

#### **d) Noise and Excess Vibrations**

The proposed project is likely result in noise emission as a result of machines such as excavators and rollers used on site during construction. Noise could impact negatively on the workers involved in the construction work. Noise can also be a nuisance to the local community near the site

#### **Mitigation Measures**

- Contractor to ensure the use of well-maintained machinery/equipment and vehicles
- All construction work to be limited to daytime only;

- Immediate neighbors to be notified in advance on the date of commencement of construction work and possible date of completion of works at the site.
- All employees likely to be exposed to ear noise to be provided with ear protectors;
- Contractor to ensure strict enforcement on use of ear protectors
- Avoid idling of Machines and vehicles engines and turn off when not in use.
- Where possible fit all noisy machines and equipment with noise arresters.

**e) Disturbance of Vegetation and Loss of Biodiversity**

The upgrading of the intake and construction of the tank's activities will require site clearing in preparation for construction and fencing. Some of the existing indigenous trees, shrubs and grasses will be lost. This will consequently affect the fauna species onsite and the neighborhood. This impact will however be of minimal significance since the site area is not vast and there exist similar vegetation on adjacent undisturbed parcels of land.

**Mitigation Measures**

- Clearing of vegetation shall be kept to a minimum
- Trees should be trimmed rather than removed wherever possible
- Contractor to ensure that specific routes are used for vehicle haulage and by the construction workers
- Sensitization of construction workforce on environmental and ecological conservation and protection.
- Compensatory planting of trees or other appropriate vegetation in the dam catchment by the contractor
- The proponent to support establishment of a community tree nursery for indigenous trees for replacement of felled trees.

**f) Generation of Solid Waste**

During the construction phase various activities will be carried out and involve the desilting and rehabilitation. Waste during the construction period will arise from operations at the sight. There will be a likelihood of accumulation of general solid waste at the site area.

**Mitigation Measures**

- The proponent should ensure recycling, reuse, reduction or disposed of waste in the designated and at the approved dumpsite.
- Provision of solid waste receptacles (waste bins)
- Sensitization of construction workers on proper disposal of solid wastes
- The Proponent to liaise with the County Government of Nyeri and NEMA office for guidance on licensed waste collectors and suitable dumping sites for generated wastes.

**g) Occupational Health and Safety Issues**

It is expected that employees are likely to be exposed to occupational health risks due to accidents at the construction site. Because of construction activities, workers are exposed to risks of accidents and injuries. Injuries can arise from use of tools and equipment general site preparation. The injuries can include cuts and bruises. Injuries from construction work can include falling from height and colliding. This exposure to risks of accidents and injuries is likely to extend to the pedestrians along the access road as a result of moving machinery to the site

**Mitigation Measures**

- Provision of suitable protective gear – PPE. The contractor should provide face overalls, helmets, safety boots, earmuffs, nose masks and gloves to the workers.
- Put in place appropriate safety signage along the construction route cautioning against various health and safety risks and prescribing particular mandatory actions

- The contractor should ensure there are no oil spills, no smoking, and no sources of ignition and proper use of warning signs in an explosive environment.
- Discourage unauthorized people from the project site- secure the site by fencing
- All sub-project workers should have insurance and workmen's compensation.
- Ensure the availability of Emergency contacts for police, ambulance, and Emergency response plans should be communicated and well understood.

### **Social impacts**

#### **a) Gender based violence and sexual harassment (GBV/SH)**

This impact is triggered during project construction phase when the contractor(s) fail to comply with the following provisions:

- Gender Inclusivity requirements in hiring of workers and entire project management as required by Gender Policy 2011 and 2/3 gender rule; and
- Failure to protect human risk areas associated with, disadvantaged groups, interfering with participation rights, and interfering with labour rights.

#### **The proposed Mitigation Measures of Human Rights and Gender Requirements are:**

- Ensure clear human resources policy against sexual harassment that is aligned with national law.
- Integrate provisions related to sexual harassment in the employee Code of Conduct.
- Ensure appointed human resources personnel to manage reports of sexual harassment according to policy.
- The contractor(s) shall require employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse.
- The contractor(s) will implement provisions that ensure that GBV at the community level is not triggered by the project, including:
- Effective and on-going community engagement and consultation, particularly with women and girls.
- Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc.
- The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment.
- The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.

#### **b) Sexual Exploitation and Abuse by project workers against community members**

This impact refers to sexual exploitation and abuse (SEA) committed by project staff against communities and represents a risk at all stages of the project, especially when employees and community members are not clear about prohibitions against SEA in the project.

#### **Mitigation measures**

- Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).
- The SEA action plan will include how the project will ensure necessary steps are in place for:

- ✓ Prevention of SEA: including Code of Conducts and ongoing sensitization of staff on responsibilities related to the Code of Conducts and consequences of non-compliance; project-level IEC materials.
- ✓ Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management.
- ✓ Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights.
- ✓ Management and Coordination: including integration of SEA in job descriptions, employment contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

**c) Risks of increased spread of COVID-19 at work sites**

During project execution (civil works), large numbers of workers will be required to assemble together in meetings, toolbox talks and even at work sites; varied number of workforce including suppliers of material and services are also expected to come in from various places in the country which may be COVID-19 hot spots; and interaction of workers with the project host community will happen as workers find accommodation close to work sites, and/or return to their homes after works. The potential for the spread of any infectious disease like COVID-19 by projects is high. There is also the risk that the project may experience large numbers of its workforce becoming ill and will need to consider how they will receive treatment, and whether this will impact on local healthcare services including the project host community.

**Mitigation Measures**

- The contractor(s) will develop a SOPs for managing the spread of COVID-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilization. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions.
- Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel.

**d) Child abuse**

Children within the project area will be exposed to risks associated with interaction between them and project workers. This includes child labour and sexual abuse which coherently leads to teenage pregnancies and exposure to communicable diseases such as HIV/AIDS.

**Mitigation measures**

- Comply with all relevant local legislation, including labour laws in relation to child labor specifically provisions of Kenya's Employment Act, 2007 (Cap. 226) Part VII on protection of children against exploitation.

- The contractor will develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project.
- All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behavior.
- Children under the age of 18 years will not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.

**e) Impacts related to occupational and public/community safety and health**

There are two main types of occupational health and safety hazards that may be of concern. These are physical and biological. Potential physical hazards will include noise and accidents. Biological hazards involve exposure to pathogenic organisms which may cause diseases. Specific areas of concern include noise and vibrations, congestion, body contact, failure to observe social distancing thus exposing other people to COVID-19, poor sanitation, gender-based violence, sexual harassment and accidents at the site. Poor sanitation could result from presence of potential environmental pollutants at the site including wastewater, decomposing solid wastes, dust and exhaust emissions in confined spaces. Accidents could result from lack of supervision and job training, improper handling of machinery and hand tools and inappropriate carrying out of tasks.

**Mitigation measures**

Mitigation options to some of the impacts have been discussed. Additional mitigation measures to other impacts are:

- Supervise all works at the site e.g. digging of the trenches, plumbing, masonry, etc.
- Support all structures under construction.
- Keep all passages clear at all times.
- Remove all soil, boulders, and other heavy materials from the edges of excavations.
- Fence the site for protection, privacy, reduction of trespass and theft, and control of entry by straying animals and therefore avoid conflicts between people at the site and the people in the neighborhood.
- Ensure that trained first aid personnel are always available on site to handle emergencies.
- Have a fully equipped First Aid Kit (containing a first aid manual and is equipped with sterile adhesive bandages, safety pins, cleansing agent/soap, latex gloves; sterile gauze pads triangular bandages, non-prescription drugs, scissors, tweezers and antiseptic amongst others) at the site at all times.
- Put in place an appropriate emergency response plan including having emergency contacts (such as ambulance, fire tender and police) conspicuously displayed.
- Dispose wastes from the site regularly and ensure high standards of cleanliness of all waste collection and disposal facilities.
- Frequently undertake workers through refresher courses in order to make them have a basic understanding of the tasks under them, the hazards involved, and how to manage them.
- Construct a pit latrine at the site and always keep it clean.
- Conduct regular maintenance of the proposed site and facilities thereat to increase the life of the proposed building making it safe for habitation.
- Rehabilitate areas within and outside the proposed site that will have been adversely affected by the construction through spillages of pollutants such as harmful chemicals, cement and paint among others and those that will have been destroyed in other ways.
- Ensure employee welfare including provision of free or subsidized medical attendance if injured on work, making provisions for leaves and offs, and operation of shorter-shift period for workers in highly polluted working areas.



- Post notices at the site to alert the people within or outside the site of the construction and any repair works and the need to be aware of falling objects and other potentially dangerous things and spots at the site and to warn them of potential consequences of their actions.
- Ensure high standards of construction as recommended in the approved structural designs and regular maintenance to increase the life of the structures at the site.

#### **f) Grievances/conflicts**

Common grievances expected to arise during the proposed project implementation include:  
Human and livestock interference with the project;

Negative project impacts which may include disruption of income streams, physical harm, and nuisance from construction activities;

Health and safety risks;

Socially-unacceptable project staff relations with the communities and other stakeholders;

Conflicts over water sources; and

Pollution and other environmental related impacts.

#### **Mitigation measures**

The following are possible mitigation measures to manage grievances:

- Establish a grievance redress mechanism (GRM) for the proposed project;
- Seek to establish amicable relationships with stakeholders and manage the impact of the project activities on affected communities;
- Put in place a pre-emptive community liaison structure aimed at identifying potential issues arising from project-related impacts and addressing them before they become grievances;
- Establish a grievance redress mechanism targeting communities and other project stakeholders but not applicable to commercial and employee-employee relationships, and which will allow stakeholders to easily put forth their concerns relating to the project, implementation and have them addressed in a prompt and respectful manner;
- Ensure the grievance redress mechanism is available to the affected community members and stakeholders at no cost;
- Address all raised grievances, real or imagined and take reasonable steps to maintain confidentiality of the parties to the mechanism and regardless of the complainants' participation in this process, give a guarantee that the complainant's statutory rights to undertake legal proceedings remain unaffected; and
- Educate all project stakeholders on the availability and use of the grievance redress mechanism in a manner that is understandable to all, before, during and after construction of the proposed project.

### **5.5 Anticipated Negative Impacts and Mitigation Measures during Operational Phase**

#### **a) Soil erosion**

During the operational phase of the project erosion is likely to occur on the walls of the dam. This is likely to result from the surface run off and burrowing by rodents. Trampling by livestock will it is important to undertake soil erosion control and management measures to increase the lifespan of the dam.

#### **Mitigation Measure**

- Proper compaction of soil during construction
- Control of livestock number in the vicinity of the dam (avail alternative watering point)

- Sensitization of farmers on soil erosion control and general environmental conservation
- Growing of grass and other soil erosion regulating plants along the riverine and in the farm around the river.
- Establishment of community tree nursery to provide for conservation tree seedlings
- Construction of gabions along the river and construction of terraces in the farm around the farms to prevent soil erosion.
- Planting indigenous tree species along the river catchment area.

#### **b) Water Pollution**

Water pollution may be caused by direct drinking by livestock from the river and the degradation of the catchment of the river due to deforestation and poor agricultural practices. The pollution of surface water would lead to the deterioration of water quality algal blooms, proliferation of aquatic weeds and eutrophication.

##### **Mitigation Measures**

- Improved waste management should be considered for the upper catchment area.
- Periodically sample water, test, treat and release
- Sensitize the community on the treatment of water before use.
- Sensitize the community on development of alternative water sources for domestic use such roof rainwater harvesting for households with iron roofs.
- Sensitization of farmers around the dam catchment on SLM practices
- Fencing of the intake and the tank site
- Water troughs and community water drawing points have been provided in the design

#### **c) Loss of Water Through leakages**

Over time there may be leakages in the intake, storage tanks or the distribution lines. This may be caused by human activities and natural causes. The irrigation committee should make sure that maintenance is done to avoid water losses.

##### **Mitigation Measures**

- Regular maintenance should be done on the water intake, water tanks and the distribution pipes.
- Farmers should be sensitized on not farming close to the distribution pipes to avoid damaging them that may then lead to leakages.
- A qualified plumber should be hired during the operation process for maintenance purposes
- In case of any leakages, corrective action should be taken immediately.

#### **d) Breaking of Intake Walls and Related Damages**

Excess rainfall over a longer period as recently observed in the area due to climate change effects and/or damage to the intake and a lack of maintenance could result in the intake walls breaking and suddenly discharging its water. The outcome may be destruction of property, land degradation and risk to people. The gradient of the intake area indicates high chances of water overflowing towards the inlet area in case of heavy rains.

##### **Mitigation Measures**

- The proponent to sensitize the community on the danger of establishing settlements in close proximity to the intake.
- The proponent to undertake annual Environmental Audit for the intake annually as required under EMCA 1999.

- Train the project management committee (PMC) and the local administration which will lead to early detection and responding to any risk situation/establish ER team
- The PMC to carry out monitoring and assessment of the intake walls and project site particularly before the onset of the rains and as the rains progress.
- Develop Emergency Response Plan
- Act upon the findings from scouting

**e) Competing Water Demand by Different Uses**

The proposed use of the harvested water for livestock and micro irrigation is bound to lead to competing uses between the two. This may result in adequate water availability for either of the competing uses.

**Mitigation measures**

- Use of water efficiency measures for micro irrigation
- Sensitization of the farmers on efficient water uses practices for crops
- Monitoring of the water use by the irrigation management committee

**5.5.1 Anticipated negative social impacts during operation phase**

**a) Health impact – creation of vector and rodents breeding grounds**

If the project commences with no well-designed storm water drains, the rain water may end up stagnating and hence creating conducive breeding areas for mosquitoes and other water based vectors leading to transmission of human diseases like malaria and cholera. The canals themselves could become a potential breeding ground for mosquitoes if the circulation of water is not regular. Diseases such as malaria and bilharzia may be common place due to the proliferation of mosquitoes and bilharzia parasites.

**Mitigation measures**

- Clear bushes in the surroundings areas and encourage usage of mosquito nets
- All hollow areas at the site should be filled with soil to prevent stagnation of water.
- Supply water purification tablets or promote domestic use of clean safe water

**b) Sexual Exploitation and Abuse by project workers against community members**

This impact refers to sexual exploitation and abuse (SEA) committed by project staff against communities and represents a risk at all stages of the project, especially when employees and community members are not clear about prohibitions against SEA in the project.

**Mitigation measures**

- Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank’s Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).
- The SEA action plan will include how the project will ensure necessary steps are in place for:
  - i. Prevention of SEA: including Code of Conducts and ongoing sensitization of staff on responsibilities related to the Code of Conducts and consequences of non-compliance; project-level IEC materials.
  - ii. Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case

- oversight, investigation and disciplinary procedures at the project level, including confidential data management.
- iii. iii) Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights.
  - iv. iv) Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

**c) Grievances/conflicts**

Common grievances expected to arise during the proposed project implementation include:

- Negative project impacts which may include disruption of income streams, physical harm, and nuisance from construction activities;
- Health and safety risks;
- Socially-unacceptable project staff relations with the communities and other stakeholders;
- Conflicts over water sources; and
- Pollution and other environmental related impacts.

**Mitigation measures**

- The following are possible mitigation measures to manage grievances:
- Establish a grievance redress mechanism (GRM) for the proposed project;
- Establish a grievance redress mechanism targeting communities and other project stakeholders but not applicable to commercial and employee-employee relationships, and which will allow stakeholders to easily put forth their concerns relating to the project, implementation and have them addressed in a prompt and respectful manner;
- Address all raised grievances, real or imagined and take reasonable steps to maintain confidentiality of the parties to the mechanism and regardless of the complainants' participation in this process, give a guarantee that the complainant's statutory rights to undertake legal proceedings remain unaffected; and

**d) Child abuse**

Children within the project area will be exposed to risks associated with interaction between them and project staff. This includes child labour and sexual abuse which coherently leads to teenage pregnancies and exposure to communicable diseases such as HIV/AIDS.

**Mitigation measures**

- The Proponent will develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project.
- Refrain from hiring children for domestic or other labour, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.

- Comply with all relevant local legislation, including labour laws in relation to child labour specifically provisions of Kenya’s Employment Act, 2007 (Cap. 226) Part VII on protection of children against exploitation.

**e) Impacts related to occupational and public/community safety and health**

Specific areas of concerns are noise and vibrations, congestion, body contact, failure to observe social distancing thus exposing other people to COVID-19, poor sanitation, gender-based violence, sexual harassment and accidents at the site. Poor sanitation could result from presence of potential environmental pollutants at the site including wastewater, decomposing solid wastes, dust and exhaust emissions. Accidents including cuts, pricks and bruises, falling in uncovered holes and/or trenches and from raised places and suffocation from lack of oxygen in confined spaces. Accidents could result from lack of supervision and job training, improper handling of machinery and hand tools and inappropriate carrying out of tasks.

**Mitigation measures**

Mitigation options to some of the impacts have been discussed. Additional mitigation measures to other impacts are:

- Remove all soil, boulders, and other heavy materials from the edges of excavations.
- Fence the site for protection, privacy, reduction of trespass and theft, and control of entry by straying animals and therefore avoid conflicts between people at the site and the people in the neighborhood.
- Put in place an appropriate emergency response plan including having emergency contacts (such as ambulance, fire tender and police) conspicuously displayed.
- Dispose wastes from the site regularly and ensure high standards of cleanliness of all waste collection and disposal facilities.
- Provide appropriate PPE including face masks, goggles, scarfs, boots and overalls among other protective clothing to all workers and people at the site and sensitize them to use them whenever they are in environments that warrant the use of such PPE especially in all situations where the body and skin are potentially exposed to hazards such as chemicals, harmful dusts, highly infectious wastes, sharp objects, burns and extreme temperature and/or when working in areas that present threatening experiences.
- Control waterborne diseases by conducting regular maintenance of pipes and taps to fix leakages and prevent underground leakages which contaminates water; ensuring sanitation at the site; regularly conducting chemical and bacteriological quality of the water to ascertain its suitability for consumption; and treating water before drinking using approved home-based treatment methods such as filtration using life-straw, boiling and use of chemicals such as chlorine-based preparations.

**5.6 Anticipated Impacts during the Decommissioning Phase**

**a) Solid waste generation:**

During the decommissioning phase various activities will be carried that are likely to generate solid waste at the sight thus a likelihood of accumulation of general solid waste at the site area.

**Mitigation Measures**

- The proponent should ensure recycling, reuse, reduction or disposed of waste in the designated and at the approved dumpsite.

- Provision of temporary solid waste receptacles (waste bins)
- Sensitization of construction workers on proper disposal of solid wastes
- The Proponent to liaise with the County Government of Nyeri and NEMA office for guidance on licensed waste collectors and suitable dumping sites for generated wastes.

**b) Noise and vibrations:**

Noise emission and vibrations is generated by machines like excavators used on site during demolition. Noise could impact negatively on the workers involved in the construction work. Noise can also be a nuisance to the local community near the site if works begins early in the morning to late in the night.

**Mitigation Measures**

- Maintain the levels of noise pollution from the machinery in accordance to the manufacturer's specifications
- All construction work to be limited to daytime only;
- Immediate neighbors to be notified in advance on the date of commencement of construction work.
- All employees likely to be exposed to ear noise to be provided with ear protectors;
- Contractor to ensure strict enforcement on use of ear protectors

**c) Occupational Health and Safety Risks**

It is expected that employees are likely to encounter occupational health risks due to accidents during demolition at the project site. Because of demolition activities, workers are exposed to risks of accidents and injuries. Injuries can arise from use of tools and equipment general site preparation. The injuries can include cuts and bruises. Injuries from construction work can include falling from height and colliding.

**Mitigation Measures**

- Adhere to Site Occupational Health and Safety rules and regulations as stipulated in the Occupational Safety Act of Kenya of 2007 and revised in 2010.
- Erect an appropriate project signboard as directed by the proponent
- Erect the appropriate safety signage along the construction route cautioning against various health and safety risks and prescribing particular mandatory actions
- Provide adequate first-aid facilities in the project sites to handle medical emergencies during construction and PPEs
- Comply with the National and International Labor laws
- Should there be an accident, the injured person should be given first and immediately taken to the hospital and investigation initiated immediately to ascertain the cause of accidents and preliminary report released within 12 hours

## **CHAPTER SIX: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN**

### **6.1 Introduction**

The Environmental and Social Management Plan (ESMMP) developed for the proposed Nganyuthe Irrigation project upgrading shall be implemented and operationalized by Project Proponent to ensure objective management of environmental issues throughout the project cycle.

### **6.2 Environmental and Social Management and Monitoring Plan**

**Table 1:** Environmental and Social Management and Monitoring Plan (ESMMP)

<b>ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN</b>						
<b>ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN DURING PLANNING PHASE</b>						
<b>Social Impact</b>	<b>Proposed mitigation measure</b>	<b>Indicator</b>	<b>Responsibility</b>	<b>Means of verification</b>	<b>Time frame/frequency</b>	<b>Estimated cost in Ksh</b>
Risk of covid 19 spread	-social distancing -wearing of appropriate face masks -regular washing of hands and sanitizing	Watering points, displayed sanitizers, people wearing masks	Committee, SPR expert	No of Covid 19 cases No of purchased PPEs	One month	20,000
Subtotal 1						20,000
<b>ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN DURING CONSTRUCTION PHASE</b>						
<b>Environmental Impacts</b>	<b>Proposed mitigation measure</b>	<b>Indicator</b>	<b>Responsibility</b>	<b>Means of verification</b>	<b>Time frame/frequency</b>	<b>Estimated cost in Ksh</b>
Loss and disturbance of biodiversity	✓ minimal vegetation clearing ✓ -pruning and trimming rather than cutting	trees planted total area landscape	County Forester Contactor Community	Tree dispatch reports Tree felling permits given	Six months	30,000



	<ul style="list-style-type: none"> <li>✓ -proponent to establish a nursery</li> <li>✓ -obtaining tree felling permits were necessary</li> </ul>					
Accumulation of solid waste	<ul style="list-style-type: none"> <li>✓ -segregation of waste</li> <li>✓ -provision of sanitary facilities</li> <li>✓ -waste collection points</li> <li>✓ -Reuse, recycle and reduce</li> </ul>	<p>Waste facilities available</p> <p>Sanitary facilities</p>	<p>Contractor</p> <p>Community</p> <p>Sub county environment and sanitation officer</p>	Waste collection reports	Six months	40,000
Soil erosion	<ul style="list-style-type: none"> <li>✓ -controlled soil excavation</li> <li>✓ -tree planting and landscaping of the excavate areas</li> <li>✓ -sustainable land and soil management measures</li> <li>✓ -training and demonstration on SLM</li> </ul>	<p>trees planted</p> <p>gabions constructed along sensitive areas</p> <p>training conducted</p> <p>soil conservation structures constructed</p>	<p>Contactor</p> <p>Community</p> <p>Sub county environment and agricultural officer</p>	<p>Tree purchase receipts</p> <p>Training reports</p> <p>No of structure constructed</p>	Through the project cycle	60,000
Water pollution	<ul style="list-style-type: none"> <li>✓ -safe use of pesticides and fertilizers</li> <li>✓ -training the farmers on integrated pesticides</li> </ul>	<p>trainings done to the farmers</p> <p>conservation structures constructed</p> <p>number of water</p>	<p>County program coordinator</p> <p>Contractor</p> <p>Community</p> <p>Sub county water and</p>	<p>Training reports</p> <p>Trees purchased</p> <p>Payments for structures constructed</p> <p>-resolved complaints and</p>	Six months	50,000

	<ul style="list-style-type: none"> <li>✓ management</li> <li>✓ -sustainable farming methods</li> <li>✓ -construction soil conservation</li> <li>✓ structures</li> <li>✓ tree planting</li> </ul>	pollution complaints	agricultural officer	their documentations		
Subtotal 2						180,000
<b>Social Impacts</b>	<b>Proposed mitigation measure</b>	<b>Indicator</b>	<b>Responsibility</b>	<b>Means of verification</b>	<b>Time frame/frequency</b>	<b>Estimated cost in Ksh</b>
Gender based violence and sexual harassment (GBV/SH)	<ul style="list-style-type: none"> <li>✓ Ensure clear human resources policy against sexual harassment that is aligned with national law</li> <li>✓ -The contractor(s) shall require employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on</li> </ul>	<ul style="list-style-type: none"> <li>-GBV/SH trainings done to the community members and the contractors team</li> <li>-complaints submitted in relation to GBV/SH</li> <li>-signing of code of conduct against GBV/SH</li> </ul>	<ul style="list-style-type: none"> <li>Department of social development</li> <li>Contractor</li> <li>Community</li> <li>CPCU</li> <li>Local administration</li> </ul>	<ul style="list-style-type: none"> <li>Signed code of conduct</li> <li>Record of complaints registered and resolved</li> <li>Reports and minutes on trainings done</li> </ul>	Six months	60,000

	<p>protection from sexual exploitation and abuse</p> <ul style="list-style-type: none"> <li>✓ -The contractor(s) will implement provisions that ensure that GBV at the community level is not triggered by the project, including:</li> <li>✓ Effective and on-going community engagement and consultation, particularly with women and girls.</li> <li>✓ Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc.</li> <li>✓ The contractor shall develop</li> </ul>					
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	<p>specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment.</p> <p>✓ The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.</p>					
Child abuse	<p>✓ Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act, 2007 (Cap. 226) Part VII on</p>	<p>-child abuse trainings done to the community members and the contractors team</p> <p>-complaints submitted in relation to child</p> <p>-signing of code of conduct against</p>	<p>Department of children welfare</p> <p>Department of social development</p> <p>Contractor</p> <p>Community</p> <p>CPCU</p> <p>Local administration</p>	<p>Signed code of conduct</p> <p>Record of complaints registered and resolved</p> <p>Reports and minutes on trainings done</p>	Six months	60,000

	<p>protection of children against exploitation and Children's Act section 10 and sexual offences 2003.</p> <ul style="list-style-type: none"> <li>✓ The contractor will develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project.</li> <li>✓ All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behavior.</li> <li>✓ Children under the age of 18 years will not be hired on site as</li> </ul>	child abuse				
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	provided by Child Rights Act (Amendment Bill) 2014.					
Grievances and conflicts	<ul style="list-style-type: none"> <li>✓ Training the community on Grievance redress mechanism</li> <li>✓ Development of Grievance Redress Mechanism procedures</li> <li>✓ Pre-emptive community liaison structure conflict resolution</li> <li>✓ Documentation of the complaints and conflicts submitted</li> <li>✓ Following of all the rules that are in relation to the grievance recorded</li> </ul>	<p>No of signed code of conduct by the workers</p> <p>Community user's development plan</p> <p>Grievance Redress register with registered complaints</p>	<p>Department of social development</p> <p>Contractor</p> <p>Community</p> <p>CPCU</p> <p>Local administration</p>	<p>Minutes of the meetings</p> <p>Reports of the training</p> <p>Attendance register</p> <p>Grievance Redress register</p>	Six months	70,000
Health, Safety of workers and local	<p>Workers</p> <ul style="list-style-type: none"> <li>✓ Provide steps to</li> </ul>	<ul style="list-style-type: none"> <li>✓ No. of sensitization meetings done</li> </ul>	<p>County Director Occupational Health and Safety</p>			

community	<p>access the base of the reservoir.</p> <ul style="list-style-type: none"> <li>✓ Provide workers with potable water</li> <li>✓ Washrooms should be accessible from the sites</li> <li>✓ Avoid overcrowding during construction and mostly so during wet season.</li> <li>✓ Recruit workers from local area and consider gender sensitivity.</li> <li>✓ Provide PPE e.g. overalls and dust masks</li> <li>✓ Develop an emergency response plan and safety drills.</li> <li>✓ Observe covid-19 and other health procedures including SOPs</li> <li>✓</li> </ul>	<ul style="list-style-type: none"> <li>✓ No of workers using PPEs on use by those involved at the demolition site</li> <li>✓ Trained workers on First-aid</li> <li>✓ Incidence report</li> <li>✓ Contingency plan for accident response in place</li> </ul>	<p>CPCU</p> <p>Project management committee</p> <p>Contractor</p>			
	<p>Local community</p> <ul style="list-style-type: none"> <li>✓ Fence off the</li> </ul>	<ul style="list-style-type: none"> <li>✓ Number of COVID-19</li> </ul>				

	intake site ✓ All threats to safety should be reported for immediate action. ✓ Display clear and visible warnings e.g. “ NO ACCESS TO THE SITE” or “DANGER/HATARI” ✓ Use of manual and local labor ✓ Undertaking of work mainly during day time	sensitizations conducted and Records of participants etc.  ✓ Emergency contacts at the site				
Subtotal 3						190,000
<b>ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN DURING OPERATIONAL PHASE</b>						
<b>Environmental Impacts</b>	<b>Proposed mitigation measure</b>	<b>Indicator</b>	<b>Responsibility</b>	<b>Means of verification</b>	<b>Time frame/frequency</b>	<b>Estimated cost in Ksh</b>
Water quality –fertilizer, pesticides suspended solids	✓ By laws should take care of water quality issues associated with livestock and children ✓ Train on safe use	✓ trainings done to the farmers ✓ conservation structures constructed ✓ number of	✓ Project management committee ✓ CPCU ✓ Sub county water and irrigation	✓ Tracking records ✓ Licenses ✓ Photos	2yrs	40,000



	<p>of pesticides and disposal of washings and waste containers</p> <ul style="list-style-type: none"> <li>✓ Crop growing areas requiring use of pesticides and fertilizers should be identified and zoned downwards.</li> <li>✓ Construct silt trapping sieves, and sedimentation ponds including Tanks and check dams where possible.</li> <li>✓ Proper observation on used chemicals including control on leakages and spills to avoid contamination of soil.</li> </ul>	<p>water pollution complaints</p>	<p>officers</p>			
Loss of biodiversity	<ul style="list-style-type: none"> <li>✓ The walk ways should be designated in the farmland.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Vegetation cleared</li> <li>✓ Established nursery</li> </ul>	<ul style="list-style-type: none"> <li>✓ Project management committee</li> <li>✓ CPCU</li> </ul>	<ul style="list-style-type: none"> <li>✓ Tree planting register</li> <li>✓ Photos</li> <li>✓ Reports</li> </ul>	2yrs	40,000

	<ul style="list-style-type: none"> <li>✓ Soil conservation techniques should be addressed mostly on critical areas e.g. built check dams.</li> <li>✓ Adaptable tree species should be introduced mostly on water ways and other affected areas by human activities.</li> <li>✓ Spill way should be located appropriately to avoid flooding downstream.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Trees planted</li> </ul>	<ul style="list-style-type: none"> <li>✓ Sub county water and irrigation officers</li> </ul>			
Generation of Solid waste	<ul style="list-style-type: none"> <li>• Provide solid waste facilities (waste bins) for temporary disposal of waste before disposal to appropriate and designated locations.</li> <li>• Liaise with the County Government of Nyeri and local</li> </ul>	<ul style="list-style-type: none"> <li>• Quantity of waste collected <ul style="list-style-type: none"> <li>✓ No. of waste receptacles</li> <li>✓ No. of licensed waste handlers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Project management committee</li> <li>✓ CPCU</li> </ul>	<ul style="list-style-type: none"> <li>✓ Tracking records</li> <li>✓ Photos</li> <li>✓ Copies of license</li> </ul>	3 months	40,000

	<p>NEMA office for guidance on licensed waste collectors and suitable dumping sites for generated wastes</p> <ul style="list-style-type: none"> <li>✓ All materials must be removed and recycled/reused as far as possible</li> </ul>					
Siltation	<ul style="list-style-type: none"> <li>✓ Soil conservation should be addressed seriously.</li> <li>✓ By-laws to ensure operation and maintenance.</li> <li>✓ Training project members on maintenance of the facility.</li> <li>✓ Use of the recommended materials and skilled labor for technical work.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Visible soil erosion control measures in place</li> <li>✓ Areas already landscaped</li> </ul>	<ul style="list-style-type: none"> <li>✓ Contractor/Supervising engineer/work foreman</li> </ul>	<ul style="list-style-type: none"> <li>✓ Photos of original site and current site status</li> </ul>	3 months	20,000
Subtotal 4						140,000

Social Impacts	Proposed mitigation measure	Indicator	Responsibility	Means of verification	Time frame/frequency	Estimated cost in Ksh
Water demand conflicts	<ul style="list-style-type: none"> <li>✓ Train locals and community beneficiaries on efficient water use</li> <li>✓ Development of water rationing plans</li> <li>✓ Prioritize efficient technologies such as drip irrigation for the project.</li> <li>✓ Schedule should be set for growing drought resistant crops during dry spell season</li> <li>✓ Other water sources should be introduced to curb water shortage.</li> <li>✓ By laws should be followed and enforced.</li> <li>✓ Penalties and fines should be</li> </ul>	<ul style="list-style-type: none"> <li>✓ trainings done to the farmers</li> <li>✓ conservation structures constructed</li> <li>✓ number of water pollution complaints</li> </ul>	<ul style="list-style-type: none"> <li>✓ Project management committee</li> <li>✓ CPCU</li> <li>✓ Sub county water and irrigation officers</li> </ul>	<ul style="list-style-type: none"> <li>✓ Minutes of the meetings</li> <li>✓ Reports of the training</li> <li>✓ Attendance register</li> <li>✓ Grievance Redress register</li> </ul>	2yrs	50,000

	<p>introduced.</p> <ul style="list-style-type: none"> <li>✓ Drip irrigation should be used</li> <li>✓ Untreated water purely used for irrigation and not for domestic use purposes.</li> <li>✓ Come up with and adhere to proper GRMs</li> </ul>					
Spread of covid 19	<ul style="list-style-type: none"> <li>✓ project management committee will develop a SOPs for managing the spread of Covid-19 during project execution. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives, and site-specific project conditions.</li> <li>✓ Mandatory</li> </ul>	<p>Availability of:</p> <ul style="list-style-type: none"> <li>✓ SOP(s),</li> <li>✓ Training material,</li> <li>✓ PPE,</li> <li>✓ Sanitizing facilities,</li> <li>✓ Installed hand washing equipment</li> </ul>	<ul style="list-style-type: none"> <li>✓ Project management committee</li> <li>✓ CPCU</li> <li>✓ Public Health</li> </ul>	<ul style="list-style-type: none"> <li>✓ SOPs,</li> <li>✓ Project assessment reports,</li> <li>✓ Purchase orders/receipts,</li> <li>✓ Photos</li> </ul>	Continuous	50,000

	<p>provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel</p> <ul style="list-style-type: none"> <li>✓ Maintaining social distancing at least 2 meters.</li> <li>✓ All workers and visitors accessing facility every day 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</li> </ul>					
Subtotal 5						100,000

**ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN DURING DECOMMISSIONING PHASE**

<b>Environmental Impacts</b>	<b>Proposed mitigation measure</b>	<b>Indicator</b>	<b>Responsibility</b>	<b>Means of verification</b>	<b>Time frame/frequency</b>	<b>Estimated cost in Ksh</b>
Site contamination	<ul style="list-style-type: none"> <li>✓ All construction waste materials should be disposed off immediately or reused for other purposes</li> <li>✓ Uproot all pipes and distribution networks</li> <li>✓ Change of user and reuse pipeline for alternative purposes</li> <li>✓ Reuse, recycle and reduce</li> <li>✓ Preparation and submission of a decommissioning plan to the NEMA</li> </ul>	<ul style="list-style-type: none"> <li>✓ Quantity of debris collected</li> <li>✓ No. of licensed waste handlers</li> <li>✓ Approved decommissioning plan</li> </ul>	<ul style="list-style-type: none"> <li>✓ Contractor</li> <li>✓ Project management committee</li> <li>✓ CPCU</li> <li>✓ NEMA</li> </ul>	<ul style="list-style-type: none"> <li>✓ Waste collection register</li> <li>✓ Work tickets for waste handlers</li> <li>✓ Decommissioning plan</li> </ul>	6months	50,000
Reduced aesthetic value of the	<ul style="list-style-type: none"> <li>✓ Do re-vegetation of the site to the community</li> </ul>	<ul style="list-style-type: none"> <li>✓ Number of trees planted</li> <li>✓ Size of the</li> </ul>	<ul style="list-style-type: none"> <li>✓ Contractor</li> <li>✓ Project management</li> </ul>	<ul style="list-style-type: none"> <li>✓ Decommissioning plan</li> <li>✓ Tree dispatch</li> </ul>	3 months	40,000

site	<p>satisfaction.</p> <ul style="list-style-type: none"> <li>✓ During demolition, appropriate surface run-off controls will be undertaken to minimize erosion.</li> <li>✓ Constant monitoring and inspection of the demolition works to prevent accidents</li> <li>✓ Landscaping of affected/decommissioned sites.</li> <li>✓ Preparation and submission of a decommissioning plan to the NEMA</li> </ul>	<p>area landscaped</p> <ul style="list-style-type: none"> <li>✓ photos of the decommissioned site</li> <li>✓ site monitoring reports</li> <li>✓ approved decommissioning plan</li> </ul>	<p>committee</p> <ul style="list-style-type: none"> <li>✓ CPCU</li> <li>✓ NEMA</li> </ul>	<p>reports</p> <ul style="list-style-type: none"> <li>✓ Tree planting and monitoring reports</li> <li>✓ Site monitoring reports</li> </ul>		
Loss of employment	<ul style="list-style-type: none"> <li>✓ Prior notification of the facility management, employees, local community members and relevant local leaders</li> <li>✓ Where possible</li> </ul>	<ul style="list-style-type: none"> <li>✓ Notifications issued</li> <li>✓ No. of forums held</li> </ul>	<p>Contractor Project management committee CPCU</p>	<ul style="list-style-type: none"> <li>✓ Memos</li> <li>✓ Letters</li> </ul>	10,000	



	provide an alternative source of livelihood					
Subtotal 6					100,000	
Total ESMMP cost						730,000

## **CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION**

### **7.1 Conclusions**

The Environmental and Social Impact Assessment has established that several positive impacts which will accrue as a result of implementing the proposed project far much outweigh the anticipated negative impacts which can however be adequately mitigated. The Study has established the baseline information of the project area against which any changes will be monitored. The proponent will be committed to maximizing on the positive impacts which will have far reaching effects while mitigating the adverse impacts as per the ESMP in chapter eight. This study therefore concludes that the proposed desilting and rehabilitation of the dam will **not** result significant negative impacts that can compromise the ecological, socio-cultural, economic and environmental integrity of the host environment as well as health and safety of the residents. There was no objection on the sub project from the community and the stakeholders

### **7.2 Recommendations**

- This study recommends that the proposed project proponent be allowed to proceed with the proposed project with strict adherence to the ESMP. The ESMP should be shared with the Contractor to ensure the responsibilities assigned in the ESMP. The contractor will also be required to employ a qualified Environmental and Social Safeguards specialist as well as Safety and Health officer to oversee implementation of the ESMP.
- The proponent should share the ESMP with the all-other responsible stakeholders and that the ESMP form part and parcel of the Contractor's contract to ensure that their obligations as outlined in the ESMP are executed.
- The proponent will be required to undertake annual environmental audit pursuant to the provisions of EMCA.
- The proponent will be required to develop an ERP and establish the ER team.
- The project management unit to apply for the WRA license and permits on quality and water use as a legal requirement.

## REFERENCES

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Annex 1: WARMA water abstraction permit



## WATER RESOURCES AUTHORITY

Sub Regional Manager,  
Water Resources Authority,  
Upper Ewaso Ng'iro Sub Region  
P.O. BOX 1331 - 10400,  
NANYUKI

Tel: 062-31784  
Cell: 0722342212  
Email: wrma.nanyuki@yahoo.com

REF:WRMA/50/NUK/5BB/13/S .....

6<sup>th</sup> March 2018

NGANYUTHE WATER PROJECT  
P.O BOX 59-10107  
ENDARASHA.

**RE: SURFACE WATER PERMIT –WRMA/50/NUK/5BB/13/S**

Forwarded herewith, please find the above mentioned document for your information and retention.

Please strictly follow the condition stipulated in this Permit for the use of water.

Thank you

A handwritten signature in black ink, appearing to read "Isaac Karimi".

Isaac Karimi  
For: Assistant Technical Coordination Manager  
UPPER EWASONG'IRO SUB-REGION.

Cc

Deputy Technical coordination Manager  
ENNCA


*Accounting for Every Drop!*

WRA is ISO 9001:2008 Certified

**Annex 2: certificate of registration**

 Certificate No. <b>3565621</b>	
Registration of Groups 2014 <b>Republic of Kenya</b>	
<b>MINISTRY OF LABOUR, SOCIAL SECURITY AND SERVICES</b> <b>Certificate of Registration of Self-help Group/Project</b>	
<b>This is to Certify that</b>	
NGANYUTHE WATER PROJECT P.O. BOX 59, ENDARASHA Group Name / Project	
NEY/REG/CD/A/7502 Registration No.	19TH SEPT. 1997 Date of Registration
IGITIGI Sub-location / Ward	KENI Constituency
ENDARASHA Location	KENI WEST Sub County
GATARAENA Division	NYERI County
<b>is registered with the office of the Sub County Social Development Officer as a Self-Help Group / Project</b>	
_____ For: Sub County Social Development Committees	
KENI WEST Sub County	
7TH JULY, 2015 Date of Issue	
Note: The Contents of this Certificate should not be erased, altered or defaced in any way.	

**Annex 3: evidence of land ownership (title deed)**

  
REPUBLIC OF KENYA  
THE REGISTERED LAND ACT  
(Chapter 300)



# Title Deed

Title Number NYERI/ENDARASHA/3756  
Approximate Area 0.101 Ha  
Registry Map Sheet No. 1

*This is to certify that* NGANYU THE SELF HELP WATER PROJECT  
P.O. BOX 137 ENDARASHA

is (are) now registered as the absolute proprietor(s) of the land comprised in the above-mentioned title, subject to the entries in the register relating to the land and to such of the overriding interests set out in section 30 of the Registered Land Act as may for the time being subsist and affect the land.

GIVEN under my hand and the seal of the  
NYERI District Land Registry  
this 28th day of May 2012

  
  
Land Registrar

Annex 4: evidence of land ownership (Title deed 2)



REPUBLIC OF KENYA

THE REGISTERED LAND ACT  
(Chapter 300)

# Title Deed

Title Number NYERI/ENDARASHA/3275

Approximate Area 0.10 HA.

Registry Map Sheet No. 3

*This is to certify that* NGANYUTHE WATER PROJECT  
OF P.O. BOX 83, ENDARASHA.

is (~~was~~) now registered as the absolute proprietor(~~s~~) of the land comprised in the above-mentioned title, subject to the entries in the register relating to the land and to such of the overriding interests set out in section 30 of the Registered Land Act as may for the time being subsist and affect the land.



GIVEN under my hand and the seal of the  
NYERI District Land Registry

this 30th day of June 20 09

  
Land Registrar  
B. M. Mwalu No. 203



**Annex 5: Evidence of public participation and consultations**

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED NGANYUTHE IRRIGATION PROJECT**

**PUBLIC PARTICIPATION QUESTIONNAIRE**

Nganyuthe Irrigation Water Project is proposing to undertake the following activities the Upgrade Water Intake, Construction of storage masonry tanks, Construction of main lines, sub mains and distribution pipes. The Project will cover Gatarakwa and Mweiga /Mwiyogo Ward both in Kiini West Sub-County, Nyeri County.

An environmental and social impact assessment (ESIA) has been commissioned in accordance with the Environmental Management and Coordination Act 1999 and World Bank Guidelines. As part of this exercise, kindly express your honest opinion on the proposed development with respect to your neighborhood, welfare, safety, infrastructure and public amenities among other issues that you may consider pertinent.

1. Please indicate the following:

- a. Title (Entrepreneur, employee etc.) ..... *Farmer*
- b. For how long have you known <sup>Nganyuthe</sup> ~~Nganyuthe~~ ~~Water~~ ~~Project~~? ..... ~~4~~ *over 20yrs*
- c. For how long have you known <sup>Mweiga</sup> ~~Mweiga~~ ~~Water~~ ~~Project~~? ..... *over 20 yrs*

2. Do you support the proposed project? - *Yes*

a) If Yes for above (2), what are the reasons?

- (i) *Create <sup>slight</sup> employment*
- (ii) *Curb <sup>near</sup> urban migration*
- (iii) *Create wealth & income*
- (iv) *Location of new agriculture industries*
- (v) *More investors*
- (vi) *Land gaining more value*
- (vii) *Reduce <sup>concern</sup> famine*

b) If No for (2) above, what are the reasons?



N/A

3. What do you think will be the contribution of the project to the local economy?

- (i) Income to farmer.
- (ii) Improving living standard.
- (iii) Create employment -
- (iv) Open a market
- (v) Bring more investors
- (vi) Having enough food throughout

4. Do you think the project will have any adverse negative impacts of any of the following items?

ITEMS		YES	NO
a)	Local residents' welfare		✓
b)	Biodiversity loss and disturbance		✓
c)	Public health and safety (Noise, wastewater, air pollution, dust, smell)	✓	<del>✓</del>
d)	Water resources and quality		✓
e)	Human density		✓
f)	Traffic operations		✓
g)	Soil erosion and quality	✓	<del>✓</del>
h)	Both solid and liquid waste		✓
i)	Water resource conflict		✓
j)	Displacement of people		✓

5. If your answer is yes for question (3) above, make suggestions on the measures that should be put in place to sustainably manage them

- (i) If any dirt contractor pour water
- (ii) Any Farmer to dig braces & Gabions to contro. soil erosion
- (iii) Dig pit for any waste Material
- (iv) Plant trees.
- (v) Contour Style of farming.

6. Is there any other comment? If so, state below

- (i) If Any Casual Labour to from Local area (Youth)
- (ii) If Contractor is to use the Materials that are within project areas is better for local people to benefit.

7. Are you aware of any indigenous community living within the project area?

There is not N/A

i. If Yes, how will they be affected by the project?

N/A

Name: PEIGA KIIGA WANSOHI

ID / Passport No.: 11318029

Date: 06/04/2021 Signature: 

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED  
NGANYUTHE IRRIGATION PROJECT

PUBLIC PARTICIPATION QUESTIONNAIRE

Nganyuthe Irrigation Water Project is proposing to undertake the following activities the Upgrade Water Intake, Construction of storage masonry tanks, Construction of main lines, sub mains and distribution pipes. The Project will cover Gutarakwa and Mweiga /Mwiyo Ward both in Kiini West Sub-County, Nyeri County

An environmental and social impact assessment (ESIA) has been commissioned in accordance with the Environmental Management and Coordination Act 1999 and World Bank Guidelines. As part of this exercise, kindly express your honest opinion on the proposed development with respect to your neighborhood, welfare, safety, infrastructure and public amenities among other issues that you may consider pertinent.

1. Please indicate the following:

- a. Title (Entrepreneur, employee etc.) ..... *Farmer*
- b. For how long have you known <sup>Ngarakwa</sup> ~~Nganyuthe~~ dam? ..... *Since 2000*
- c. For how long have you known <sup>Ngarakwa</sup> ~~Nganyuthe~~ Water Project? ..... *Since yr. 2000*

2. Do you support the proposed project? *Yes*

a) If Yes for above (2), what are the reasons?

- Will benefit with irrigation water
- To promote the Area with highly farm products - hence cash flow.
- Will attract development of the roads and electricity supply (communication).
- Promote afforestation
- Produce healthy air/ environment.

b) If No for (2) above, what are the reasons?

N/A

3. What do you think will be the contribution of the project to the local economy?

- Generation of money
- Job creation to the residents
- Encourage / attract business within the area
- Security will be tightened

4. Do you think the project will have any adverse negative impacts of any of the following items?

ITEMS		YES	NO
a)	Local residents' welfare		✓
b)	Biodiversity loss and disturbance		✓
c)	Public health and safety (Noise, wastewater, air pollution, dust, smell)		✓
d)	Water resources and quality	✓	
e)	Human density	✓	
f)	Traffic operations	✓	
g)	Soil erosion and quality		✓
h)	Both solid and liquid waste		✓
i)	Water resource conflict		✓
j)	Displacement of people	✓	✓

5. If your answer is yes for question (3) above, make suggestions on the measures that should be put in place to sustainably manage them

- watering of roads during dry seasons.
- bring contour lines for control of soil erosion.

6. Is there any other comment? If so, state below

- Area residents to be employed for the digging of way-leaved line.
- Groups to be supported with by means of trainings for better usage of water.
- Farmers to be funded for healthy farming.
- Due to climate change we should be served with the water the soonest possible.

7. Are you aware of any indigenous community living within the project area?

No.

i. If Yes, how will they be affected by the project?

N/A

Name: Burcan G. Iyaga Karick

LD / Passport No.: 9670887

Date: 6/4/2021 Signature: 



ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED  
NGANYUTHE IRRIGATION PROJECT

PUBLIC PARTICIPATION QUESTIONNAIRE

Nganyuthe Irrigation Water Project is proposing to undertake the following activities the Upgrade Water Intake, Construction of storage masonry tanks, Construction of main lines, sub mains and distribution pipes. The Project will cover Gatarakwa and Mwelga (Mwlyogo Ward both in Kieni West Sub-County, Nyeri County.

An environmental and social impact assessment (ESIA) has been commissioned in accordance with the Environmental Management and Coordination Act 1999 and World Bank Guidelines. As part of this exercise, kindly express your honest opinion on the proposed development with respect to your neighborhood, welfare, safety, infrastructure and public amenities among other issues that you may consider pertinent.

1. Please indicate the following:

- a. Title (Entrepreneur, employee etc.) ..... Joseph Muriuki farmer  
b. For how long have you known <sup>Nganyuthe</sup> ~~Nganyuthe~~ ..... 24 years  
c. For how long have you known ~~Murera~~ <sup>Nganyuthe</sup> Water Project? .....

2. Do you support the proposed project?

a) If Yes for above (2), what are the reasons?

- i. Yes i. to have irrigation water  
ii. to empower me economically  
iii. Create employment  
iv. It will improve environment  
since there be planting of trees

b) If No for (2) above, what are the reasons?



N/A

3. What do you think will be the contribution of the project to the local economy?

- (i) There will generation of Money to the farmer
- (ii) Will open vegetable Market
- (iii) Small business like opening Shops and hotels

4. Do you think the project will have any adverse negative impacts of any of the following items?

ITEMS		YES	NO
a)	Local residents' welfare		✓
b)	Biodiversity loss and disturbance		✓
c)	Public health and safety (Noise, wastewater, air pollution, dust, smell)		✓
d)	Water resources and quality		✓
e)	Human density		✓
f)	Traffic operations		✓
g)	Soil erosion and quality		✓
h)	Both solid and liquid waste		✓
i)	Water resource conflict		✓
j)	Displacement of people		✓

5. If your answer is yes for question (3) above, make suggestions on the measures that should be put in place to sustainably manage them

Planting of trees  
Watering dusty areas

6. Is there any other comment? If so, state below

- i. Our youth will benefit since creation of jobs will benefit disabled people and orphans in our locality  
ii. We would like to be helped because we have been affected by climate change.

7. Are you aware of any indigenous community living within the project area?

NO

- i. If Yes, how will they be affected by the project?

N/A

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED  
NGANYUTHE IRRIGATION PROJECT

PUBLIC PARTICIPATION QUESTIONNAIRE

Nganyuthe Irrigation Water Project is proposing to undertake the following activities the Upgrade Water Intake, Construction of storage masonry tanks, Construction of main lines, sub mains and distribution pipes. The Project will cover Gatarakwa and Mweiga /Mwiyogo Ward both in Kieni West Sub-County, Nyeri County.

An environmental and social impact assessment (ESIA) has been commissioned in accordance with the Environmental Management and Coordination Act 1999 and World Bank Guidelines. As part of this exercise, kindly express your honest opinion on the proposed development with respect to your neighborhood, welfare, safety, infrastructure and public amenities among other issues that you may consider pertinent.

1. Please indicate the following:

- a. Title (Entrepreneur, employee etc.) ..... *Farmer* .....
- b. For how long have you known <sup>Nganyuthe</sup> ~~Nganyuthe~~ <sup>Water Project?</sup> ..... *Over 20 years* .....
- c. For how long have you known <sup>Nganyuthe</sup> ~~Nganyuthe~~ <sup>Water Project?</sup> ..... *over 20 years* .....

2. Do you support the proposed project?

- a) If Yes for above (2), what are the reasons? *Yes*

*Yes because we dont have any water project in our area so there is many problem of water shortage as our area is very dry. As we have water - Farming in our areas will prosper Good climate, alot of employment and we shall plant trees*

- b) If No for (2) above, what are the reasons?

5. If your answer is yes for question (3) above, make suggestions on the measures that should be put in place to sustainably manage them

If dust occur we pour water on it,  
If soil erosion occur we do terracing  
farming and plant a lot of trees

6. Is there any other comment? If so, state below

Employment of our <sup>Local</sup> area people  
is advisable as our youth has  
no jobs.  
If the project is complete our  
areas shall have more trees thus  
make good climate change

7. Are you aware of any indigenous community living within the project area?

No.

- i. If Yes, how will they be affected by the project?

Not applicable.

N/A

3. What do you think will be the contribution of the project to the local economy?

It will encourage dairy farming in our area, horticultural crops will increase in our area to get more money.

4. Do you think the project will have any adverse negative impacts of any of the following items?

ITEMS		YES	NO
a)	Local residents' welfare		✓
b)	Biodiversity loss and disturbance		✓
c)	Public health and safety (Noise, wastewater, air pollution, dust, smell)		✓
d)	Water resources and quality		✓
e)	Human density		✓
f)	Traffic operations		✓
g)	Soil erosion and quality		✓
h)	Both solid and liquid waste		✓
i)	Water resource conflict		✓
j)	Displacement of people		✓

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED  
 NGANYUTHE IRRIGATION PROJECT

PUBLIC PARTICIPATION QUESTIONNAIRE

Nganyuthe Irrigation Water Project is proposing to undertake the following activities the Upgrade Water Intake, Construction of storage masonry tanks, Construction of main lines, sub mains and distribution pipes. The Project will cover Gatarakwa and Mweiga /Mwiyo Ward both in Kieni West Sub-County, Nyeri County.

An environmental and social impact assessment (ESIA) has been commissioned in accordance with the Environmental Management and Coordination Act 1999 and World Bank Guidelines. As part of this exercise, kindly express your honest opinion on the proposed development with respect to your neighborhood, welfare, safety, infrastructure and public amenities among other issues that you may consider pertinent.

1. Please indicate the following:

- a. Title (Entrepreneur, employee etc.) *Fuma*
- b. For how long have you known <sup>Nganyuthe</sup> ~~the~~ dam? *Nganyuthe*
- c. For how long have you known <sup>Murefu</sup> ~~Murefu~~ Water Project? *Ten years*

2. Do you support the proposed project? *yes*

a) If Yes for above (2), what are the reasons?

*because of water irrigation (mugunda ni waji  
 mbeca, na ihu na ni tukayo mbeca  
 hi ku habite ku zema waga*

b) If No for (2) above, what are the reasons?



H/A

3. What do you think will be the contribution of the project to the local economy?

economy... money people will have a job  
we will have big market.

4. Do you think the project will have any adverse negative impacts of any of the following items?

ITEMS		YES	NO
a)	Local residents' welfare		✓
b)	Biodiversity loss and disturbance		✓
c)	Public health and safety (Noise, wastewater, air pollution, dust, smell)		✓
d)	Water resources and quality		
e)	Human density		✓
f)	Traffic operations		✓
g)	Soil erosion and quality		✓
h)	Both solid and liquid waste		
i)	Water resource conflict		✓
j)	Displacement of people		

5. If your answer is yes for question (3) above, make suggestions on the measures that should be put in place to sustainably manage them

We will plant trees

Cudleria flua riera

6. Is there any other comment? If so, state below

Youth also managed wira

7. Are you aware of any indigenous community living within the project area?

Yes, not applicable

i. If Yes, how will they be affected by the project?



Name: *MURMUR ALER MURMUR*  
I.D / Passport No.: *9532616*  
Date: *6/4/2021*  
Signature: *[Signature]*

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED  
NGANYUTHE IRRIGATION PROJECT

PUBLIC PARTICIPATION QUESTIONNAIRE

Nganyuthe Irrigation Water Project is proposing to undertake the following activities the Upgrade Water Intake, Construction of storage masonry tanks, Construction of main lines, sub mains and distribution pipes. The Project will cover Gatarakwa and Mweiga/Mwiyogo Ward both in Kiari West Sub-County, Nyeri County.

An environmental and social impact assessment (ESIA) has been commissioned in accordance with the Environmental Management and Coordination Act 1999 and World Bank Guidelines. As part of this exercise, kindly express your honest opinion on the proposed development with respect to your neighborhood, welfare, safety, infrastructure and public amenities among other issues that you may consider pertinent.

1. Please indicate the following:

- a. Title (Entrepreneur, employee etc.) ..... *FARMER*
- b. For how long have you known <sup>Name of the</sup> ~~Name of the~~ dam? ..... *RESIDENT*
- c. For how long have you known <sup>Name of the</sup> ~~Name of the~~ Mweiga Water Project? ..... *1*

2. Do you support the proposed project? *YES*

a) If Yes for above (2), what are the reasons?

- (1) development of the area*
- (2) Employment of the youth*
- (3) Making the development clean*
- (4) Making the development good after*  
*growing or planting trees*

b) If No for (2) above, what are the reasons? *- NIL*

Not Applicable

3. What do you think will be the contribution of the project to the local economy?

- 1) generation of money to the farmer
- 2) making people clean
- 3) opening agricultural markets
- 4) opening little factories
- 5) great employment to the young people

4. Do you think the project will have any adverse negative impacts of any of the following items?

ITEMS		YES	NO
a)	Local residents' welfare		✓
b)	Biodiversity loss and disturbance		✓
c)	Public health and safety (Noise, wastewater, air pollution, dust, smell)		✓
d)	Water resources and quality		✓
e)	Human density		✓
f)	Traffic operations		✓
g)	Soil erosion and quality		✓
h)	Both solid and liquid waste		✓
i)	Water resource conflict		✓
j)	Displacement of people		✓

5. If your answer is yes for question (3) above, make suggestions on the measures that should be put in place to sustainably manage them

- ① plant trees
- (2) put together all waste products  
bury them to put some where safe
3. Teach the people of better ways  
of keeping the envelop clean

6. Is there any other comment? If so, state below

- ① local people to be employed  
by the project from the area
  - (2) materials to be bought in the  
area.
  - (A) Make use of proper ways of face masks  
by the area community, also ban climate  
change.
7. Are you aware of any indigenous community living within the project area?  
No

i. If Yes, how will they be affected by the project?

Not applicable

Name: ABRANTH MANA MANAB!

I.D / Passport No.: 0237025

Date: 06/04/2021 Signature: [Handwritten Signature]



PUBLIC CONSULTATION MEETING  
 AT HILLSTAD SCHOOL NGANYUTHE  
 -NGANYUTHE IRRIGATION PROJECT  
 ATTENDANCE LIST.

S-NO.	NAME	AREA	ID	SIGN
1.	Miriam Mwangi	Nganyuthe	9557616	MJM
2.	Francis maina	Nganyuthe	9075156	Fm
3.	Samuel Gichaga M.	GITEGI	12779395	Samuel
4.	Joseph Muriuki	Nganyuthe	3754805	JM
5.	Peter Mwangi Gitau	Muruthu Mwigogo	11287974	Peter
6.	Beatrice Ndubi	GITEGI	11774133	BNdubi
7.	Paul Maina gitau	Gitegi Lower	14519802	Paul
8.	Mary Muthoni Kagwanja	Mwigogo	9586698	MUTHONI
9.	EDITH MUTHANJE Mwangi	Kinyanti	3513412	MUTHANJE
10.	Abraham Mwangi Mwangi	Gitegi	0237025	Abraham
11.	Duncan Gitonga	ndunguath	9670887	Duncan
12.	JEFINA GITONGA	KARAGURU	6836506	Jefina

## Annex 6: Minutes of public participation meetings

**MINUTES FOR PUBLIC CONSULTATION MEETING ON THE PROPOSED  
NGANYUTHE IRRIGATION PROJECT HELD AT HILLSTEAD ACADEMY,  
NGANYUTHE, KIENI WEST SUBCOUNTY ON 4<sup>TH</sup> APRIL 2021.**

<b>TIME :10am-12pm</b>	
<b>Members present</b>	
<ol style="list-style-type: none"> <li>1. Miriam Muraya-Nganyuthe</li> <li>2. Francis Maina-Nganyuthe</li> <li>3. Samuel Gichaga-Gitegi</li> <li>4. Joseph Muriuki-Nganyuthe</li> <li>5. Peter Mwangi-Mwiyogo</li> <li>6. Beatrice Nduta-Gitegi</li> <li>7. Paul Maina -Gitegi lower</li> <li>8. Mary Muthoni-Mwiyogo</li> <li>9. Edith Muthanji -kinyaiti</li> <li>10. Abraham Maina-Gitengi</li> <li>11. Duncan Gitonga -Ndunyuguathi</li> <li>12. Jefitha Gitonga-Karaguriro</li> <li>13. Philip Wangia-Sub County environmental officer</li> </ol>	
<b>Meeting Agenda</b>	
<ol style="list-style-type: none"> <li>1. Call to order</li> <li>2. Introductions</li> <li>3. Tabling of comments and addressing the tabled comments from the Nganyuthe community</li> <li>4. Views from the participating stakeholders.</li> <li>5. Recommendations / Way forward</li> <li>6. AOB</li> <li>7. Closure of meeting</li> </ol>	
<b>Agenda</b>	<b>Discussion</b>
<b>Min 1 Call to order</b>	The meeting was called to order by the chair at 10:30 am with the first business being prayers lead by Beatrice Nduta and the official welcome to the meeting done by the Jefitha Gitonga. The members introduced themselves.
<b>Min 2 Introductions</b>	The chair gave a brief introduction on the proposed project of Nganyuthe Irrigation water project. The members were brought abreast on the process the community has taken in project proposal writing and acquiring of relevant documents including; Environmental and Social Impact Assessment. For the purpose of this report writing (ESIA)the community invited an EIA expert.
<b>Min 3 Tabling of comments from the community</b>	1. Labour distribution

<p>and addressing the tabled comments.</p>	<p>The community raised issues on how labour will be distributed during the project implementation</p> <p>The project committee will be involved when the labour was needed. The community especially the youth will be involved in activities of the project implementation.</p> <p>2. Land</p> <p>The committee should ensure that the members where distributions lines will be located have signed agreements to ensure there are no conflicts on land and human displacements.</p> <p>3. Project costs</p> <p>The community enquired on the specific cost of the project as in the BoQ. The KCSAP team has revised the community BoQ to fit all the project cost materials while ensuring quality and quantity without compromising the project objectives.</p> <p>The committee will be issued with the revised BoQ for their perusal and reference.</p> <p>4. Corporate Social Responsibility (CSR) by the contractor</p> <p>Upon project implementation the community should discuss on the most appropriate CSR to benefit the project area.</p> <p>5. Environmental and soil conservation</p> <p>The community through the Sub County Environmental and Agricultural officers should create awareness to the community on the most appropriate conservation method.</p>
<p><b>Min 4</b> Views from the participating stakeholders.</p>	<ul style="list-style-type: none"> <li>• Agricultural officer</li> </ul> <p>The community with the help of the local/area officers should adopt integrated pest management (IPM), conservation agriculture technologies and climate smart agricultural technologies for the sustainable and economic viability of the crop production in the area.</p> <ul style="list-style-type: none"> <li>• Environmental officer</li> </ul> <p>The following views were raised from the environment officer regarding the proposed project ;Riparian conservation ,Indiscriminate cutting of trees and alternative sources of energy.</p>



	From the raised views recommendations were made including; the committee will liaise with the department in supply of bamboo and other agroforestry trees, the community should acquire a tree felling permit before tree felling activities and adopt renewable energy technologies.
<b>Min 5</b> Recommendations / Way forward	<ul style="list-style-type: none"> <li>• All the recommendations made should be implemented during and after the construction of the proposed project.</li> <li>• The environmental and social report should be complied the contractor and the community members should be made aware of the content of the ESMMP.</li> </ul>
<b>Min 6</b> AOB	There being no other business the meeting was adjourned.
<b>Min 7</b> Closure of meeting	The meeting was adjourned at 12:50 pm after a word of prayer.

Minutes prepared by: ANNE N. RAROKI Date: 12/12/2023

Minutes confirmed by: SEFITHA GITONGA Date: 12/12/2023