ENVIRONMENTAL AND SOCIAL IMPACT ASSSESSMENT

SUMMARY PROJECT REPORT

THE PROPOSED KIMITER-CHEMITEL SMALL HOLDER IRRIGATION PROJECT.

ELGEYO MARAKWET COUNTY

GPS LOCATION: Latitude: 1.8221°N, Longitude: 35.3990°East.

TO BE SUBMITED TO NEMA COUNTY OFFICE, COUNTY GOVERNMENT OF ELGEYO MARAKWET
P.O BOX 467-30700,
ITEN.

PROJECT PROPONENT
KIMITER-CHEMITEL IRRIGATION SCHEME COMMITTEE

JUNE 2021.

DECLARATION

CONSULTANT

Befcon Consultants**, P.O Box 1830-3100, Eldoret** hereby submit this Environmental and Social Impact Assessment (Summary Project Report) on the proposed Kimiter-Chemitel Irrigation Scheme. We certify to the best of our knowledge that the information contained in this report is accurate and a truthful representation as presented by the client.

Signed By: RUTO CHRISTOPHER
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Signed: **Date: 30/06/2021**

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PROPONENT:

I……., the representative of Kimiter-Chemitel Irrigation Scheme Committee certify to the best of my knowledge that the information contained in this report is accurate and a true representation.

Designation: _____

Signed: _____ Date_____

On Behalf of: Kimiter-Chemitel Irrigation Scheme

ACKNOWLEDGEMENT

The team of experts involved in this work would like to sincerely thank The County Project Coordinating Unit (CPCU) for the Kenya Climate Smart Agriculture Project (KCSAP) for according us the honor to participate in this exercise and for availing the required documents as well as organizing and participating in the public engagement fora. In this regard, we want to specifically appreciate Mrs. Margaret Kendagor, The Coordinator KCSAP, Elgeyo Marakwet County and Mr. Ben Kibor, The County Environment and Social Safeguard Officer, KCSAP.

We sincerely thank the project engineer Mr. Wilson Chepkong'a for taking his time to highlight the project in details including proposed project designs.

We also want to sincerely appreciate the National Project Coordinating Unit (NPCU) led by Dr. Muthee for guiding and facilitating the process.

Many thanks to the World Bank team for being patient with us and facilitating the engagements including workshops and consultations on capacity building as well as reviewing the reports.

To my fellow colleagues, thank you for the hard work and persistence.

To the administration team at the proposed project site, the farmers and the other professionals we interacted with, we say thank you and God bless you.

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LIST OF ABBREVIATIONS AND ACRONYMS

CBD	Convention Biological Diversity
C-EMMP	Contractors Environmental and Social Management and monitoring Plan
CESSCO	County Environmental and Socials Safeguards Officer
CIDP	County Integrated Development Plan
CPCU	County Project Coordinating Unit
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social; Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
FAO	Food and Agricultural Organization
FGD	Focused Group Discussion
GOK	Government of Kenya
KCSAP	Kenya Climate Smart Agriculture Project
KWS	Kenya Wildlife Services
m.a.s.l.	Metres above Sea Level
NEAP	National Environmental Action Plan
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NPCU	National Project Coordinating Unit
PAPs	Persons Affected by Project
PCPB	Pesticides Control Products Board
PMC	Project Management Committee
SEA	Sexual Exploitation and Abuse
SPR	Summary Project Report
SLM	Sustainable Land Management
TOR	Terms of Reference
WRA	Water Resource Authority
WRUA	Water Resource Users Association

EXECUTIVE SUMMARY

The proposed Irrigation Project is located in Kimiter-Chemitel area, Murkutwo location, Endo ward, Marakwet East Sub County in the Kerio valley region of Elgeyo Marakwet County at GPS location Latitude:1.8221^0N, Longitude:35.3990^0E. The project was proposed by the beneficiary community of 200 households to enable them irrigate 200 acres of fertile land by abstracting water from Embolot River via a stone lined canal. The proposed project is designed to abstract approximately 1.187m3/second litres of water which will be used for irrigation to improve agricultural production for improved food and nutrition security and income.

The Project is implemented through the Kenya Climate Smart Agriculture Project (KCSAP), a Kenya Government initiative funded by the World Bank whose development objectives is increasing productivity and incomes, enhancing resilience to climate change and reduction of Green House Gases(GHGs). The specific proposed interventions for this project include lining of a 7 km irrigation canal from Embolot intake to the base of the escarpment, construction of 12 division boxes and fencing of the farm. The proposed perimeter fence is about 6,444 m in length. The proposed project is expected to benefit 300 households directly and a total of 2,000 people will benefit indirectly.

The Environmental and Social Impact Summary Project Report has been conducted in compliance with the Environmental regulations, the EMCA, 1999(Rev 2015) and its subsequent supplements regulating major development including the World Bank Environmental and Social Safeguard Policies. This SPR process involved desk review of literature relating to the project, baseline study of the project area, review of the relevant legal, institutional, regulatory and policy framework, public consultation and stakeholders' engagement through public meetings, focused group discussion and key informant's interviews as well as data collection using questionnaires.

The total number of participants during the public participation meeting conducted on 1st April, 2021 were 54 people (49 males, 9 female). During the public participation meeting, data was also collected using structured questionnaires. A total of 40 questionnaires were distributed out of which 34 questionnaires were filled and returned. Additionally, 9 stakeholders were consulted to obtain more information on the proposed project. The main issues raised during the public participation and stakeholders' consultation include project sustainability, catchment conservation, and provision of water troughs for livestock and equal distribution of water to the irrigation farms. To address these issues the following measures were proposed are: water users paying water user fee to the Project Management Committee (PMC), planting of agroforestry trees in the water catchment on yearly basis, training of PMC on leadership and governance and construction of water troughs for livestock in the scheme.

The potential positive impacts identified included increased employment opportunities, improved infrastructure, improved nutrition, increased household incomes, improved environment due to planting of trees, reduced water borne diseases and increased quality of life. The anticipated negative impacts included loss of biodiversity, soil erosion, soil compaction, pollution of rivers, gender-based violence, sexual exploitation and abuse and

occupational and safety hazards. Appropriate mitigation measures have been provided in the Environmental and Social Management Plan (ESMMP). The main mitigation measure includes planting of trees, control of soil erosion, training on safe use of agrochemicals, capacity building of the beneficiaries on gender, HIV, COVID-19 and climate smart technologies, use of recommended machinery was suggested to reduce soil compaction among others.

The County Project Coordination Unit, KCSAP Elgeyo Marakwet County through the County Environmental and Social Safeguard Officer (CESSCO) will follow up and monitor the implementation of the ESMMP. The Contractor, PMC, supervising engineer and the community will be required to ensure the implementation of the proposed mitigation measures. The estimated cost of implementation of the ESMMP which should be included in the project cost is Kenya shillings 1,980,000 out of the total project cost of Ksh. 16,580,000. The client is expected to share the ESMMP with the contractor who then is expected to prepare and implement a contractor-specific ESMMP.

Considering the positive and negative impacts, this project will not result to significant or irreversible impacts since all anticipated negative impacts will be mitigated through the ESMMP. Therefore, the project is recommended for approval and issuance of permit by the National Environmental Management Authority (NEMA).

CHAPTER ONE.
INTRODUCTION

1.1 Background Information.

The County government of Elgeyo Marakwet recognizes the importance of irrigated agriculture in improving agricultural production for food and nutritional security, poverty alleviation and economic growth. Irrigated agriculture is one of the priority projects in the Elgeyo Marakwet CIDP 2018-2022 under the department of Agriculture and Irrigation. The proposed Kimiter-Chemitel irrigation scheme which is located in located in Kimiter-Chemitel area, Ketut location, Endo ward, Marakwet East Sub County in the valley region of Elgeyo Marakwet County about 60 km. along Biretwo-Tot road off Iten-Kabarnet road is one of such initiatives. The proposed Kimiter-Chemitel irrigation scheme is situated on a fertile and fairly flat land but currently not cultivated due to lack of water. However, the proposed development which is mainly abstraction of water from Embolot River and channeling the water via a concrete line water furrow will eventually open up 200 acres' farm for irrigation agriculture. The irrigation scheme is expected to support production of crops such as maize, tomatoes, green grams, beans, sorghum, cassava, finger millet, paw paws, mangoes and various vegetables throughout the year. This would result into increased productivity and income hence food and nutrition security, improved livelihoods and environmental protection which is in line with the core objectives of KCSAP.

1.2 Project Justification

Establishment of irrigation and drainage infrastructure is considered a priority by the Kenyan government in enhancing agricultural productivity and contributing to food and nutritional security as well as poverty alleviation. The proposed project is relevant to the KCSAP triple wins which include increasing productivity and income, resilience to climate change and reduction of Green House Gases. The proposed Kimiter-Chemitel irrigation project is aimed at abstracting water from Embolot River and channeling it to Kimiter-Chemitel irrigation scheme via a concrete lined water furrow. This will open up 200 acres of land for irrigation from the current 80 acres, targeting crops such as tomatoes, green grams, maize, beans, finger millet, mangoes, bananas, paw paws and vegetables. The proposed project is also expected to benefit 200 households around Kimiter-Chemitel area.

The major considerations for supporting the implementation of this project include

- The proposed irrigation infrastructure will enhance the efficiency of irrigated water conveyance by reducing seepage
- The proposed project will create jobs and income generation opportunities
- water abstracted from Embolot River is expected to open up 200 acres of land for irrigation

The project will enable increased agricultural productivity hence increased food and nutritional security and farm income among the project beneficiaries.

1.3 Environmental Social Impact Assessment Summary Project Report

The CPCU, KCSAP Elgeyo Marakwet contracted Befcon Consultants to undertake an Environmental and Social Impact Assessment and prepare a Summary project report based on the recommendation of the County Director of Environment, Elgeyo Marakwet. This followed

screening including the Environmental and Social Safeguards Checklist. The SPR was conducted in compliance with the Environmental regulations, the EMCA,1999(Rev 2015) and its subsequent supplements; the Environmental (Impact Assessment and Audit) Regulations, 2003 (Rev. 2009); EMCA (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006; the Land Acts, the Water Act 2002 and the Irrigation Act among other pertinent legal and institutional frameworks regulating major development including the World Bank Environmental and Social Safeguard Policies. O.P 4.01 Environmental assessment (EA) of projects proposed, OP 4.09 Pest Management, OP 4.10 Indigenous Peoples, OP 4.11 Physical Cultural Resources and OP 4.12 Involuntary Resettlement. All environmental and social issues related to the proposed project have been considered. The main objective of this report is to ensure that all the potential Environmental and Social Impacts have been identified and appropriate mitigation measures proposed for adoption during project's cycle.

1.4 Objectives of the SPR

The major objective of this study was to undertake an ESIA(SPR) for the proposed Kimiter-Chemitel irrigation project to establish potential impacts of the project`s activities on the environment and the community and recommend mitigation measures.

The specific objectives include: -

1. To comply with EMCA 1999 and World Bank Safeguard Policies
2. To describe the nature of the proposed Project site including the layout, design and planned activities
3. To conduct a comprehensive public participation and document the outcome
4. To identify the impacts of the proposed project's activities on the environment and social aspects
5. To propose mitigation measures for the significant negative environmental and social impacts
6. To develop an Environmental and Social Management and Monitoring Plan(ESMMP)
7. To make recommendations based on the findings of the ESIA(SPR)
8. Submit this SPR to NEMA for issuance of permit

1.5 Approach and Methodology of Summery Project Report

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

a) Environmental and Social Screening: This was conducted by the Environmental and Social safeguards officer in consultation with the county NEMA office to determine the ESS instrument hence the Summery Project Report(SPR)

b) Environmental and Social Scoping: This was conducted to determine the environmental and social aspects that were likely to be affected by the proposed project. This was important for the identification of potential impacts.

c) Desk reviews: This involved literature review of existing documents regulations and guidelines such as Environmental Management and Co-ordination Act (EMCA) as well as other related statutes and international codes on water use.

d) **Field visit**: This was undertaken to evaluate the area of interest including intake, farms and general infrastructure. Information gathering was conducted through two site visits to the project, one transect walk and interview with the key informants of the project which included the area chief, assistant chief, project management committee and opinion leaders. A transect walk was carried out during the field visit to quantify the perceived impacts of project on land use, land conflicts and ownership, areas of insecurity, existing institutions in the area, vegetation cover and ecologically sensitive areas such as water bodies, animal grazing areas and migratory routes. The information gathered included the existing strategies towards environmental protection.

e) **Public participation** meetings and consultative meetings at the administrative and community levels were held to collect information on the beneficiaries` perceptions on benefits and impacts of project implementation. One (1) public participation meeting was conducted in full adherence to the government directive on the COVID-19 pandemic-social distancing, wearing of face masks, use of sanitizers and limiting the number of contact hours. The total number of participants during the public consultation were 60 people comprising of 46 males and 14 females. One (1) focused group discussions were also conducted during the public participation targeting the youth, the women and differently abled persons. Relevant stakeholders were also consulted including the Department of Agriculture and Irrigation. Detailed outcome of the public participation and stakeholder consultation is presented in chapter five of this SPR.

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

1.6 Organization of the SPR

The report is organized into seven chapters. Chapter one is the introduction, Chapter 2 gives the nature of the project, Chapter 3 dwells on the project location while Chapter 4 presents the outcome of the public participation and stakeholder consultation process, Chapter 5 discusses the anticipated impacts and proposed mitigation measures of the project, Chapter 6 presents the Environmental and Social Management and Monitoring Plan (ESMMP) while chapter 7 include conclusions and recommendations followed by references and annexes.

CHAPTER TWO
NATURE OF THE PROJECT

2.1 Introduction

This section presents the project design, proposed activities, materials and equipment and estimated project cost.

2.2 Project Design

The main components of the project are intake, weir works and water furrow rehabilitation that will be lined with concrete to serve as a major water conveyance structure (Refer to annex1). The amount of water abstracted is expected to irrigate 200 acres of farm land in the small holder irrigation farms.

2.3 Project Activities for the proposed Project

2.3.1: Preliminary activities

This include activities conducted before the actual works for the proposed project commences

2.3.1.1 Initial Site Meeting

This will entail initial site meeting to introduce the contractor to the site and to the project management committee by the KCSAP CPCU and the supervising engineer.

2.3.1.2 Mobilization of plants and machinery

This will involve assembling all the machines and equipment required for the planned activities for the proposed project

2.3.1.3 Erection of Signboard

This will involve putting up a signboard for the proposed project with all the necessary information as prescribed in the contract. This will go a long way to increase project visibility and disclosure of the project to the public.

2.3.2 Construction of Weir and intake works

This will involve construction of an intake and weir across Embolot river to divert water into a concrete lined furrow leading to Kimiter-Chemitel irrigation scheme.

2.3.3 Conveyance system

The main conveyance system comprises of a concrete lined water furrow which covers approximately 7 km in length to the base of the escarpment. Another 5 km of unlined furrow takes the irrigation water to the farm. This furrow is expected to convey about 1.187m^3/s litres of water which is expected to irrigate 200 acres of land

2.4 Materials and Equipment

2.4.1 Materials

The materials required for the proposed project include cement, sand, stones and timber for slab support. Also barbed wires of gauge 30, chain links and metal posts will be required to fence the farm.

2.4.2 Equipment

The equipment required for the proposed project include excavation equipment, concrete mixer and assorted masonry tools.

2.5 Project Cost

The estimated costs of Kimiter-Chemitel Irrigation project including implementation of ESMMP is Kenya shillings 16,580,000.

CHAPTER THREE
THE LOCATION OF THE PROJECT

3.1 Introduction.

This section provides the project location, land ownership, conformity to land use plan and supportive environmental and social management infrastructure.

3.2 Project Location

Kimiter-Chemitel irrigation project is situated in Ketut Sub location, of Murkutwo location, Endo ward, Marakwet East Sub-county, Elgeyo-Marakwet County at GPS coordinates: Latitude: 1.8211^{o} N, Longitude: 35.3990^{o} E. It is situated along Biretwo-Arror-Tot road; about 60 km from the main road (Iten–Kabarnet road). The irrigation project is being undertaken by Elgeyo Marakwet County through the Kenya Climate Smart Agriculture Project with objective of increasing agricultural productivity, food and nutritional security and wealth creation. It is meant to benefit about 400 households who are small scale farmers under furrow irrigation. About 200 acres of land will be put under irrigation and each farmer will be allowed to irrigate approximately 0.5 of an acre.

Figure 3.2: Proposed Project Location

3.3Land Ownership

The land ownership in the area is communal where farmers have land that they till but with clan boundaries. Land adjudication in the project area has not commenced. (Refer to Annex 4). The land where the main irrigation infrastructure (weir and intake) are situated in public land (escarpment) and the Kenya forest service has issued a no objection consent to the community for abstraction of water from the intake (See annex 2). Similarly, adequate consultation has been done with the members of the community on the no objection for the passage of the irrigation channel to the irrigation farms.

3.4 Supportive Infrastructure for Environmental and Social Management

3.4.1 Transportation

The area can be accessed via Biretwo-Tot murram road off Iten-Kabarnet or Iten – Kapsowar

- Tot road. The transport services in the area is provided by lorries, public service vehicles and motor cycles. The motor cycle sector offers major transport services to the community. This is important to allow transportation of solid and liquid waste from the project site to designated sites away from the project site.

3.4.2 Telecommunication

The project area is served by two network providers, namely Safaricom and Airtel. This is necessary to enable communication to seek support in case of emergencies such as injuries during the project cycle.

3.4.3 Health facilities

The area is served by Chesongoch Mission Hospital which is about 3 km from the project site. This is a major health facility which can handle most of the cases.

3.4.4 Waste management system

Many households have pit latrines to manage human waste. Other wastes at household level are either dumped in compost pits or burned in shallow pits. Livestock wastes are used as organic manure to improve soil fertility.

3.5 Conformity to land use plan

The land tenure in the area is communal and farmers are currently using little water available for irrigation. The implementation of the proposed project is in line with the land use plan since the project site land is designated for agricultural irrigation scheme.

CHAPTER FOUR
PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

4.1 Introduction

Public Participation and stakeholders' consultation was conducted as stipulated in the Kenya constitution 2010, County Government Act and Environmental Impact Assessment and Audit Regulations of 2003 (amendment 2019). However, due to the government restrictions and World Bank guidelines following Covid-19 pandemic, the number of those consulted was minimized to a representative number as guided and led by the area chief and those living close to the proposed project site. During all public participation meetings, COVID-19 guidelines on social distancing, wearing of face masks, use of hand sanitizers as well as limiting the number of people during the meetings were followed.

4.2 The Objective of Public Participation and Stakeholders Consultations

The objectives of the public participation and stakeholder consultation were to get the scope of the SPR, to probe for possible environmental and social impacts of the proposed project and how to mitigate against any negative impacts as well as the baseline information of the project area.

4.3 Stakeholders identification

During the SPR exercise, relevant stakeholders were identified. Each stakeholder was consulted on specific aspects of the projects ranging from the design, views on benefits, likely negative impacts and involvement at all stages of implementation. A total of 9 stakeholders were consulted (See Annex 6) and their views, issues and suggestions were documented.

4.3 Methodology of Public Participation and Stakeholder Consultations

The methods used in public participation included public meetings, focused group discussion and key informant interviews. One public participation meeting and one focused group discussion were conducted on 1st April 2021. During the public participation meetings data was collected using structured questionnaires from key informants (see annex 5). Focused group discussions focused on the women, youth and differently abled persons. A total of 54 people (49 males, 6 females) participated in the public participation meetings and stakeholder consultation (Refer to Annex 3). The team ensured strict adherence to the COVID-19 protocols (social distancing, hand washing and wearing of face masks) as stipulated by the Ministry of health in all the public meetings to prevent the spread of the disease.

4.4 Summary of issues raised by the community and stakeholders and responses

During public consultations, members of the community raised the direct benefits of irrigating farms including; availability of water for irrigation, positive impacts raised included reduction in poverty levels of many households as a result of increased incomes from sale of produce, creation of employment opportunities in form of farm labor and related input and output activities and diversification of farming enterprise leading to improved nutrition. The community also raised issue of water scarcity during dry season as the major negative impact and they resolved that the issue the challenge that PMC to use rotational system to solve the water scarcity.

Figure 4.4: Public participation at Kimiter-Chemitel irrigation scheme

During the consultative meetings, the following areas of interest were discussed;

a) **Economic activities in the area.** The public indicated that these activities will be improved during the implementation of the proposed project. These activities would include employment opportunities for the youth, women and orphans. This will be addressed by advising the contractor to employ and source materials from the local area during construction phase of the project. The increased agricultural activities will lead to increased volumes of farm produce and consequently increased marketing activities and local incomes.

b) **Land use and management in the area**. The public were notified that the area will be under irrigation for crops and pasture for livestock. The public suggested that fodder should be established along the terraces and the acacia trees be conserved in the scheme to meet the recommended 10% canopy cover and to provide fodder for livestock. This concern will be addressed during land clearing, soil and water conservation trainings that will be conducted by the agriculture staff as in the ESMMP. The community suggested that the fodder grown in the scheme be harvested and fed to livestock. However, it was also noted that the number of animals within the area should be reduced and quality be improved to attain the right carrying capacity.

c) **Socio-economic and environmental challenges in the area.** The socio-economic and environmental challenges during project implementation were raised by the public. The public advocated for fair employment and business opportunities during project implementation phases. Environmental challenges including loss of biodiversity, soil erosion and degradation of air quality have also been addressed in the ESMMP.

d) **Flora and fauna may be destroyed during construction**. The public expressed the need of minimizing clearing of trees. This issue will be addressed by the ESMMP on conservation of biodiversity.

e) Community conflicts. This concern was raised due to water use in the farm. This concern will be addressed through project management committee and public meetings. It was also suggested that water troughs be constructed to serves as drinking points for livestock in the scheme.

CHAPTER FIVE
ANTICIPATED IMPACTS AND MITIGATION MEASURES

5.1 Introduction

This chapter outlines the assessment of the issues that are likely to arise as a result of implementation of the proposed Kimiter-Chemitel irrigation project. The anticipated impacts are discussed in three phases namely: construction, operational and decommissioning phases.

5.2 Anticipated Impacts during Construction Phase

5.2.1 Positive Impacts during Construction

a) Employment Opportunities: There will be an increase in job opportunities through recruitment of skilled and unskilled labor from the locals, service provision to the construction workers (catering, accommodation and transport) and sourcing of some building materials.

b) Improved Infrastructure: The access roads that be rehabilitated during phase to facilitate activities.

c) Increased Income: The construction works will provide a market for the locally available materials while the services required by the construction workers will boost the local businesses. Project implementation in the proposed area will increase employment opportunities hence improved incomes.

d) **Infusion of skills and knowledge:** The locals will interact with people from other areas. Consequently, skills and knowledge of the locals will improve. These skills would include better ways of doing business and artisanship.

5.2.2 Anticipated Negative Impacts and Mitigation measures during Construction phase

The negative impacts during the construction phase will be short lived but may pose a great danger to the environment and social aspects of the community. Lack of effective maintenance of the construction site environment is likely to impact on the project area and its environment adversely. Some of the negative impacts include; -

a) Loss of Flora and Fauna

It is anticipated that construction of irrigation furrows would lead to loss of biodiversity. This impact is not significant therefore appropriate mitigation measures shall be put in place for mitigation.

Proposed Mitigation Measures

- The contractor should sensitize construction workers on environmental conservation
- The contractor should avoid cutting trees within the survey area as much as possible
- The contractor should ensure re-vegetation of completed furrow routes and any other area disturbed during construction
- The contractor should ensure that transportation of construction materials is done through existing local routes
- The contractor, in collaboration with Kenya wildlife services should sensitize the public on the importance of wild life conservation

b) Soil Erosion

An increase in soil erosion may result from loosening of the soil during construction works and vegetation clearing. In addition, some of the loose soils may lead to siltation of water bodies thus affecting aquatic life.

Proposed Mitigation Measures

- The contractor should ensure that all excavation works are properly compacted
- The contractor should incorporate erosion control measures during construction
- The contractor should not use topsoil during the construction phase
- The contractor should ensure intensive re-vegetation on bare grounds after construction
- If erosion is severe, soil erosion control nets or gabions could be used

c) Soil Compaction

The high traffic especially of machineries and the construction workforce within the project area is likely to lead to compaction of the soil structure leading to reduced water infiltration.

Proposed Mitigation Measures

- The contractor should ensure that all machines are operated on the existing roads or tracks as much as possible
- The contractor should ensure that there are no unnecessary vehicle movement especially off the designated tracks
- The contractor should avoid compaction during stockpiling by working the soil in its dry state
- The contractor should ensure restoration of vegetation on bare ground to reduce run-off

d) Pollution of rivers and wetlands

The construction of the intake water conveyance system, if not well controlled could deposit construction wastes such as sediments from the earthworks, oils and fuels into the rivers. This may lead to potential pollution of the water especially for downstream users and may also affect aquatic life.

Proposed Mitigation measures

- The contractor should service equipment regularly to ensure good working condition and free of leakages.
- Fueling of vehicles and plant should be restricted to designated sites to contain possible leakages
- Generated solid waste should be disposed in designated sites

e) Dust and Noise pollution

During the construction phase, it is expected that there will be an increase in traffic flow into the project area, including heavy and other vehicles ferrying construction materials. The access roads that are largely earthen roads could result in increased dust and noise. This is likely to affect the health of the residents and the aesthetic value of the areas.

Proposed Mitigation Measures

- The contractor should ensure that vehicles delivering materials to the site are confined to the designated routes and speed limits
- Roads especially near shopping centers, schools and those near human dwellings should be sprinkled with water to reduce dust
- Construction workers should put on dust masks and ear plugs

- ❖ Machines at the site should be well serviced and fitted with mufflers to reduce noise
- ❖ Idle machines should be switched off to reduce noise
- ❖ If possible, work should be within the normal 8 am to 5pm working hours

f) Extraction of Construction Materials

There will be demand for construction materials in bulk such as sand, gravel and rocks. These will be extracted from the local sources. The extraction and transportation of these materials is likely to result in the disturbance of the soil structure, vegetation loss, dust emission, oil spills, noise and potential for accidents. Quarries and barrow pits associated with extraction of materials can hold water that can be a suitable breeding grounds for mosquitoes and other disease causing vectors, leading to increased water borne diseases. These temporary pits can lead to possible drowning accidents.

Proposed Mitigation Measures

- ❖ The contractor should source construction materials from sites approved by local authorities
- ❖ The contractor could emphasize re-use policy of the excavated waste materials
- ❖ Landscaping, backfilling and draining of the depressed areas could be done destroy breeding grounds for disease vectors
- ❖ The contractor should give advanced notice to the nearby communities on the intended excavation.
- ❖ Excavated areas should be fenced off to reduce accidents

g) Generation of Solid wastes

The construction activities will lead to the production of solid wastes such as soils, rock debris, metal cut offs, plastics, cardboards, paper, wood and waste concrete among others. These wastes will cause environmental pollution including reduced aesthetic value of the area.

Proposed Mitigation measures

- ❖ The contractor should sensitize workers on proper disposal of waste
- ❖ The contractor should embrace the policy of reduce, reuse and recycling of materials
- ❖ The contractor should provide adequate litter collection facilities designated in the construction site
- ❖ The contractor should ensure that collected wastes are disposed in designated sites approved by NEMA in accordance with the waste management regulations
- ❖ The contractor should construct a temporary pit latrine for use by workers and visitors

h) Generation of Liquid Wastes

Liquid wastes including oil spills, grey and black water, concrete washing, run off from workshop areas and various liquid wastes from the washing of construction vehicles and equipment will be generated during construction works. These wastes are likely to pollute water bodies and aquatic life.

Proposed Mitigation Measures

- ❖ The contractor should ensure that grey water runoff from the working areas is contained and properly channeled to a well sited soak pit or reused.
- ❖ The contractor should ensure that water containing pollutants such as cement, concrete, lime, chemicals and fuels are discharged into a conservancy tank for removal from the site

- ❖ The contractor should ensure that potential pollutants are stored, kept and used in such a manner that any escape can be contained to avoid degrading the environment.
- ❖ The contractor should ensure that maintenance of vehicles and other machineries are done in designated locations.
- ❖ The contractor should ensure regular maintenance of machineries to ensure they are in good working conditions and are free from leakages
- ❖ The contractor should ensure that soil contaminated by oil spills or pollutants are immediately scooped and disposed in designated sites

i) Occupational hazards and Health risks.

The construction activities will likely employ several persons and therefore expose them to various safety and health risks such as accidents, injuries or illnesses. These include exposure to food related diseases as most of the workers will be feed at the work site.

Proposed Mitigation Measures

- ❖ The contractor should comply to all health and safety standards when handling workers on site
- ❖ The contractor should provide all workers with appropriate personal protective equipment (PPEs)
- ❖ The contractor should establish an assembly area for all workers in case of an accident and maintain a record of all works at the site at each particular time.
- ❖ The contractor should provide well equipped first aid kits at the site and first aid training given to the supervisors for handling potential accidents
- ❖ The contractor should have workmen's compensation cover to avoid liabilities in cases of serious accidents
- ❖ The contractor should ensure that warning signs are erected to warn on construction activities and heavy machinery at site
- ❖ The contractor should ensure that risky areas such as deep pits are covered or fenced off to avoid accidents
- ❖ the contractor should provide insurance cover to the workers under the employment compensation Act
- ❖ Workers should be warned from smoking at sites with inflammable chemicals such as petrol

j) Gender Based Violence (GBV) at construction site

The interaction between the community members and the construction workers may result in GBV.

Proposed Mitigation Measures

- ❖ The contractor should ensure that that all construction workers are sensitized on GBV
- ❖ The contractor should comply with the provisions of the GBV policy to safeguard the community against the vice.

k) Increased spread of STDS/HIV/ AIDs

Sexual relationships between community members and the construction workers may result to increased cases of STD including HIV/AIDS

Proposed Mitigation Measures

- ❖ The contractor should ensure that all construction workers are sensitized on the prevention and control of STIs including HIV/AIDs
- ❖ The contractor should provide adequate prevention measures such as provision of condoms to the community and construction workers
- ❖ The contractor should comply with the provisions of the HIV/AIDs prevention policy

l) Increased risk of spread of covid-19 pandemic.

Covid-19 pandemic spread among people during construction may occur in the project area. The human interactions may increase the risk of spread of the disease.

Proposed Mitigation measures.

- ❖ The contractor should adhere to the standard operating procedure(SOPs) on the prevention of the spread of COVID-19 including social distancing, regular hand wash, face masks and sanitization
- ❖ The contractor should sensitize the workers and the neighboring community on COVID-19

5.3 Anticipated Impacts during Operation Phase

5.3.1 Positive Impacts at the Operation Phase

a) Food Security: The proposed project through the irrigated agriculture will result in increased agricultural production. This will increase food and nutrition security both at the individual household and national level. There will also be increased livestock productivity due to availability of fodder.

b) Increased Agricultural Activities and Economic Growth: The proposed development project will avail irrigation water to Kimiter thus increasing crop and livestock productivity. This alongside the related input and output markets will boost the economy of the area and beyond.

c) Income Generation Opportunities: The project will directly create employment for those members of the community who will be farming in the irrigation scheme. Other income generating activities such as transportation, provision of hospitality services and input stores will also benefit

d) Improved Infrastructure: The inception of Kimiter irrigation project will trigger infrastructural developments within the area such as the expansion of roads, markets and others recreational facilities. The improved productivity will also attract more business people to the urban centers leading to improved housing both for accommodation and recreational facilities.

e) Opportunities for Skills Acquisition: The implementation of the project activities will trigger increased demand for skill improvement such as agricultural extension services, business and marketing skills.

6.3.2 Anticipated negative impacts and mitigation measures during operation phase

a) Water Quality Degradation

The quality of water resources may be affected by intensified use of pesticides and fertilizers leading to ground water pollution and eutrophication in water bodies. The disposal of empty agrochemical containers may lead to pollution and poisoning of aquatic life.

Proposed Mitigation Measures

- The local agricultural extension service providers should train farmers on safe use of agro-chemicals including fertilizers and pesticides
- The proponent should ensure proper disposal of wastes

b) Soil salinization, sedimentation and nutrient leaching

Increased use of fertilizers and pesticides may lead to increased soil salinity while excessive use of irrigation water may change both physical and chemical attributes of soil including water logging and leaching of water soluble nutrients to levels where they are no longer available for use by plants.

Proposed Mitigation Measures

- The amount of water abstracted from the river should be controlled through appropriate design of the intake to include facilities for regulating irrigation
- The Project Management Committee (PMC) should ensure installation of appropriate drainage channels to drain any excess water from the farms.
- The proponent should frequently monitor soil salinity through analysis of soil carried out before project implementation and with every annual audit
- Afforestation and vegetation growth should be encouraged especially along the river banks
- The PMC should ensure that appropriate soil conservation structures are put in place to reduce loss of soil fertility
- The PMC should ensure that water application does not exceed soil intake rate leading to over- irrigation, consequently mineral leaching

c) Soil erosion

Soil erosion will occur during the operation phase. The rate of erosion should be controlled as suggested below.

Proposed Mitigation Measures

- Farmers should use soil erosion control measures in their farms
- There should be intensive re-vegetation on bare grounds after construction
- Provide fruit trees to farmers along slopes

d) Water borne diseases

The most common diseases in the area include malaria, upper respiratory tract infections and water borne diseases like amoebiosis and dysentery. Malaria is common because of water pools and the vegetation. Other diseases such as bilharzia, may come in but currently not experienced in the area.

Proposed Mitigation Measures

- The members of the community should be sensitized on preventive and control measures of the common water borne diseases in the area
- The county government should equip the health facilities with adequate drugs to deal with these endemic diseases

e) Possible land use conflicts

The excavation of irrigation pipes may interrupt movement patterns of the livestock. Inception of Kimiter-Chemitel irrigation scheme will reduce grazing land for livestock and may cause conflicts between crop and livestock farmers.

Proposed Mitigation Measures

- ❖ The proponent should organize public meetings to discuss conflicts related to land use in the project area.
- ❖ The irrigation scheme should be fenced off to reduce destruction of crops by livestock.
- ❖ There should be a provision of water for livestock outside the scheme
- ❖ The PMC should constitute a team to receive, discuss and resolve grievances caused by these conflicts

f) Human- wildlife conflict

A wild life corridor is situated to the east of the proposed Kimiter-Chemitel irrigation scheme. This corridor is mainly used by elephants who often stray to farms along the corridor. Kimiter-Chemitel irrigation scheme may fall on the way of these migrating animals.

Mitigation Measures

- ❖ The proponent in collaboration with the department of livestock should sensitize herders and the general community on possible conflicts that may arise
- ❖ Fence off the farms to minimize conflicts between farmers, livestock and wildlife
- ❖ Provide watering troughs outside the farm to reduce animals including wild life from straying into farms

g) Pests and Crop Diseases

Increased acreage of irrigated land may create a conducive environment for agricultural pests and diseases triggering increased use of pesticides.

Proposed Mitigation Measures

- ❖ The farmers should be trained on pest and disease control and management, especially integrated pest management
- ❖ Conduct pest and disease surveillance to monitor prevalence of both existing and new pests and diseases in the scheme.

m) Gender Based Violence (GBV) at community level

The interaction between the community members, people from other communities and the empowerment from increased incomes may result in GBV.

Proposed Mitigation Measures

- ❖ The proponent should ensure that that community members are sensitized on GBV
- ❖ The proponent should comply with the provisions of the GBV policy to safeguard the community against the vice
- ❖ The beneficiaries of the proposed project and the community at large should be sensitized on gender issues including role/activities sharing and how to share benefits

h) Water use Conflicts

The following water related conflicts are likely to occur as identified during public participation:

Water for irrigation versus livestock needs: The proposed water furrow may not contain adequate water for both livestock and irrigation use. This may therefore cause conflicts. Livestock may also destroy furrows if allowed to access water from the furrow.

Proposed Mitigation measure

- ❖ The project should consider installation of water troughs at appropriate places for livestock use.
- ❖ Irrigation of crops could be done in the evening to reduce pressure on water use

i) Risk of spread of COVID-19 among community members

Covid-19 pandemic spread among people during operations may occur in the project area from the interactions of community members sharing the irrigation resources.

Proposed Mitigation measures

- ❖ The proponent should adhere to the standard operating procedure(SOPs) on the prevention of the spread of COVID-19
- ❖ The project management committee (PMC) should sensitize the public on covid-19
- ❖ The PMC should ensure that participants in the site meetings follow the COVID – 19 protocols

5.3.3 Anticipated impacts during Decommissioning

The project is expected to last for some years and therefore decommissioning may not be anticipated in the near future. Therefore, the anticipated positive impacts are expected to last for many years.

Positive impacts

Some of the positive impacts resulting from decommissioning of the project include:

a) Restoration of the environment to its original state
b) Job opportunities accruing from restoration works

The main negative impacts at this phase are mainly losses in the irrigation infrastructure. Other notable negative impacts include

a) Loss of livelihoods and incomes

Proposed Mitigation measures

- ❖ Sensitize/prepare the public on how to cope with loss of livelihoods through trainings
- ❖ Sensitize the farmers to diversify livelihood enterprises.

b) The generation of solid waste

Solid wastes such as stones, metals, bricks will be produced during restoration works.

Proposed Mitigation measures

- ❖ The wastes produced should either be reduced, reused or recycled
- ❖ Provide waste disposal bins at appropriate sites
- ❖ Waste disposal sites should be located away from water sources to prevent run off with wastes reaching the water system

c) Noise and dust pollution

Blasting or use of heavy machinery will produce a lot of dust and noise during restoration works.

Proposed Mitigation measures.

- ❖ Put off idle machinery to reduce noise pollution.

- ❖ Use of machinery that are fitted with appropriate mufflers to reduce noise
- ❖ Use of ear muffs by workers to reduce impacts of excess noise.
- ❖ Control the speed of running machines
- ❖ Sprinkle water on the ground surface to reduce dust

d). Displacement of population

Decommissioning of the project will render some people jobless and may opt to relocate to other areas. This may strain families especially children.

Proposed mitigation measures

- ❖ Families and the community at large should be sensitized early enough on the impending decommissioning.
- ❖ Families should be supported in identifying new opportunities

CHAPTER SIX
ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN(ESMMP)

6.1 Introduction

The main objective of ESMMP is to offer practical steps to mitigate identified adverse effects throughout the life cycle of the project - design, construction, operation and decommissioning phases, so as to enhance the positive effects. The proponent should acquire the technical assistance and training in environmental management practices for the operations of the proposed project.

6.2 Auditing the ESMMP

The managers of the project should conduct annual audits to ensure the systems are operating effectively. The audit will ensure that;

- The ESMMP being used is up to date,
- Variations to the ESMMP and non-compliance and corrective actions are documented
- The appropriate environmental training for personnel is undertaken
- Emergency procedures are in place and effectively communicated to the personnel
- A register of major accidents is in place and other documentation related to the ESMP
- The appropriate corrective and preventive actions are implemented by the contractor once instructions have been issued.

The environmental management monitoring plan of the proposed project should strengthen the mobilization of the beneficiary communities with regard to environmental and health aspects and render the proposed irrigation project sustainable.

6.3 Responsibilities

The ESMMP has various components with the respective stakeholders involved towards the implementation of the corrective actions. Various persons and organizations are to be involved in the project. The implementation of the ESMMP should involve the contractors, line ministries, NEMA, various farmer organizations, the local administration, lands Office, KWS, KFS and the consultants

6.4 Training and sensitization.

Sensitization of all the stakeholders is crucial in the implementation of the ESMMP. All the stakeholders involved in the ESMMP should undergo environmental awareness training. Training should be aimed at practical aspects of environmental monitoring and management.

6.5 ESMMP Monitoring

There should be continuous monitoring and follow-up of the project activities to ensure that the ESMMP is implemented and objectives achieved. The implementing staff, the community, and the contractor should ensure that the mitigation measures are put in place and implemented as outlined in the ESMMP. The monitoring parameters should include improved vegetation cover, increased discharge of water from springs, preservation of species in synergy with the water springs, low level of coli form and other bacteria in the sampled water not to forget the ppm solid elements, reduced watershed encroachment and increased public safety and health awareness

Other expectation includes reduced malaria and other social diseases, reduced livestock wildlife -human conflicts management, safety of equipment and property and capacity building and skills improvement of water users among others as outlined in the ESMMP.

6.6 Environmental and Social Management Monitoring Plan (ESMMP)

6.6.1 Environmental and Social Management and Monitoring Plan during Construction phase

No.	Environmental and Social Impact	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Means of Verification	Time Frame	Est. Cost (KShs.)
	Environmental Impacts						
1.	Loss of Flora	❖ Avoid cutting indigenous trees and vegetation within the survey area path of the water conveyance ❖ Avoid excessive bush clearing; where possible adopt re-vegetation around the water intakes ❖ Minimize number of indigenous trees cut ❖ Afforestation and re-afforestation programs in certain parts of farmlands ❖ Preserve certain sections for grazing and fodder production purposes ❖ The integrity of the forest resources should be well guarded from the spillover effects of the project' activities so as to maintain their functionalities ❖ Encourage planting of fruit trees along the escarpment – mangoes, avocados	❖ % of vegetation cover ❖ No. of trees within the project areas ❖ No of fruit trees planted along the escarpment ❖ % of bush cover around the water intake	Contractor Community Local forest Associations KFS County Government	Baseline Report Site Report	6 Months	250,000
2.	Destruction of Wildlife habitats	❖ The contractor should retain and protect habitat diversity	❖ The extent of habitat diversity retained	-County Government -Contractor	Incidence Report	1 Month	50,000

		❖ The contractor should not excavate the riparian sections since they serve as habitats for several animal species ❖ The contractor, in collaboration with Kenya wildlife services, should sensitize the public on the importance of wild life conservation	❖ Incidences of invasive species ❖ Number of sensitization meetings on the importance of wildlife conservation	-Farmers -KFS -KWS	Attendance list Photos		
3.	Soil Erosion	❖ The contractor should ensure that all excavation works are properly compacted ❖ The contractor should incorporate erosion control measures during construction ❖ The contractor should not use topsoil during the construction phase ❖ The contractor should plant trees on bare grounds after construction	❖ Number of soil conservation structures established ❖ Length of soil conservation structures	Contractor Supervising Engineer Farmers	4 Months	Soil and land management plan Reports	200,000
4.	Soil Compaction	❖ The contractor should ensure that all machines are operated on the existing roads or tracks as much as possible ❖ The contractor should ensure that there are no unnecessary vehicle movement ❖ The contractor should avoid compaction during stockpiling by working the soil in its dry state	❖ Reduced Erosion ❖ Reduced suspended dust	Contractor. Supervising Engineer and farmers	1 week	Site supervision report	50,000

		❖ The contractor should ensure re-vegetation on bare ground to reduce run-off					
5.	Pollution of rivers and wetlands	❖ The contractor should regularly check on the equipment in use to ensure they are well maintained and in good working condition to prevent leaking oils and fuels. ❖ The contractor should ensure that refueling is done in designated places to contain spillage ❖ The contractor should ensure that generated solid wastes are disposed in designated sites ❖ The contractor should ensure that all construction equipment and machineries are clean and mud free	❖ Number of water test done ❖ Number of training conducted on waste management ❖ Number of SOPs availed to workers ❖	Contractor Supervising Engineer	1 week	Water test report Attendance list Site report	30,000
6.	Dust and Noise Pollution	❖ The contractor should ensure that vehicles delivering materials to the site use designated routes and speed limits ❖ The contractor should ensure there is regular watering of dusty roads and maintenance during this stage. ❖ The contractor should provide construction workers with dust masks and ear protectors ❖ The noise levels should be kept at the minimum acceptable levels and the construction activities be confined to the normal 8 am to 5pm working hours	❖ Number of workers provided with dust mask ❖ Number of times water is sprinkled during excavation ❖ Number of trainings conducted	Contractor Supervising Engineer	Work Progress Report	1 Month	50,000

		❖ Machines should be well serviced and fitted with mufflers to reduce noise					
7.	Extraction of construction materials	❖ The contractor should source construction materials from sites approved by the local authorities ❖ The contractor to encourage re-use of the excavated waste materials ❖ The contractor should ensure adequate landscaping and backfilling. ❖ The contractor should drain depressed areas to prevent breeding grounds for disease vectors such as mosquitoes ❖ The contractor should give advance notice to the nearby communities on the intended excavation.	❖ Number of approved sites for extraction of construction materials ❖ Quantity of excavated materials re-used ❖ % of excavated area backfilled ❖ % of depressed area drained	Contractor Supervising Engineer	Approval Reports Site reports	4 Months	100,000
8.	Generation of Solid Wastes	❖ The contractor should sensitize construction workers on proper disposal of wastes ❖ The contractor should embrace the policy of reuse, recycle and reduction of wastes ❖ The contractor should provide adequate litter collection facilities designated in the construction site ❖ The contractor should ensure that collected wastes are disposed in designated sites approved by NEMA	❖ Number of litter bins purchased and installed in project site. ❖ Waste disposal sites ❖ Licensed waste handler in place ❖ Number of beneficiaries trained on waste disposal	Contractor Supervising Engineer	4 months	Site Supervision Report	50,000

		❖ The contractor should construct a pit latrine for use by workers.					
9.	Generation of Liquid wastes	❖ The contractor should ensure that grey water is contained and properly channeled or reused. ❖ Water containing pollutants such as cement, concrete, lime, chemicals and fuels should be discharged into a conservancy tank for removal from the site ❖ Potential pollutants should be stored and used in such a manner that any escape can be contained to avoid degrading the environment. ❖ The contractor should ensure that maintenance of vehicles and other machineries are done in designated locations. ❖ The contractor should ensure regular maintenance of machineries to ensure they are in good working conditions and are free from leaks ❖ The contractor should ensure that soil contaminated by oil spills or pollutants is scooped and disposed in a designated site	❖ % of grey water run off properly channeled or reused ❖ % of water containing pollutants discharged into conservancy tanks for removal from the site ❖ Number of sites designated for maintenance of vehicles ❖ Volumes of contaminated soils scooped and disposed in designated sites	Contractor Supervising Engineer	Site Report	6 Months	50,000
	Social Impacts						
10.	Occupation hazards and health risks	❖ The contractor should comply to all health and safety standards ❖ The contractor should provide all workers with appropriate personal protective equipment (PPEs)	• Number of accidents reported • Number of fully equipped First AID	Contractor Supervising Engineer	4 months	Incidence Report Site Report	50,000

		❖ The contractor should establish an assembly area for all workers in case of an accident and maintain a record of all works at the site at each particular time. ❖ The contractor should sensitize all workers on construction safety measures ❖ The contractor should provide equipped first aid kits at the site and first aid training given to the supervisors for handling potential casualties ❖ The contractor should have workmen's compensation cover to avoid liabilities in cases of serious accidents. ❖ The contractor should provide clean sanitary facilities and clean water for drinking at the site. ❖ The contractor should ensure that warning signs are erected to warn on construction activities and heavy machinery at site ❖ The contractor should ensure that risky areas such as deep pits are covered or fenced off to avoid accidents ❖ the contractor should provide insurance cover to the workers under the employment compensation Act	Kits at strategic points at working area • Number of workers with insurance cover ❖ Number of PPES provided to workers				

11.	Gender based violence	❖ The contractor should ensure that all construction workers are sensitized on GBV ❖ The contractor should comply with the provisions of the GBV policy to safeguard the community against the vice ❖ Train the project beneficiaries on human rights and consequences of gender based violence ❖ A grievance redress mechanism should be established to receive complains	❖ Number of beneficiaries trained ❖ Cases of gender based violence reported to local chief	Social services officer Agriculture staff	Incidence Report Attendance list Site Report	Operation phase	50,000
12.	Increased risk of spread of HIV/AIDs	❖ The contractor should ensure that all construction workers including the community are sensitized on prevention and control of STIs/HIV/AIDs ❖ The contractor should provide adequate prevention measures such as condoms to the community and construction workers ❖ The contractor should comply with the provisions of the HIV/AIDs prevention policy	❖ Number of construction workers sensitized on prevention and control of STIs/HIV/AIDs ❖ Level of compliance with provisions of the HIV/AIDs prevention policy ❖ Number of prevention measures put in place	Contractor Public Health Officer Supervising Engineer	Incidence report Attendance list Compliance report	6 Months	100,000
13.	Risk of spread of COVID-19	❖ The contractor should adhere to the standard operating procedure(SOPs) on the prevention of the spread of COVID-19 ❖ The contractor should sensitize the public on the prevention of COVID-19 including hand	❖ The SOPs in place ❖ Number of people sensitized on COVID-19 ❖ Number of hand washing equipment on site	Contractor Supervising Engineer Ministry of Health	Incidence report Purchase orders/receipts Photos	4 Months	100,000

		washing, use of sanitizers and wearing of face masks	❖ Number of workers provided with hand sanitizers ❖ Number of workers putting on face masks on site				

6.6.2 Environmental and Social Management and Monitoring Plan during Operation phase

No.	Environmental and Social Impact	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Means of Verification	Time Frame	Est. Cost (KShs.)
	Environmental Impacts						
1.	Water Quality degradation	❖ The local agricultural officers and other service providers should train farmers on safe use of agrochemicals including fertilizer ❖ The proponent should prepare and implement pest management plan and seek for clearance before commencement of farming activities ❖ The proponent should ensure proper disposal of wastes including empty pesticide containers	❖ Number of water testing done ❖ Number of farmers trained on safe use of agrochemicals	PMC Farmers Agricultural officers	Water testing report Number of trainings, certificates	Operation life of the project	100,000
2.	Soil Salinization, sedimentation and nutrient leaching	❖ The amount of water abstracted from the river should be controlled through appropriate design of the intake to include facilities for regulating irrigation discharge ❖ The Project Management Committee (PMC) should ensure installation of appropriate drainage channels to drain any excess water from the farms. ❖ The proponent should frequently monitor soil salinity through regular soil testing	❖ Appropriate intake design in place ❖ Number of drainage channels dug and maintained ❖ Number of soil testing ❖ Number of trees planted ❖ The area of riverine protected	PMC Farmers Agriculture Department	Design report Site report Soil salinity monitoring report	Operation life of the project	100,000

		❖ Afforestation and planting of trees should be encouraged especially along river banks ❖ The PMC should ensure irrigation infrastructure is well maintained ❖ The PMC should ensure that there is appropriate terracing for soil and water conservation ❖ The PMC should ensure that water application does not exceed soil intake rate - over- irrigation					
3.	Soil erosion	❖ There should be soil erosion control measures especially on prone areas ❖ Intensive tree planting especially on bare ground ❖ Provide fruit trees to farmers along slopes especially at the foot of the escarpment	❖ Number of Sensitization meetings held ❖ Number of soil conservation structures/practices practiced by farmers ❖ Number of soil conservation structures established	Agriculture officers. Farmers	Soil and Land Conservation Plan Reports	During and after construction	100,000
	Social Impacts						
4.	Water borne diseases	❖ The members of the community should be sensitized on preventive and control measures of water borne diseases ❖ Construction of pit latrines should be encouraged to control diseases. ❖ The Ministry of public health should ensure regular spraying	❖ Number of incidences (cases) reported ❖ Number of mosquito nets distributed	Community PHO	Incidence Report Surveillance Report Report of domestic water use	Project Implementation	50,000

		within the project area to control mosquitoes ❖ Regular flushing of stagnant water to destroy breeding grounds for mosquitoes	❖ Number of disease surveillance conducted ❖ Number of individuals boiling and treating water for drinking				
5.	Water Use Conflict	❖ The project should consider installation of water troughs at appropriate places for livestock use ❖ The management of the scheme should ensure fairness in the distribution of irrigation water during the dry season. ❖ The users should be trained to conserve water ❖ The users should also invest in water storage tanks to conserve water ❖ The members should also adhere to by-laws related to water use to reduce wastage ❖ Roof catchment should be encouraged to supplement irrigation water ❖ Grievance registration and redress mechanism should be put in place	❖ Number of complaints registered ❖ GRM register in place	Community Agricultural officer WRA	Register Water use report	Project operation time	50,000
6.	Interference of livestock movement paths	❖ The proponent should organize public meetings to discuss	❖ Number of Public meetings	PMC Farmers	Notice of public meetings	Operation and maintenance phase	50,000

		conflicts related to land use in the project area. ❖ The irrigation infrastructure and crops should be protected by erecting and repairing of fences to reduce destruction of crops by livestock. ❖ Water troughs should be provided for livestock	organized to discuss conflicts ❖ Number of water troughs provided ❖ Level of protection to irrigation infrastructure	Local administration	Attendance list Incidence report		
7.	Human-livestock conflict.	❖ The proponent in collaboration with the department of livestock should sensitize herders and the general community on possible conflicts that may arise ❖ Fence off the farms to minimize conflicts between crop farmers, livestock and wildlife ❖ Provide livestock watering troughs outside the farms to avoid livestock and wildlife straying into crop farms	Number of cases reported in the community.	Local administration -Farmers -WRA - Livestock Extension Officers - Wild Life Officers (KWS)	Reports on resolved cases	Operation and maintenance phase	100,000
8.	Gender based violence	❖ Train the project beneficiaries on human rights and consequences of gender based violence ❖ Sensitize the community on the importance of sharing resources in families to reduce tension ❖ Awareness creation and sensitization of workers and the local communities on the associated dangers and preventive measures	❖ Number of sensitization meetings ❖ Number of trainings on GBV ❖ Cases of gender based violence reported	Social services officer Agriculture staff Local administration. Community.	Incidence Report Attendance list	Operation phase	50,000

9.	Risk of spread of COVID-19 among community members	❖ The proponent should adhere to the standard operating procedure(SOPs) on prevention and spread of COVID-19 ❖ The project management committee (PMC) should sensitize the public on covid-19 regulations to reduce risk of spread. ❖ The PMC should provide hand washing equipment at strategic points within the site. ❖ The PMC should provide hand sanitizers in for people to sanitizes their hands	❖ The SOPs in place ❖ Number of people sensitized on COVID-19 ❖ No. of and washing equipment on site ❖ Number of workers provided with hand sanitizers ❖ Number of workers putting on face masks on site	PMC Ministry of health Farmers	Incidences reported Purchase orders/receipts Photos	4 Months	100,000

6.6.3 Environmental and Social Management and Monitoring Plan during decommissioning phase

No.	Environmental and Social Impact	Proposed Mitigation Measures	Monitoring Indicators	Responsibility	Means of Verification	Time Frame	Est. Cost (KShs.)
	Environmental impacts						
1.	Generation of solid waste	❖ The wastes produced should either be reduced reused or recycled ❖ Provide waste disposal bins at appropriate sites ❖ Waste disposal sites should be located away from water sources to avoid water pollution ❖ Train the beneficiaries on waste disposal methods including composting	Quantity of solid waste in the scheme during decommissioning.	Contractor	Site Report	1 Month	50,000
2.	Noise pollution	❖ Reduce noise by sensitizing drivers in the project site ❖ Use manual labor as much as possible. ❖ Restrict activities to daytime ❖ Provide workers with appropriate PPEs ❖ No idling of vehicles and machinery if not in use, they should be switched off.	❖ Number of sensitization meetings ❖ Number. of PPE procured	Contractor	Sensitization Report Attendance list	1 Month	50,000
	Social Impacts						
3.	Loss of livelihoods and incomes	❖ Sensitize and train farmers on livelihood diversification	Number of people sensitized on alternative livelihoods	Contractor	Livelihood profile reports	1 Month	100,000
4.	Displacement of human population	❖ Families and the community at large should be sensitized early enough on the impending decommissioning. ❖ Families should be supported in identifying new opportunities.	❖ Number of community sensitizations done	Proponent PMC Administration.	Alternative livelihood report Number of sensitizations	2 months	50,000

			❖ Number of alternative livelihood strategies promoted.		done to project beneficiaries.		
	Total Cost						**1,980,000**

CHAPTER SEVEN
CONCLUSION AND RECOMMENDATIONS.

7.1 Introduction

This study has been conducted to equip the Government, National Environmental Management Authority (NEMA), the project proponent, Kenya Climate Smart Agriculture Project, project beneficiaries and other stakeholders with relevant and sufficient information about the proposed Kimiter-Chemitel Irrigation project. It is hoped that NEMA would use this information to give a go ahead to the project by issuing the proponent with a permit. The Irrigation Project proposes to use a gravity fed system which will greatly reduce the operation and maintenance cost. Water will be conveyed through improved irrigation canals to the irrigation scheme.

7.2 Conclusions

The study established that positive impacts will be realized as a result of implementation of the proposed Kimiter-Chemitel irrigation scheme. These positive impacts include enhanced food and nutrition security, diversification of farming enterprises and increased incomes among others.

There will be an increase in economic activities in the area leading to an increase in employment along the value chains mainly crop related and livestock as well. Other positive impacts identified include reduction in poverty levels, improved infrastructure especially roads, conserved environment and reduced cattle rustling between the warring communities and increased infusion of knowledge and skills into the community.

The few negative impacts identified include soil erosion, potential water conflicts, salinity of the soil, crop – livestock conflicts and pollution of the environment in general due to intensive use of agro-chemicals. However, mitigation measures have been recommended to deal with the negative impacts.

7.3 Recommendations

The results from the study showed that there are more positive social and environmental impacts that the community will benefit from the proposed project. These positive impacts largely outweigh the potential negative impacts and therefore the proposed project Kimiter-Chemitel irrigation scheme, is recommended for approval and issuance of permit by NEMA on condition that all the proposed mitigation measures are implemented throughout the project life cycle.

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ANNEXES.

Annex 1. Design and drawings.

COUNTY GOVERNMENT OF ELGEYO MARAKWET

DEPARTMENT OF AGRICULTURE AND IRRIGATION

KENYA CLIMATE SMART PROJECT (KCSAP)

DESIGN REPORT

FOR

PROPOSED KIMITER IRRIGATION PROJECT

MARCH, 2021

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KCSAP- EMC

EXECUTIVE SUMMARY

The proposed Kimiter irrigation project is situated in Endo ward, Marakwet East Sub-county, Elgeyo-Marakwet County, near Chesongoch centre. The soils in the area are fertile of predominantly sandy and clay loams, suitable for irrigated agriculture. The crops currently grown are mainly under rain fed, which often fails due to inadequate and unreliable rainfall. The project is targeting to promote both food crops such as maize, beans & sorghum and horticultural crops production which includes watermelons, green grams, and tomatoes. The gross potential scheme area is over 600 acres (240ha) but the target for irrigation 300 acres (120 ha) based on the currently available water for irrigation. This will enable 300 farmers to irrigate using surface irrigation. This project targets to increase land productivity by ensuring sufficient, regular supply of irrigation water in the scheme through improved water abstraction, conveyance, distribution and application efficiency and capacity development of the beneficiaries.

The scheme will abstract irrigation water from Embolot River and convey it through open conveyance. The scheme will be managed by the community through a registered Irrigation Water Users Association (IWUA), with elected officials. However their capacity for irrigation management will have to be enhanced.

The scope of works includes rehabilitation of the intake, improvement of the existing open canal through lining and construction of division boxes. There will also be other activities including perimeter fencing of the farm and farmers' capacity building. The project is estimated to cost about **Ksh 14.6million.**

JUSTIFICATION

The frequent occurrences of droughts and subsequent lack of adequate food, call for a sustainable means of food production. Therefore the improvement of the gravity fed irrigation schemes will not only ensure food production at low cost but also enable the community to increase their household income.

The project area has potential for irrigated agriculture that has not been exploited. Apart from availability of suitable fertile land for irrigation, there is the potential to efficiently and effectively utilize the available water for agricultural production.

The project will contribute towards reduction of poverty level among the people of Kerio valley which currently stands at about 53%.

The development of this project will improve food and nutrition self sufficiency and incomes of the beneficiary community. It is expected to directly benefit about 800 households and over 2,000 people indirectly.

The project will enable the community to diversify their livelihood style and adopt crop farm which will in turn address the problem of cattle rustling that has led to insecurity and even loss of lives in the past.

GOAL AND OBJECTIVES

GOAL: This project is proposed to be an intervention to increase access to water for irrigation through an efficient water abstraction, conveyance and distribution system, improve the health and living standards of families within the project area and contain/eradicate the insecurity caused by cattle rustling.

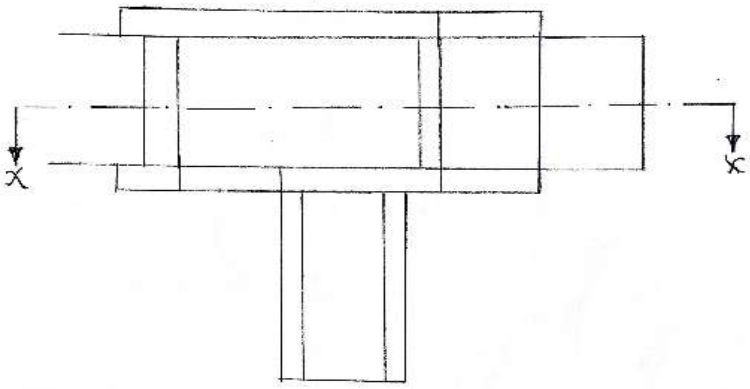
OVERALL OBJECTIVE: The overall objective of the project is to contribute to poverty reduction and food security in the area by installing and managing an efficient, effective and sustainable irrigation system that is able to diversify the people's livelihood and supply sufficient food production and improve household income.

SPECIFIC OBJECTIVES:

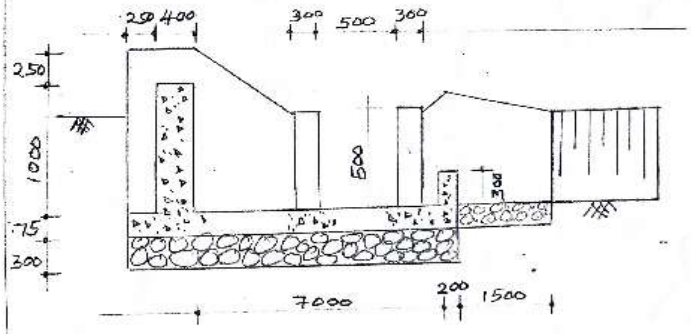
- Install, utilize and manage a more efficient irrigation system on the scheme for improved production.
- Reduce the present high dependence on rain-fed agriculture thus minimizing crop failures.
- Utilize the semi arid but fertile land for effective agricultural production through irrigated farming.
- Diversify the peoples' livelihood thereby reduce or eliminate incidences of insecurity caused by cattle rustling.
- Minimize irrigation water losses in abstraction, conveyance, distribution and application by improving the intake, lining the canal and construction of division boxes.
- Build the capacity of the beneficiaries through training on irrigated agriculture.
- Minimize human and capital costs used in operation, maintenance and management of the scheme.

KIMITER IRRIGATION PROJECT

1. INTAKE

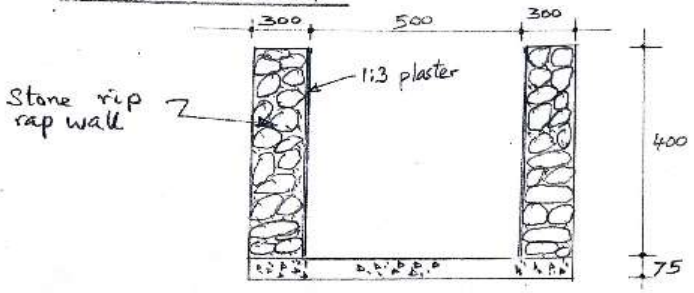


PLAN



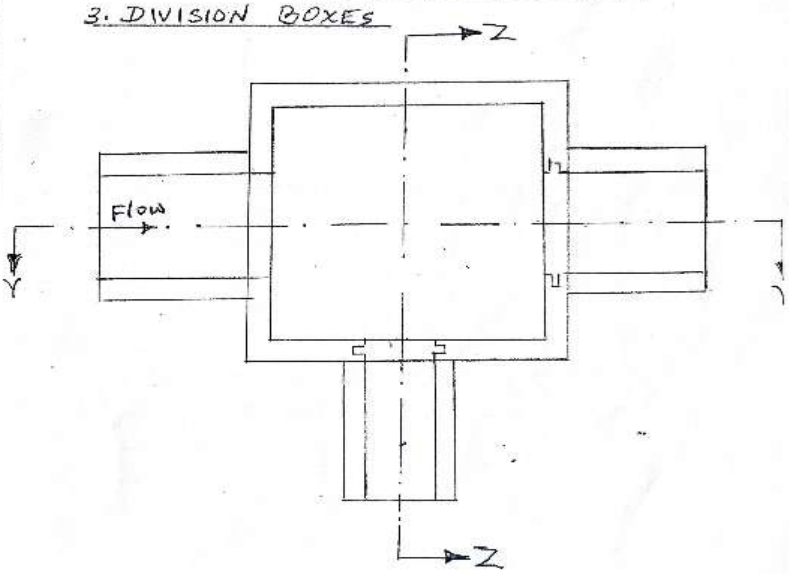
SECTION X-X

2. CANAL LINING

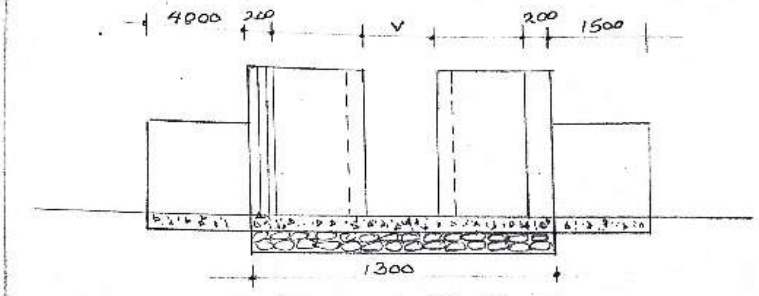


CANAL CROSS SECTION

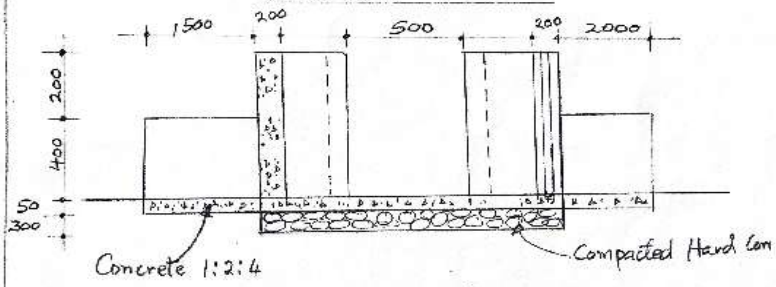
3. DIVISION BOXES



PLAN



SECTION Y-Y



SECTION Z-Z

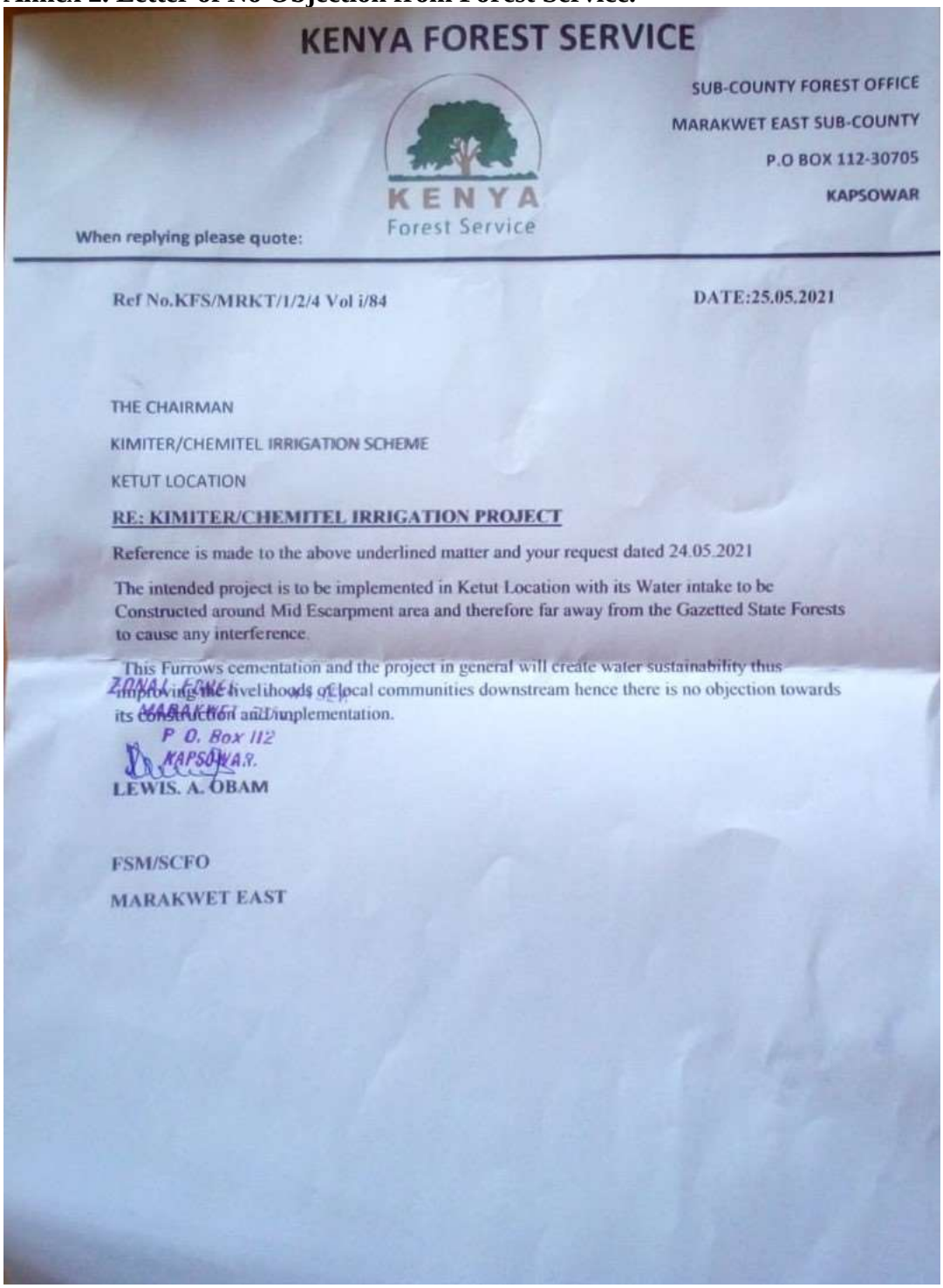
NOTES:

1. The drawings are NOT to scale. They just give indication of actual dimensions.
2. Dimensions are in mm
3. The dimensions of division boxes will vary according to location and area to be irrigated.

PREPARED BY:

WILSON K. CHEPKONGA
LEAD ENGINEER

Annex 2. Letter of No Objection from Forest Service.



KENYA FOREST SERVICE

KENYA
Forest Service

SUB-COUNTY FOREST OFFICE
MARAKWET EAST SUB-COUNTY
P.O BOX 112-30705
KAPSOWAR

When replying please quote:

Ref No.KFS/MRKT/1/2/4 Vol i/84

DATE:25.05.2021

THE CHAIRMAN

KIMITER/CHEMITEL IRRIGATION SCHEME

KETUT LOCATION

RE: KIMITER/CHEMITEL IRRIGATION PROJECT

Reference is made to the above underlined matter and your request dated 24.05.2021

The intended project is to be implemented in Ketut Location with its Water intake to be Constructed around Mid Escarpment area and therefore far away from the Gazetted State Forests to cause any interference.

This Furrows cementation and the project in general will create water sustainability thus improving the livelihoods of local communities downstream hence there is no objection towards its construction and implementation.

ZONAL FOREST OFFICER
MARAKWET
P. O. Box 112
KAPSOWAR.

LEWIS. A. OBAM

FSM/SCFO

MARAKWET EAST

Annex.3 Attendance list.

Republic of Kenya

Kenya Climate Smart Agriculture Project

Kenya Climate Smart Agriculture Project(KCSAP)

ELGEYO MARAKWET COUNTY

ATTENDANCE LIST

ACTIVITY PUBLIC PARTICIPATION ON ESIA DEVELOPMENT FOR KIMITER IRRIGATION SCHEME

DATE 01/4/2021 VENUE KIMITER IRRIGATION WATER PUMPHOUSE

S/No	NAME	MOBILE No.	ORGANIZATION	STATION	EMAIL	SIGN
1	Ezekiel C Chelangat	0726835022	WARD EXTENSION OFFICER	TOT	Ezekielchelagat2016@gmail.com	
2	Richard Cheptkolee	0720470492	CHEMITER FARMER.	KETOT		
3	Cherono J. Saliniah	0710991348	member	Ketut		
4	Stellah Chesit	0724064605	member	Ketut		
5.	Benjamin K Kanda	0718689026	Member	Ketut		
6	Gregory C. Talai	0706836937	" "	" "		
7	John Choptot		" "	" "		
8	David Kipkoh		" "	" "		
9	Oliver Kiptoo	0713729725	" "	" "		

Republic of Kenya

Kenya Climate Smart Agriculture Project(KCSAP)

ELGEYO MARAKWET COUNTY

ATTENDANCE LIST

ACTIVITY: PUBLIC PARTICIPATION ON ESIA DEVELOPMENT FOR KIMITER IRRIGATION SCHEME

DATE: 01/4/2021

VENUE: KIMITER IRRIGATION WATER PAVILION

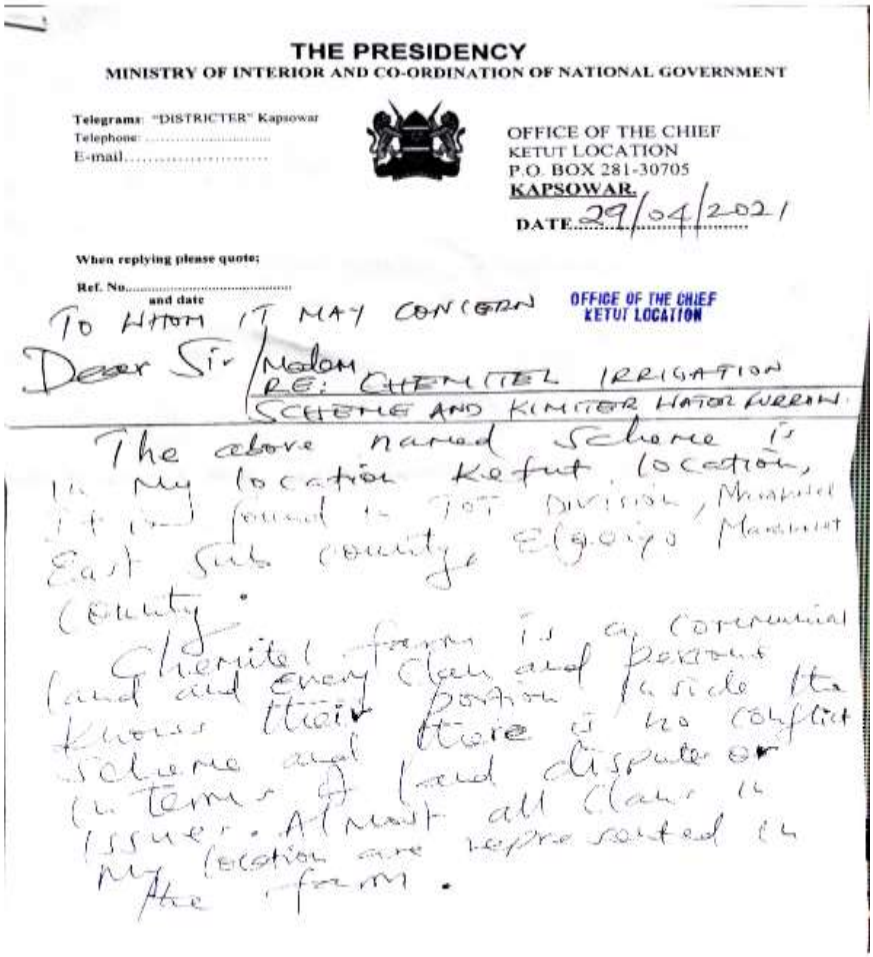
S/No	NAME	MOBILE No.	ORGANIZATION	STATION	EMAIL	SIGN
10	James Komon		Member	Ketut		
11	Yego Chebet		Member	Ketut		
12	Gabriel K. Kisang	0745 947700	Member	Kapkondot		
13	Richard Ezekiel C. Chelangat	0722 ...626	Member	Kapkondot		
14	Markus Richard Cherkole		Member	Kapkondot		
15	Nicholas Chelimo	0746 701444	Member	Kapkondot		
16	Richard Chebet		Member	Kapkondot		
17	Stephen Stedlah Chesit	0763738278	Member	Kapkondot		
18	Walter Kiplagat Kanda	0726689026	Member	Kapkondot		
19	Gregory Talai	0706883693	Kapkondot			
20	Pius John Chelimo	0718800639	Member	Kapkondot		
21	Richard Chebor	0706443008	V. Chairman	Kapkondot		
22	Daniel Davidson Kipkorir		Member	Kapkondot		
23	Samuel Olimbon Kiptoo	0729 3436	Committee member	Ketut		
24	Anthony Mukoh	0715857459	KCISAP	DCT		
25	Edward Chemon	0726729175	Member	Kapkondot		
26	Kiptoo Kibor		Member	Ketut		

S/No	NAME	MOBILE No.	ORGANIZATION	STATION	EMAIL	SIGN
			Kapkondot Ward Extension Officer		Ezekiel Chelangat...	
			Chemutee Farmer	Ketut		
			Kapkondot Member	Ketut		
			Member	Ketut		
			Member	Ketut		

S/No	NAME	MOBILE No.	ORGANIZATION	STATION	EMAIL	SIGN
27	BENARD KIBOR		MEMBER	KETUT		
28	JACOB KISANG	0720357050	MEMBER	KETUT		
29	MILLICENT CHEBOI	0723716507	"	KAPKONDOI		
30	Gilbert Chepkogei	0714531003	"	KAPKONDOI		
31	Kemboi Mengich	0727347272	"	KAPKONDOI	[illegible]mengich@gmail.	
32	Wilfred kim kipchemamoy	0727761763	"	Ketut		
33	Dominic K. chelanga	0724228129	"	"	Dominick[illegible]mail.com	
34	Bowen J. Monicah	0741762756	"	"	Bowenmonicah@mail	
35	GILBERT K. SUTTER	0724727029	"	KETUT		
36	Benjamin - K. Sum	0728075841	Agriculture	Tot	Bsum[illegible]@gmail	
37	Jacob K. KOMEN	0723516370	CHIEF KETUT	KETUT	KIPKENA-@Gmail.com	
38	JOSEPH Kitum KOLITIANG	0727471285	Livestock/Vet	ENDD	Kolitiangjoe@gmail.com	
39	Kiluma Kanda Stephen	0715301729	member	KETUT	village elder	
40	Barnaba Suter	—	Member	KETUT		
41	JOHNATHA KIBOR	0723675615	MEMBER	K elat	Village	
42	William Otiego	0722538080	Member	Ketut	William[illegible]	
43	Edward Otiego	0723713633	" "	KAPKondat	Village	

S/No	NAME	MOBILE No.	ORGANIZATION	STATION	EMAIL	SIGN
44	Gabriel Cheruf Tumbo	0713729744	Member	KAPKONDOJ		
45	Pius m. KITUM	0726529751	Chairperson	Ketut		
46	Jeremiah C. KANDA	0729614361	Ass. Chief	Keiyo S/Lo		
47	Ezron Kosgei	0746331510	Member	KETUT		
48	Gabriel Kilimo	—	Member	KETUT		
49	SAMUEL Cheruiyot					
50	ELIJAH KANDA					
51	Ezra Cheboi					
52	Jeremiah					
53	KENNETH CHEZANIA	0726464825	Member	KETUT		
54	ALEX KIPRONO	0725651273	Member	KAPKONDOJ		

Annex 4: Land ownership letter.



THE PRESIDENCY
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams: "DISTRICTER" Kapsowar
Telephone: .....
E-mail.....

OFFICE OF THE CHIEF
KETUT LOCATION
P.O. BOX 281-30705
KAPSOWAR.
DATE 29/04/2021

When replying please quote:
Ref. No.....
and date

OFFICE OF THE CHIEF
KETUT LOCATION

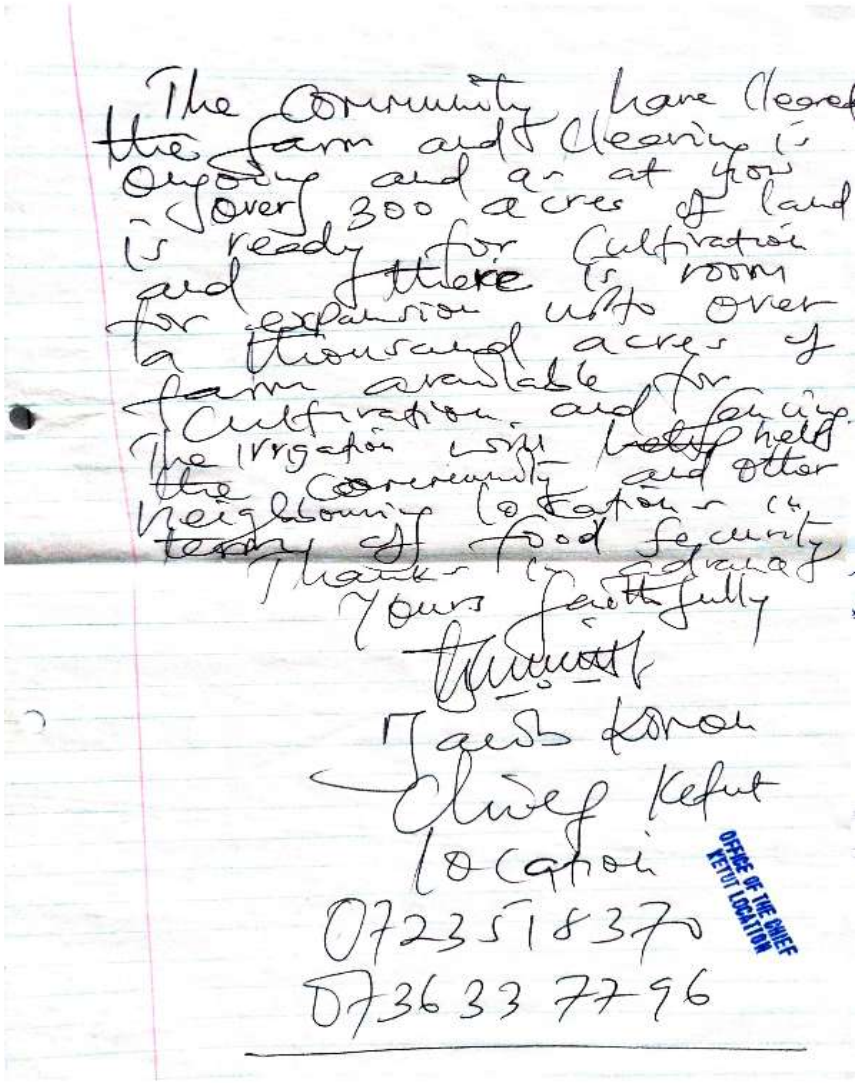
TO WHOM IT MAY CONCERN

Dear Sir/Madam

RE: CHEMITEL IRRIGATION SCHEME AND KIMITER WATER PROJECT

The above named Scheme is in My location Ketut location, it is found in TOT Division, Marakwet East Sub county, Elgeyo Marakwet County.

Chemitel farm is a Communal land and every Clan and person inside its knows their boarder there is no conflict Scheme and land dispute or (in terms of land ownership issues. Almost all Clans in My location are represented in the farm.



The Community have cleared the farm and clearing is ongoing and as at now over 300 acres of land is ready for cultivation and there is room for expansion unto over a thousand acres of farm available for cultivation. and for us the irrigation will help the community and other neighbouring locations in terms of food security

Thanks in advance

Yours faithfully

James Kanoi

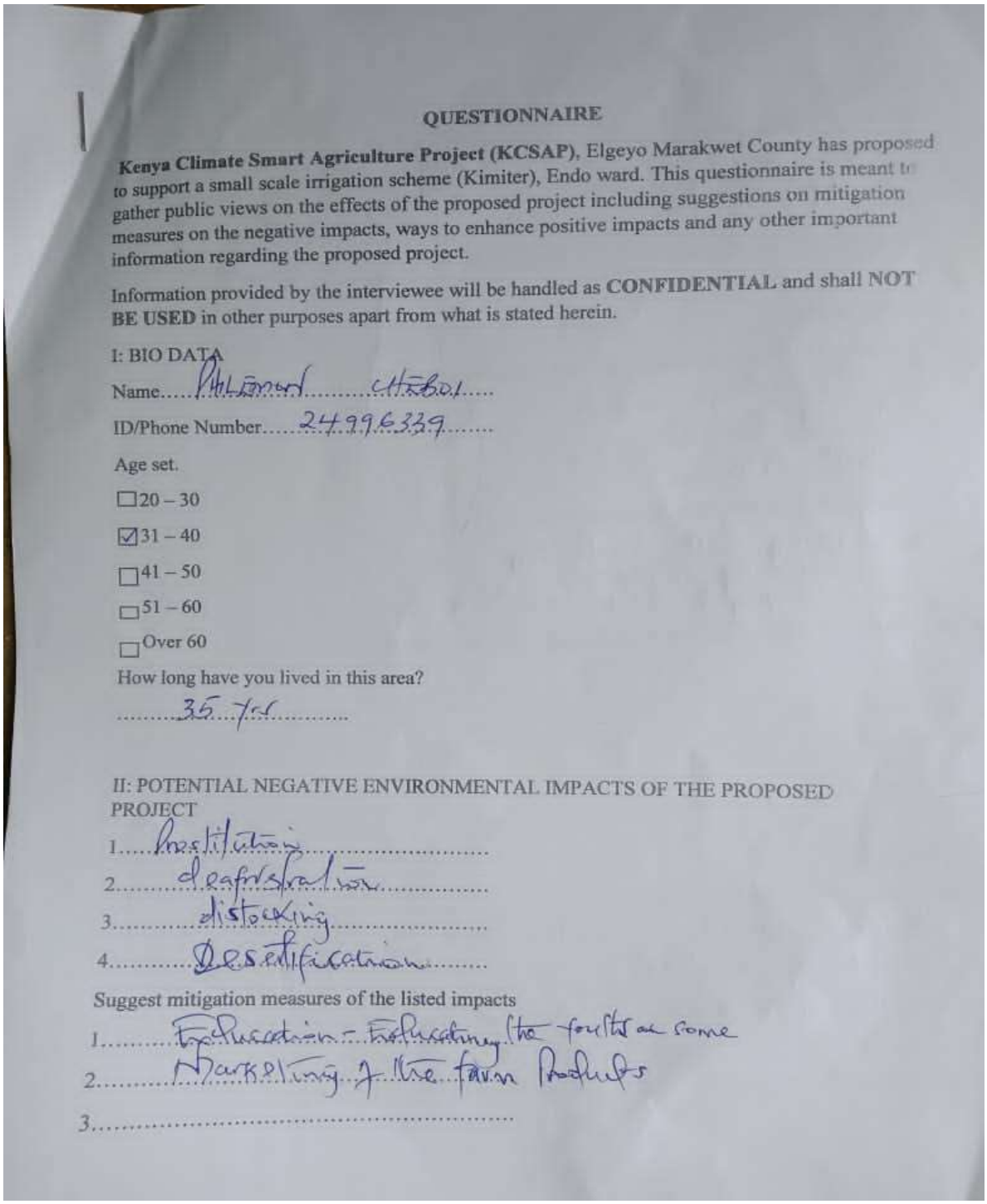
Chief Kefut Location

0723518370

0736337796

OFFICE OF THE CHIEF KEFUT LOCATION

Annex 5: Sample questionnaire.



QUESTIONNAIRE

Kenya Climate Smart Agriculture Project (KCSAP), Elgeyo Marakwet County has proposed to support a small scale irrigation scheme (Kimiter), Endo ward. This questionnaire is meant to gather public views on the effects of the proposed project including suggestions on mitigation measures on the negative impacts, ways to enhance positive impacts and any other important information regarding the proposed project.

Information provided by the interviewee will be handled as **CONFIDENTIAL** and shall **NOT BE USED** in other purposes apart from what is stated herein.

I: BIO DATA

Name.....Philomena Cheboi.....

ID/Phone Number.....24996339.....

Age set.

☐ 20 – 30

☑ 31 – 40

☐ 41 – 50

☐ 51 – 60

☐ Over 60

How long have you lived in this area?

.....35 yrs.....

II: POTENTIAL NEGATIVE ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

1.....Prostitution.....

2.....deforestation.....

3.....distocking.....

4.....Desertification.....

Suggest mitigation measures of the listed impacts

1.....Evacuation - Evacuating the tourists as some

2.....Marketing of the farm Products

3.....

4.....

III WHAT ARE THE ALTERNATIVE LAND USE IN THE AREA

1. Ranching
2. Afforestration
3. .....
4. .....

SOCIAL ISSUES

IV. WHAT ARE THE COMMON WATER RELATED DISPUTES IN THE AREA

1. Inter-village Conflicts
2. Land Conflicts
3. Soil Erosion

V. HOW ARE THE DISPUTES RESOLVED?

1. Setting stretch land laws
2. Building of cesspool
3. Hanging of stretch boundaries

VI. FROM OBSERVATION, WHICH GENDER IS DISADVANTAGED IN THIS AREA

MALE

FEMALE

YOUTH

PWD ✓

IPs

ORPHANS

HOW ARE THEY DISADVANTAGED?

1. They are not able to access the land
2. Lack of capital
3. Lack of labour
4. .....

SUGGEST WAYS TO REDUCE MARGINALIZATION OF THE GENDER MENTIONED ABOVE

1 Provide them with wheel chairs

2 Provide them with capital

3 .....

I **recommend/not recommend** the project to be implemented

I recommend the Project it go on as stated.

Annex 6. List of stakeholders consulted.

1.Project Management Committee

2.Community/Project beneficiaries

3.Department of Agriculture & Irrigation.

4.Department of Livestock, Fisheries & Co-operatives.

5.Department of public Health

6.Local administration (chiefs &ward leadership)

7.NEMA office (during screening).

8.Department of Gender & Social services.

9.Kenya Forest Service.

Annex 7. Minutes of Public Consultation

Minutes for Kimiter-Chemitel irrigation scheme on ESIA SPR public participation.

The meeting started with a word of prayer from Stella one of the project beneficiaries. Then the area chief welcomed stakeholders to the public participation meeting. The chief informed the public the main agenda of the meeting which was to engage the public to give their views on the project.

The following stakeholders were present.

1.Department of Livestock, Co-operatives & Fisheries.

2.Department of Agriculture & Irrigation.

3.Department of Public Health & Sanitation.

4.CPCU representative-CESSCO

5.Department of Interior & Administration.

6.Project management Committee & Project beneficiaries.

7.Ward Development Committee. (WDC)

Min.01/4/2021: Welcoming remarks

The chief welcomed the members to the meeting indicating that it had been a while since they met to discuss issues of the scheme. He also welcomed the team of environmental experts to the scheme.

The scheme will ensure nourishment for children in the area and should be in operational as soon as possible. The area Chief thanked the members for attending the public participation. He also informed the public on Covid-19 regulations so that the spread is minimized.

Min.02/4/2021: Brief on project from Ward Agricultural Officer.

The Officer informed the public that the irrigation project will open land and increase area under cultivation. He observed that the scheme is in fertile area that need constant water supply to irrigate crops.He emphasized the need to maintain forest cover of at least 10 percent which is a requirement by Kenyan policy.Again he proposed construction of retention ditch on upper part of

the irrigation scheme.Also he informed the project beneficiaries on the need to continue clearing their land in readiness of the project which forms part of contribution.

Min.03/4/2021.Objectives of Public participation.

The CESSCO informed the public on the main agenda of the meeting which was to develop ESIA-SPR instrument for the proposed project.He advised the project beneficiaries to be free to contribute so that they could air their views concerning environmental and social issues.The CESSCO also informed the Lead expert will engage them from time to time for example the letter of No Objection from Kenya Forestry Service as it's a requirement to avoid damage of forest catchment,then welcomed the lead ESIA expert.

Min.04/4/2021.ESIA Lead Expert Remarks.

The Lead Expert thanked the participants for attending the meeting and for proposing the project in the community. He informed the public that for any project to proceed, Environmental and social issues need to be addressed before it commences. He informed the public to be free in their discussions and ask clarification of issues on the project. The Expert informed the stakeholders that the issues raised from the meeting and questionnaires will form part of the report that needs to be addressed in the report. He assured the public that the information gathered from the will only be used for report purposes and confidential. He then took stakeholders on the process of discussion on various issues.

Min.05/4/2012: Reactions from the Public.

The public after being taken through the questionnaires and discussions, the following issues were raised in order to improve water supply for irrigation to the scheme;

i)Construction of a reservoir upstream to store water to be used during dry season

ii) They suggested that there is need to use open furrow system for it to be available for other uses

iii) The community raised issue of water conservation during rainy season.

iv) Water related conflicts that may arise in the future due to water use for farming.

v) The need to strengthen the Project Management Committee to manage water conflicts and constitute conflict management sub-committee in the scheme.

vi) The need to tap water using irrigation technologies from Kerio river.

vii) The need for training farmers on agricultural practices.

There after questionnaires were distributed to the stakeholders to fill and submit.

Min.06/04/2021.Closing Remarks.

The chief thanked all the members for patience and the fruitful engagements. He also requested the KCSAP team to move fast so that the community can benefit. The chief requested Mr. Benjamin Sum to close the meeting with a word of prayer. There being no other business, the meeting closed at 3.30 pm.

Minutes prepared by: Christopher Rutto ..... Dat: 8/4/21 ..... Signature: .....

.....

Annex 8. Expert Practicing License

FORM 7 (r.15(2))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

License No : NEMA/EIA/ERPL/15135

Application Reference No: NEMA/EIA/EL/20075

M/S **CHRISTOPHER KIPTANUI RUTO**
(individual or firm) of address

P.O. Box 111, KAPSOWAR

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **6116**

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

Issued Date: **5/24/2021** Expiry Date: **12/31/2021**

Signature…..

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2015 Certified