ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED RAICHIRI WATERPAN DESILTING PROJECT ON LR. NO NYANDARUA/LESHAU BLOCK 3(RAICHIRI) PLOT NO. 23, NYANDARUA COUNTY

PROPONENT:

CHIEF OFFICER,

DEPARTMENT OF AGRICULTURE, LIVESTOCK AND FISHERIES,

COUNTY GOVERNMENT OF NYANDARUA

KENYA CLIMATE SMART AGRICULTURE PROJECT
P.O BOX 701-20303
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CERTIFICATION

I/We, the undersigned certify that to the best of my/our knowledge and belief, this report is correct and true reflection of the findings on the anticipated environmental and social impacts of the of the proposed Raichiri Water pan Desilting Project in Nyandarua County

For and on behalf of Lead Expert

Kevin Muhia Njui (Lead Expert)

License No: 8047

Signature…… Date……

For and on behalf of Client

I, certify that I have read this report for and on behalf of and that it is to the best of my knowledge and belief correct and true.

Name:……

Designation:…… Telephone:……..…

Signature:…… Date:……

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ABBREVIATIONS & ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CBO	Community Based Organization
CIDP	County Integrated Development Plan
COVID-19	Corona Virus Disease
CPP	Consultation and Public Participation
EMCA	Environmental Management and Co-ordination Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GBV	Gender Based Violence
GoK	Government of Kenya
GPS	Geographical Positioning System
HIV	Human Immunodeficiency Virus
IP	Indigenous People
KES	Kenya Shilling
KCSAP	Kenya climate Smart Agriculture Project
KNBS	Kenya national Bureau of Statistics
NEMA	National Environment Management Authority
NOX	Nitrogen Oxides
OSHA	Occupational Safety and Health Act
PPE	Personal Protective Equipment
SEA	Sexual exploitation and Abuse
SH	Sexual Harassment
SID	Society of International Development
SOP	Standard Operating Procedure
WHO	World Health Organization
WRMA	Water Resources Management Authority

EXECUTIVE SUMMARY

Nyandarua County is one of the 24 counties in Kenya that is benefiting from World Bank Agricultural Support under the Kenya Climate Smart Agriculture Project (KCSAP). The proposed Raichiri Water Pan desilting project is a one of the sub-projects being funded by KCSAP Nyandarua. The project will benefit 986 community members (347 male, 639 females) and is estimated to cost KES 30, 694,125.00.

The project was identified through participatory integrated community development (PICD) and irrigated agriculture is also identified as a priority project in CIDP II. Raichiri Pondo Dam CBO (here after referred to as the CBO) has been managing the water pan for many years using the water for domestic and livestock use.

The project objective to be achieved shall be as inter alia: food and nutrition security, improve livelihood to Raichiri community, supply of clean water for domestic, livestock and small scale irrigation, employment creation especially to the youths, improvement to social infrastructures and improvement of the catchment area.

The project's aim is to strengthen resilience of the beneficiary community against drought through provision of water for domestic and small scale irrigation at household level to enable farmers to grow crops and minimize losses that would otherwise be experienced during drought in the semi-arid area.

The proposed site vegetation is dominantly grass which is easily established. There are no endangered plant species in the area as only water plants like papyrus are growing around the water pan. There are also no major wild animals noted at the site except for few water ducks at the existing water pan. The site slopes gently (less than 4%) from South to North. There are no rivers or lake within the area as the only waterways are shallow valleys through which the flood water passes and drains into the water pan. The area soils are well drained clay soils with some areas having stones cropping up due to erosion. The Environmental and Social Impact Assessment is based upon desk studies, field assessments, discussions with the proponent and stakeholders; and has been carried out using the following methods; screening, scoping, field assessment and public participation. Due to COVID-19 regulations, 59 community members attended the public participation meeting of which 34 were male and 25 were female. Questionnaires for focus group discussions were administered to 12 groups each having about five members. All the questionnaires administered were returned as the process was done at the project site. The major perceived negative concerns from the community were; diseases like malaria due to stagnant water body, life risk due to drowning, silt emanating from farms polluting the water pan, overflow

of water affecting those downstream and accumulation of dust during construction. The community also highlighted perceived positive impacts that would emanate from the project such as economic empowerment, improved health, improved infrastructure, establishment of a tree nursery, increased employment opportunities, improved access to water,

The adverse negative impacts of the project as highlighted by the community were to be addressed through provision of mosquito nets to immediate members that live next to the water-pan in order to curb malaria, training on safe farm management to the community, construction work being strictly limited to day time only, conservation of the catchment through tree planting and wetting of construction site to reduce dust

This Environmental and Social Impact Assessment document is aimed at providing a description of existing environmental situation in the project area, identification of the relevant legal and administrative framework, identify the potential positive and adverse impacts associated with project implementation and defining the measures that are appropriate to enhance the potential beneficial impacts and to prevent, mitigate or minimize potential adverse impacts.

The proposed project will have beneficial impacts to the local community, which are; increased food and nutrition security, economic empowerment, water provision, transfer of skills, environmental conservation, employment opportunities, increase in land value and improved health status.

Probable adverse impacts of the project will include: gaseous emissions, particulate matter, likelihood of decreased water quality, soil erosion & contamination, noise & vibration, occupational hazards, construction waste, health & safety concerns, increase in transmissible diseases, risk of contracting COVID-19, gender based violence; sexual exploitation and abuse, sexual harassment and Child abuse issues. Necessary mitigation measures will be applied which include but not limited to:- regular maintenance of construction vehicles, machines & equipment to reduce emission; suppress dust at the site by covering stockpiled material and wetting dry areas; avoid discharge of contaminated water to water channels; avoid spillage of fuels, oils and greases; only remove vegetation from areas meant for water pan construction; sensitization of construction workers on GBSV by the contractor; having clear human resource policy against sexual harassment that is aligned with national law and contractor ensuring effective community engagement and strong grievance redress mechanisms on matters related to labour laws.

An ESMP has been prepared to enable implementation of the proposed measures. The estimated cost of implementing the proposed ESMP is Kenya Shillings one million and fifty six thousand (KES 1,056,000.00). For better implementation, a monitoring plan has also been prepared. The project management committee (PMC) together with Chief Officer (Agriculture) and KCSAP will be responsible for routine monitoring of the ESMP implementation. The ESIA will form part of the contract to be shared with the selected contractor. The contractor will have to adopt the document before starting the works.

This ESIA Report concludes that implementation of the Project should be undertaken and recommendations given strictly adhered to.

The review of this ESIA is undertaken during the era of the Coronavirus disease (COVID-19) pandemic outbreak. As such, specific mitigation measures have been introduced to prevent the spread of the pandemic during the construction period. Moreover, consultations required as part of the mitigation measures, such as during training on E&S issues, also pose a risk of infection to communities. For this reason, the risk of contracting the virus during consultations will be avoided, minimized and mitigated with specific measures to ensure national requirements on social distancing and recommendations on how to minimize contact are adhered to.

1.0 INTRODUCTION

1.1 Project Background

The proposed Raichiri Water pan Desilting Project for small scale irrigation is to be implemented in Raichiri, Leshau Pondo Ward, Ndaragwa Sub-county, Nyandarua County. It is located approximately at GPS Co-ordinates latitude N 0°4'57.39168" and Longitudes E 36°27'14.02308. Raichiri Secondary School is approximately 587 metres north east of the proposed site. To the west of the site about 200 metres is AIC Raichiri Church. The project location is approximately 1.03 kilometres from Leshau Pondo centre.

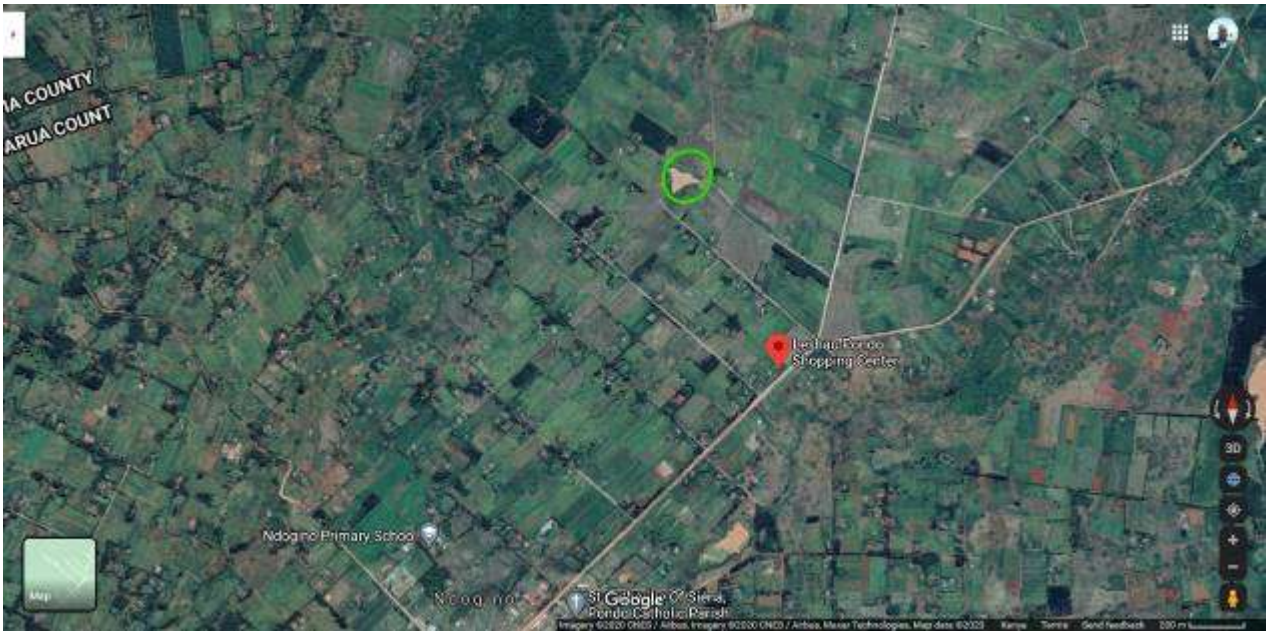

Figure 1: GPS map of proposed site

The Nyandarua County Government-Department of Agriculture, Livestock & Fisheries (Proponent) is proposing the desilting of Raichiri Water pan. The project objective is to improve the livelihoods and build resilience of smallholder farmers to effects of climate change through provision of water by desilting Raichiri Water pan. This is in line with KCSAP PDO which is to 'increase agricultural productivity and build resilience to climate change risks in the targeted smallholder'. Upon completion of the desilting works the water Pan shall be used to conserve run off water for domestic, livestock and small scale irrigation covering two villages: i.e. Raichiri and Pondo.

The Project funding is from World Bank through the Kenya Climate Smart Agriculture Project (KCSAP) and the County Government of Nyandarua. The proposed Raichiri Water Pan desilting project is a one of the sub-projects being funded by KCSAP Nyandarua. The project will benefit 986 community members (347 males, 639 females) and is estimated to cost KES 30, 694,125.00.

The project was identified through participatory integrated community development (PICD) and irrigated agriculture is also identified as a priority project in CIDP II. Raichiri Pondo Dam CBO (beneficiary) has been managing the water pan for many years and the water used for domestic and livestock.

In order to achieve this goal, the Proponent engaged a team of experts to carry out the Environmental and Social Impact Assessment (ESIA) project study of the area and give recommendations regarding the proposed project.

The objectives of this ESIA are:-

a) Ensure compliance with the Environmental Management and Coordination Act, 1999
b) Document and review relevant legislative, regulatory and policy framework
c) Examine, evaluate and assess likely environmental and social impacts
d) Raise community awareness on impacts of the proposed project
e) Facilitate management control of environmental practices
f) Establish benchmarks for various environmental and social aspects relevant to the project
g) Establish framework for environmental and social management systems
h) Highlight issues that would guide decision makers on the implementation process

1.2 Terms of references

The terms of reference and scope of this assignment include:

- Description of the proposed project
- Documentation of background/baseline information
- Review of relevant legislative and regulatory framework influencing the project.
- Description of the potentially affected environment.
- Evaluate the suitability of the proposed location of the project.
- Seek views of local community
- Occupational health and safety concerns throughout the project cycle.
- Identification of probable impacts both social and environment of the proposed development.
- Propose sufficient mitigation measures for anticipated impacts
- Preparation of a detailed Environmental and Social Management Plan (ESMP)

1.3 Methodology

The environmental assessment is based upon desk studies, field assessments, discussions with the proponent and stakeholders; and has been carried out in the following key steps:

a) Screening

This is the first step on evaluation of requirements of ESIA on the proposed project. The project is listed under the Second Schedule of EMCA 1999, (revised 2015) as projects that should undergo Environmental Impact Assessment. In addition the regulations require that project screening be undertaken to establish the environmental relevance of a project. The environmental relevance of a project depends on the type, location, sensitivity, and scale of the project, as well as the nature and magnitude of its potential impacts.

b) Scoping

The scoping exercise was undertaken to focus on the potentially significant impacts. During scoping, discussions were primarily held with the project proponent and stakeholders, and involved clarification of the proposed project and environmental aspects that need to be considered during project implementation.

c) Assessment

A checklist was used as a starting point for collecting baseline information and carrying out the assessment. Results of the assessment were then used in identifying those environmental and social effects which are likely to impact on the project and its sustainability. The next step involved identification of changes that are most significant and the assessment of the overall impact of all changes. Data collection was carried out through use of observations and photography made during site visits, and consultation with stakeholders. Visual inspections were carried out in the proposed project area to get an impression of the physical features, land use, vegetation cover, existing infrastructure and land development.

d) Public Consultation

The ESIA experts, in consultation with KSCAP, Nyandarua sought the views of persons likely to be affected by the proposed project by holding a public consultation forum. The public consultation was undertaken by identified stakeholders and project affected persons (PAPs). A public meeting was undertaken at the proposed site and the project area on 22/10/2020. 59 community members attended the public participation meeting of which 34 were male and 25 were female. Questionnaires for focus group discussion were administered to 12 groups each having about five members. Stakeholders who attended the public participation and who gave their views included area Ward administrator, Social Officer, ward livestock development Officer, Ward Agricultural officer, Water Officer, Environment officer, and National Government

Administration Officer (Area Chief) (**Minutes of Public Participation & List of Participant- Appendix 7, and Sample questionnaire- Appendix 9).**

e) Report Structure

The scope of the study complied with Kenyan legislative requirements set out in Part IV of the EMCA, 1999(revised 2015) and also conformed to the provisions for Environmental and social Impact Assessment (ESIA) project reports as stipulated under the Environmental (Impact Assessment and Audit) Regulations 2003. Also, the report has been prepared in accordance to World Bank Guideline on ESIA. This report represents the findings of the ESIA and contains a description of the baseline, project alternatives, potential and their mitigation measures as well as an environmental and social management plan and the monitoring plan.

2.0 PROJECT DESCRIPTION

2.1 Introduction

Raichiri water pan was constructed in 1946 by a white settler who resided in the area for purpose of using the water at his farm. The local community inherited the water pan when they acquired the land through a land buying cooperative and set aside the land where the water pan is located. The water pan has been a source of water for the locals and even pastoralist who come to the area looking for pasture. The water pan has silted up and the spillway blocked leading to breaching on one side of the embankment. The land where the water pan is situated measures eight acres but the reservoir occupies about two acres. The community through area extension officers expressed their need to have the water pan desilted, expanded and protected to increase its storage capacity to cater for small scale irrigation. They presented their proposal to KCSAP for funding leading to this project.

2.2 Project Cost and Timelines

The project will benefit 986 community members (347 males, 639 females) and is estimated to cost KES 30, 694,125.00 out of which KES 24,555,300.00 is requested from KCSAP while the rest will be contributed by the County Government of Nyandarua.

The project constructions works will commence once NEMA and other statutory approvals are received as well as the World Bank guidelines are met.

2.3 Project Objectives

The project objective is to improve the livelihoods and build resilience of smallholder farmers to effects of climate change. More specifically the objective to be achieved shall be as inter alia:

i) Improved food and nutrition security
ii) Improve livelihoods to Raichiri community
iii) Access to clean water for domestic, livestock and small scale irrigation
iv) Employment creation
v) Improvement to social infrastructure
vi)Improvement of the catchment area

2.4 Project Activities

The project activities will include

- **Desilting**- this will involve draining of the water pan to enable silt removal, stripping of topsoil and vegetative cover, construction of the spill way, rehabilitation of breached section of the embankment, expansion of the reservoir area and reinforcing existing

embankment. A silt trap will be constructed upstream. Most of the work will be done by machines

- **Fencing**- the site is not currently fenced thus creating uncontrolled access to human and livestock to the reservoir area. The site will be fenced - off after construction to keep off unauthorized persons and animals from the reservoir and to protect it.
- **Solar pump installation**- once the water pan is complete, a solar water pump will be installed to pump water to elevated tanks. Water from the elevated tanks will be distributed within the project area using pipes that will run along the public road wayleaves and the beneficiaries will connect from these pipes. This will enable gravitational water flow to the homesteads within the project area. The use of solar as source of energy is a climate smart intervention that reduces operational costs and enhances project sustainability.
- **Water reticulation**- the project intends to convey water from the water pan to beneficiary community along the wayleaves of main roads in the area to avoid conflicts.
- **Construction of steel water tower and installation of storage tanks** - to serve the area well, elevated plastic tanks, on steel tower, will be installed to increase the flow rate of water to beneficiaries including those far off from the source.
- **Construction of a cattle trough-** a cattle trough for watering livestock will be constructed within the project land but outside the fenced reservoir area to avoid direct entry of animal to the water pan (**See appended Site plan- Appendix 10**)
- **Construction of sanitary facilities-** adequate sanitary facility will be constructed at the site catering for both gender.
- **Establishment of 1 tree nursery & 2 greenhouses on half acre**- will be supported for operation by youths and vulnerable persons.

2.5 Land Ownership

The project land is public and held in trust by the County Government of Nyandarua. The land has been surrendered to the county government by the Raichiri Investment Co. Ltd for the purposes of the proposed project (**See attached share certificate and surrender letter for title processing in Appendix 2**).

2.6 Design

The proposed project is a water pan occupying about 2 acres of land in Raichiri village. The site is relatively flat with a slope of less than 3%. The catchment of the pan is estimated at

approximately 2Km^2 with mean annual rainfall of 900mm and mean annual run-off of 270mm. The mean annual evaporation is estimated at 2000mm and flood flow of 15m^3/s/km^2.

The design specifications are as tabulated below.

Table 1: Project design details

Description	Specification
Spillway	
Spillway width at control	**8m at base, 10m at top**
Design flood discharge	**2m^3/s**
Flood return period	**50 years**
Spillway length	**95m**
Embankment	
Embankment type	**Homogeneous earth Type**
Embankment volume	**7800 m^3**
Embankment crest width	**4m**
Embankment height from deepest level to crest	**5m**
Embankment slope upstream	**1:3**
Embankment slope downstream	**1:2**
Factor of safety Upstream (At steady state seepage)	**Compacting a clay layer of at least 150mm thick on the upstream side of the embankment**
Factor of safety downstream	**Put Rock toe or drainage layer of gravel material at toe of the dam**
Embankment freeboard	**0.7m**
Embankment core trench	**4m wide, 1.5m deep**
De-silting materials	**Clay loam/ sandy clay Soil**
Source of core material	**Borrow area within the site**
Source of fill (outer shell material)	**Borrow area within the site**
Reservoir	
Active storage	**37,625m^3**

Full reservoir area	**2.75 Acres (1.1Ha)**
Design yield	**300 m^3 per day**
Dead Storage	**3,500 m^3**

(See annexed design)

A cattle watering trough will be done separately away from the water pan.

2.7 Project Construction Process

This involves the desilting, water conveyance and distribution system from the water source to the beneficiaries as well as safe disposal of excess water from the water pan. These works are technical and require technical personnel to execute. The project construction component will be contracted out to suitable contractors. This will be done partly by machinery and partly by manual labor. During construction, the major environmental concern will be occupational, health and safety of workers.

Project implementation process will be done by strictly following step-by-step engineering design of the proposed water pan. Preliminary planning and needs assessment were done prior to design. This involved assessing the capacity of the existing water pan against the needs of the beneficiaries and their livestock. Also the suitability of the site was also considered to ensure its economic viability, suitability of the foundation material, and availability of the required construction materials. The design was based on the most technically viable option for the site.

2.8 Capacity Building

The community will be trained on good husbandry and sustainability particularly on best practices on selected crop production, pasture, soil, water and environmental conservation among others.

2.9 Water Utilization and Management

The water will be used for domestic, livestock use and for small scale irrigation of crops. Once the project has been commissioned, maintenance schedule will be established that includes repairs and maintenance of water pan, conveyance, pumping and other water distribution and controls concerns. It also includes immediate environment greening, soil and water conservation. The community management committee already in place will take change of such maintenance.

Figure 2: Project Management Committee members

2.10 Project Commissioning and Handing over to the Community

Upon completion, the proposed project will be commissioned by the County Government and handed over to the community. The water pan will be managed by project management committee (PMC) on behalf of the benefitting community.

The willingness of the community to contribute in-kind such as land for water pan and other infrastructure, provision of locally available materials, unskilled labor, security and management of the project among others is an indicator of community ownership for the project.

2.11 Project decommissioning process

Monitoring will be used in water pan risk evaluations. Water pan project decommissioning will be opted after a review of possible water pan remediation options show that it's the most inefficient in terms of cost and risk elimination.

To meet requirements of Environmental Management and Coordination Act 1999, the environmental assessment will consider the potential impacts of the project in regard to: Water quality; vegetation; Wildlife and wildlife habitat; Heritage values; as well as Socio-economic values.

Additional factors that will be considered on the likelihood of the project causing significant adverse environmental effects are:

- Cumulative environmental effects; Current land use and resources;
- Effect of environment on the project; Accidents and malfunctions

2.12 Cross Cutting Issues

The project has been planned to address environmental issues through catchments protection, tree planting and general environmental conservation as well as community education/ sensitization/ capacity building. There will be deliberate inclusion of women and youth to address gender and social inclusion issues. The youth will be engaged to enhance their income generation opportunities that will reduce their indulgence in alcohol, drug abuse, theft and any other forms of crime.

Photos of the site during assessment

		
Breached section of the embankment	Existing water pan	Grass type at site
		
Livestock at the site	Stakeholders during site assessment	Lower side of the water pan

Figure 3: Photos

3.0 POLICY, INSTITUTIONAL, LEGISLATIVE AND REGULATORY FRAMEWORK

3.1 Introduction

This section of the report discuses all the relevant Government of Kenya (GOK) legislation, policies and plans as well as relevant international safeguards policies including World Bank Group guidelines and policies on environmental and social risk management. The relevant national and international legislations, policies and guidelines are presented in this section, and their relevance included in each sections or subsections. This is done to ensure that adequate mitigation measures are put in place to deal with the negative impacts on the project affected persons, and that all project related activities are in conformity with the existing laws, and regulations, and international best practices.

3.2 Legal framework

Kenya has several provisions under the Constitution as well as various Acts that protect the environment and human health. These include:

3.2.1 Constitution of Kenya 2010

The Constitution of Kenya 2010 acts as the overarching legal framework for matters on environment. It recognizes the environment as part of the country's heritage, and which must be safeguarded for future generations. It provides for the right to a clean and healthy environment for every person in Article 42, obligating the state to enact legislation to protect that right as well as to establish systems of environmental impact assessment, environmental audit and monitoring of the environment in Article 69.

Article 69(2) similarly poses a conservation obligation on parties such as the proponent. The proponent is thus obligated to cooperate with State organs and other persons to protect and conserve the environment.

The constitution envisions that the project will contribute to Article 42 by enhancing access to a clean and healthy environment for the targeted beneficiaries.

3.2.2 EMCA, 1999 and EMC (Amendment) Act, 2015

EMCA, 1999 and its 2015 Amendment provides a legal and institutional framework for the protection and conservation of the environment as well as providing the necessary mechanism to monitor that, which include environmental impact assessment, environmental auditing and monitoring.

The Act requires that permit or license shall only be granted to project upon submission of a project report to the Authority the prescribed format. The project report should be conducted or carried by an individual expert or firm of experts authorized by NEMA.

The project is listed in the second schedule of the act under projects that requires an environmental impact assessment. EMCA is the principal Act and provides for preparation and submission of the report. By undertaking this ESIA, the project has complied with the requirement for projects listed in Schedule II.

3.2.3 The Environmental Impact Assessment and Audit Regulations 2003 (Legal Notice No. 101) amended 2009

The regulations provide for the detailed procedure of carrying the EIA and audit process in Kenya. They also provide explicitly for public consultation and mechanisms for doing it. The regulations also indicate "Issues to be Considered in Environmental Impact Assessment' in the second schedule of the regulations and "General Guidelines for Carrying out an Environmental Impact Assessment Study" in the third schedule to the regulations.

In conducting this exercise the stakeholders were consulted and their views have been integrated in this report. Implementation of the incorporated ESMP and monitoring of the same is key to actualizing this regulation.

3.2.4 EMCA (Noise and excessive Vibration pollution prevention control) Regulations, 2009

These regulations give maximum permissible noise levels in different environments. During the Environmental Impact Assessment studies the regulations requires that natural resources, land uses or activities which may be affected by noise or excessive vibrations from the project activities shall be identified. Secondly, the EIA shall determine the measures which are needed in the plans and specifications to minimize or eliminate adverse noise or vibration impacts; and, finally to incorporate the needed abatement measures in the plans and specifications.

Construction machines at the site will generate noise and vibration, requiring the contractor to ensure that the works will be undertaken during the day, machines will be maintained and machine not in use will be switched off to minimize noise.

3.2.5 The Environmental Management and Co-ordination (Waste Management) Regulations, 2006

These regulations provide guidelines on management of various waste streams including domestic waste, industrial waste, hazardous and toxic waste, pesticides and toxic substances, biomedical wastes and radioactive waste.

Solid waste management is one of the functions devolved to County governments. Counties are expected to develop relevant laws to guide waste management and implement provisions therein.

Waste will be generated during the project implementation. The contractor shall therefore ensure that all waste generated from the project site is disposed properly to the designated sites.

3.2.6 Environment management and coordination (water Quality) Regulations 2006

These regulations apply to drinking water, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife and water used for any other purposes. The regulations give guidelines on protection of water sources and management of effluent discharge. These regulations also give quality standards for various uses of water and monitoring standards for effluent discharge.

The regulations will be adhered to enable the proponent in coming up with measures to ensure that the quality of water given to the community meets the standards. Water quality analysis will be carried periodically to ensure its safety.

3.2.7 Water Act, 2016

This is an Act of Parliament that provides for the regulation, management and development of water resources, water and sewerage services; and for other connected purposes. The act provides for the right to access water resources for every person. The acts give WRMA the duty and responsibility of ensuring protection and conservation of water resources and their catchment areas.

The water pan project falls under projects that need permit from WRMA and the proponent has applied for the permit and the process is in its final stages. The proponent will also ensure protection of the catchment area.

3.2.8 The Public Health Act

Part IX Section 8 & 9 of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Any noxious matter or waste water

flowing or discharged into a water course is deemed as a nuisance. Part Xll. Section 136 states that all collections of water, sewage, rubbish, refuse and other fluids which permits or facilitates the breeding or multiplication of pests shall be deemed nuisances The Act addresses matters of sanitation, hygiene and general environmental health and safety.

The Act places responsibility for protection of water supplies from any pollution dangerous to health on the local authorities. The Act empowers the Minister for Health to make rules and impose on local authorities and others, the duty of enforcing such rules.

The Act addresses matters of sanitation, hygiene and general environmental health and safety that are key to the project since health hazards such as workplace accidents, air, and water and land pollution are likely to emanate from the proposed project's activities. These will be integrated into the project to ensure healthy environment. Also, the project will be implemented at a time when the country and the whole world is experiencing Covid-19 pandemic, warranting that necessary arrangements and preventive measures be made to prevent construction workers and other players from being infected with the virus.

3.2.9 Agriculture Act (Cap 318)

The Agriculture Act (cap 318) is the principal land use statute covering inter alia soil conservation agricultural land use and conservation issues such as the preservation of soil fertility. The Act prohibits any land use practices that may intensify soil erosion. The act prohibits cutting down or destroying vegetation on any land of which the slope is 35 per cent. The rules stipulate strict regulations on the cultivation of any land whose slope is between 12 percent and 35 per cent when the soil is not properly protected from erosion. The Act also provides for protection of watercourses setting aside a riparian zone of a minimum 2 meters equivalent to the width of river to a maximum of 30 meters.

This act is relevant because the proposed project impacts on land use and the agricultural activities and calls on the proponent to capacity build the farmers on soil conservation and management.

3.2.10 County Government Act 2012

The County Government Act of 2012, which has been adapted to the Constitution's State and County structure in relation to devolution, declares the County Integrated Plan to be central to the County's administration and prohibits any public spending outside of the plan. The Act clarifies that the County Integrated Plan to be broken down into the economic plan, physical

plan, social environmental plan and spatial plan. Also, the Act states that the County Plan commands; County integrated development plan, County Sectoral plans, County spatial plan, Cities and urban areas plans as stipulated by Urban Areas and Cities Act

The act also stipulates that the County Government will be responsible for functions stipulated in article 186 and assigned in the Fourth Schedule of the Constitution, which includes control of air pollution, noise pollution, other public nuisances and outdoor advertising.

The County Government will oversee all development activities within the County; as such will be a major stakeholder for the proposed project. The Proponent will ensure the project will be compliant with County Government Act 2012 by controlling all forms of pollution and ensuring that the County Government of Nyandarua is update on the project development by incorporating county officers at various levels. The Act also calls for public/ stakeholder consultations on development projects, which has been achieved the PICD process and public consultation during the ESIA process.

3.2.11 HIV and AIDS Prevention and Control Act No. 14 of 2016

This act provides measures for the prevention, management and control of HIV and AIDS. It also provide for the protection and promotion of public health and for the appropriate treatment, counseling, support and care of persons infected or at risk of HIV and AIDS infection, and for connected purposes. The act also outlaws discrimination in all its forms and subtleties against persons with or persons perceived or suspected of having HIV and AIDS. Further, it prohibits against compulsory HIV/AIDS testing.

With workers coming from outside the project area, poses the risk of infection. The act will guide the contractor of coming up with policies that mitigates against spread of HIV & AIDS. *This will go a long way in ensuring reduced risk of new infection, stigmatization of those already infected as well as management during the construction period.*

3.2.12 The Sexual Offences Act, 2006

This Act protects people and employees from any unwanted sexual attention or advances by staff members. This act ensures the safety of women, children and men from any sexual offences which include: rape, defilement, indecent acts. This law will govern the code of conduct of the Contractor's staff and provide repercussions of any wrongdoing.

This act will act a guiding principle to avoid issues of sexual offences as well as enable the contractor and proponent to come up with strategies on prevention of sexual exploitation and on dealing with any such offences.

3.2.13 Employment Act, 2007

The Act declares and defines the fundamental rights of employees, provides basic conditions of employment of employees, regulates employment of children, and provides for matters connected with the foregoing. The act provides the basic minimum conditions for employment to include hours of work, water (for use at the place of work), food (employee properly fed) and medical attention.

At construction stage, the project contractor will hire both full-time and casual staff and the prevailing basic minimum conditions of employment will have to be observed.

3.2.14 Land Act (No.6 of 2012)

This Act is intended to create harmony among the land laws to allow for a sustainable administration and management of land and related resources such as environmentally sensitive areas and heritage sites within public land. As part of environmental management of land resources in areas earmarked for development, the Act requires an Environmental Impact Assessment as per EMCA Act.

The proposed project will be implemented on a community land where the community voluntarily agreed to surrender the community land to the County Government of Nyandarua for implementation of the project.

3.2.15 Wildlife Conservation and Management Act, 2013

This Act through rules and regulations seeks to promote protection, sustainable conservation and management of wildlife resources within the Country and related matters. The Act recognizes and vests a range of responsibilities to different agencies associated with management of biodiversity. The Act takes cognizance that conservation, protection and management of wildlife environment shall be in conformity with the provisions of the Environmental Management and Coordination Act. In addition, the Act in its schedules have listed legally protected areas and various species of wildlife under differing categories of conservation significance (i.e. vulnerable, endangered etc.) and whose handling requires authority from the Kenya Wildlife

Service (KWS). *The Proponent shall ensure that human – wildlife conflicts are not induced by the project, though there are no wildlife in the project area.*

3.2.16 Children Act, 2001

This Act protects the welfare of children within the Country. The Act identifies Children as a persons below the age of 18 years old and protects them from exploitation. Of importance to this project, is section 10, which protects the child from:

-Economic exploitation.

-Any work that interferes with his/ her education, or is harmful to the child's health or physical, mental, spiritual, moral or social development.

The proponent will ensure that the project does not involve children in any way and their rights will be protected during project implementation.

3.2.17 National Construction Authority Act

The National Construction Authority (NCA) Act covers virtually all construction works in the country including building and civil engineering works; electrical and mechanical engineering services all defined in the broadest sense. The Act requires all contractors; both foreign and local contractors of whatever class to be registered with the Authority.

The project proponent will ensure that the contractor selected to carrying out the project meets the requirements as stipulated in the law.

3.2.18 Forest Conservation and Management Act, No. 34 (2016)

An Act of Parliament to give effect to Article 69 of the Constitution with regard to forest resources; to provide for the development and sustainable management, including conservation and rational utilization of all forest resources for the socioeconomic development of the country and for connected purposes

The project is not being implemented in a forest land but the proponent will endeavor to ensure that local community members are sensitized on need of forest conservation.

3.2.19 Community Land Act No. 34 (2016)

This is an act of Parliament to give effect to Article 63 (5) of the Constitution; to provide for the recognition, protection and registration of community land rights; management and administration of community land; to provide for the role of county governments in relation to unregistered community land and for connected purposes. *The proposed project land has been surrendered by the community to the County Government of Nyandarua for the purpose of*

implementing the project and it's the responsibility of the county government to ensure that it's registered for that sole purpose.

3.2.20 Kenya Road Act, 2017

This Act may be cited as the Kenya Roads Act, 2017 and its purpose is to give effect to the provisions of the Fourth Schedule to the Constitution in relation to the functions on roads and to review and rationalize the legal and institutional framework for the management of the road network in Kenya. The Act under the first schedule give classification of roads in the country. Under part B of the schedule, county roads classification is given. *The roads in the project area falls under county roads. The proponent will have to seek permission from the county roads department to use road reserve for laying pipes. The proponent has complied with this law by getting a no objection letter from Department of Transport, Energy & Public Works, Nyandarua County* (**See Appendix 11- No Objection Letter**).

3.3 Policy framework

The Kenya Government's environmental policy is geared towards sound environmental management for sustainable development. This is envisaged in the principle of prudent use, which requires that the present day usage should not "compromise the needs of the future generations". In the case of the proposed water pan, this is more so because it is the basis of human development. The policy emphasis is on environmental protection in order to ensure a flood free area for the present and future generations. The policy envisages the use of the "polluter pays principle", where one is expected to make good any damage made to the environment.

The Kenya Government's environmental policy aims at integrating environmental aspects into national development plans. The broad objectives of the national environmental policy include:

- Optimal use of natural land and water resources in improving the quality of human environment;
- Sustainable use of natural resources to meet the needs of the present generations while preserving their ability to meet the needs of future generations;
- Integration of environmental conservation and economic activities into the process of sustainable development; and

- Meet national goals and international obligations by conserving bio-diversity, arresting desertification, mitigating effects of disasters, protecting the ozone layer and maintaining an ecological balance on earth.

3.3.1 Vision 2030

Vision 2030 recognizes the link between water security and other pillars of national development. The policy document foresees improved water harvesting infrastructure that will provide opportunities for the ASAL communities to achieve food security. It specifically identifies construction of dams and reservoirs to harness rainwater. In addition, Vision 2030 advocates for management of catchment areas as destruction of these areas leads to increased runoff, flash flooding, reduced infiltration, soil erosion and siltation of dams and other water reservoirs. The vision for the water sector is to, "***ensure water and sanitation availability and access for all***".

Besides the development of water resources, Vision 2030 seeks to improve the livelihoods of communities in ASAL areas. ASAL areas constitutes 80% of the total land mass and supports approximately 10 million people and more than 70% of livestock at the backdrop of already declining natural resources base and the country's fragile environment. Vision 2030 aims to "*create a socially just and equitable society without extreme poverty*". The ultimate objective will be to improve the livelihoods of the poor e.g. through better technologies, better livestock management, better ASAL technologies etc.

The proposed project is relevant with the Vision 2030 and the national policy for development of water resources since it will contribute to the vision by increasing agricultural production and reducing poverty levels.

3.3.2 National Environment Action Plan (NEAP) 2009-2013

From the policy, they are areas which are relevant to the project. From the policy, the project is expected to support the following environmental interventions:- a) Reforestation and conservation of water catchment areas, b) Protection of flora & fauna, c) Ensuring protection of water catchments, e) Supporting soil erosion and siltation control, f) Management of invasive alien species and g) Promoting efficient water harvesting and storage

The proponent will ensure that during the construction and operation of the Raichiri Water Pan, there will be minimal loss of vegetation resources, no soil erosion and siltation at the water pan

site, no introduction of invasive alien species and use of proper water pan design and construction technology for efficient water harvesting and storage.

3.3.3 National Gender and Development Policy, 2011

The National Gender and Development Policy provide a framework for advancement of gender equity and an approach that would lead to greater efficiency in resource allocation and utilization to ensure empowerment of women.

The National Policy on Gender and Development is consistent with the Government's efforts of spurring economic growth and thereby reducing poverty and unemployment, by considering the needs and aspirations of all Kenyan men, women, boys and girls across economic, social and cultural lines. The policy is also consistent with the Government's commitment to implementing the National Plan of Action based on the Beijing Platform for Action (PFA).

The overall objective of the Gender and Development Policy is to facilitate the mainstreaming of the needs and concerns of men and women in all areas in the development process in the country. *This law will be of relevance to the contractor in ensuring that all gender equality and equity is taken into account during recruitment of construction workers and operation phase of the project.*

3.3.4 National Land Policy, 2009

Through the national Land Policy, the government has ensured that all land is put into productive use on sustainable basis by facilitating the implementation of key principles of land use, productivity targets guidelines as well as conservation. The land policy, 2009 encourages a multi-sectoral approach to land use, provides social, economic and other incentives and puts in place an enabling environment for investment, agriculture, livestock development and exploitation of all natural resources. The national land policy vision is "to guide the country towards efficient, sustainable and equitable use of land for prosperity and posterity" by all the stakeholders

The *proposed project will be implemented on a community land. The land .has been surrendered to the county Government of Nyandarua (**See attached Share certificate and surrender letter-Appendix 2**).*

3.3.5 National Forest Policy 2015

The goal of this Policy is to: enhance the contribution of the forest sector in the provision of economic, social and environmental goods and services. The specific objectives of this policy in line with the project are to contribute to sustainable land use through soil, water and biodiversity

conservation, and tree planting through the sustainable management of forests and trees; promote the participation of the private sector, communities and other stakeholders in forest management; conserve water catchment areas; create employment; reduce poverty and ensure the sustainability of the forest sector and promote farm forestry to produce timber, wood fuel and other forest products.

The project has aligned itself with this policy by proposing to have a tree nursery for seedling production which will enhance community participation in conserving the forest and also increasing the area of forest cover.

3.3.6 Wildlife Policy 2007

The goal of this Policy is to provide a framework for conserving, in perpetuity, Kenya's rich diversity of species, habitats and ecosystems for the wellbeing of its people and the global community. The objectives and priorities are to:-Conserve Kenya's wildlife resources as a national heritage; Provide legal and institutional framework for wildlife conservation and management throughout the country; Conserve and maintain viable and representative wildlife populations in Kenya; Develop protocols methodologies and tools for effective assessment and monitoring of wildlife conservation and management throughout the country; Promote partnerships, incentives and benefit sharing to enhance wildlife conservation and management; and to Promote positive attitudes towards wildlife and wildlife conservation and management.

The project area has some wild ducks at the existing water pan. The presence of the ducts points to the likelihood of more birds coming to the area once the project is completed. The policy will be a guide on the co-existence of the birds and the local community.

3.3.7 Water policy

The Policy Paper set out to tackle issues pertaining to Water Resources Management, Water and Sewerage Development, Institutional Framework and Financing of the Water sector. The Policy Paper stipulates that, the long-term objective of the Government of Kenya is to ensure that all residents in the country are entitled to clean and potable water by protecting the water resources. The policy proposes that the water abstraction and disposal permits be dynamic and economic instruments for the water quality control. The policy paper stresses that there should be continuous water resources assessments for the determination of sources, extent, dependability and quality of water resources and further states that, monitoring of water quality parameters provides baseline data for the purpose of pollution control. The policy also mandates the

Ministry of Water & Irrigation to facilitate formulation of policy framework to guide water sector activities.

The proposed irrigation project shall adhere to the water policy requirements to ensure sustainable utilization of the same

3.3.8 Kenya National Youth Policy 2006

The policy goal of the youth policy is to promote youth participation in community and civic affairs and to ensure that youth programmes are youth centred. The policy proposes guidelines and strategies that can be used to facilitate participation of the youth in national development. *This policy is relevant to the project as the project area has youths. The project has complied with the policy by incorporating youth in the projects. The project proponent to have a youth project of tree nursery as well as a greenhouse at the project site to help the youths. The project committee also has a youth representative.*

3.3.9 Policy on Gender and Sexual Based Violence 2017

The overall Goal of this National Policy is to accelerate efforts towards the elimination of all forms of Gender & Sexual Based Violence (GSBV) in Kenya. The Policy Goal is to be realized as laid out in the key objectives which seek to ensure; a coordinated approach in addressing GSBV and effective programming; enhanced enforcement of laws and policies towards GSBV prevention and response; increase in access to quality and comprehensive support services across sectors; and improved sustainability of GSBV prevention and response interventions. The Policy takes cognizance that effective GSBV prevention and response requires strong and efficient systems and structures to operationalize laws, policies and plans. It therefore provides an implementation framework which spells out the roles and responsibilities of stakeholders towards the implementation of the Policy.

The proponent is committed to ensuring that the spirit of the policy id implemented during the project implementation.

3.4 Institutional and Administrative Framework

There are several organizations involved in water resource and environment management in the country. These organizations include the Ministry of Water and Irrigation, Ministry of Environment and Natural Resources, National Environment and Management Authority, Water Resources Management Authority and the County Governments etc. The overall entity involved

in the environmental management in Kenya is the National Environment Management Authority which has been founded and mandated under the Environmental Management and Coordination Act.

3.4.1 Ministry of Water and Irrigation

The Ministry of Water and Irrigation has its fundamental goal and purpose as conserving, managing and protecting water resources for socio-economic development. Its aim is to improve the living standards of people by ensuring proper access to available water resources. The Ministry was created in 2003 following a separation from the Ministry of Environment and Natural Resources. The split was aimed at consolidating the responsibility for the management and development of water resources under a single Minister. The ministry will be a collaborator in the project as they will be giving guidance during project implementation.

3.4.2 National Environment Management Authority (NEMA)

The objective and purpose for which NEMA was established is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. NEMA will review this ESIA and if it meets of the requirements, they will issue licence for the project. Also NEMA will be doing periodic site monitoring to ensure compliance with the license conditions.

3.4.3 Water Resource Authority (WRA)

Water Resources Authority which is a corporate body to function under the direction of a Governing Board is responsible for water resource management. The

Authority develops principles, guidelines and procedures for the allocation of water resources, assess and re-assess water resources potential, receive and determine applications for permits for water use, monitor and enforce conditions attached to the permits for water use. Furthermore the Authority regulates and protects water resources quality from adverse impacts, manage and protect catchment areas, determine charges and fees to be imposed for the use of water from any water source, gather and maintain information on water resources from time to time to publish forecasts, projections and information on water resources and also liaise with other bodies for the better regulations and management of water resources. It establishes offices in the Catchment Areas called Catchment Area Advisory Committee whose membership consists of Government Officials, Stakeholders and Communities. *The authority will play a role in issuance of permits for the desilting of the water pan.*

3.5 International policies

3.5.1 World Bank Operational Policies

The World Bank operational policies that will be triggered by this project are as follow;

3.5.1.1 World Bank Operational Policy on Environmental Assessment- OP 4.01

The purpose of this policy is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted. An ESS screening and scoping exercise was undertaken to determine the type assessment to be carried out before approval of funding for the project. The screening report recommended for a simple ESIA.

The guidelines have helped to assess the potential environmental risks and impacts of the project in its area of influence; examine project alternatives; identify ways of improving the project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts. As required by this Policy, the public and other concerned stakeholders have been consulted on both the project and this ESIA.

3.5.1.2 OP/BP 4.12 Policy on Involuntary Resettlement

The policy includes safeguards to address and mitigate impoverishment risks.' 'This policy contributes to the World Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures

However the proposed sub-project will not involve any form of displacement and resettlement, as the water pan land is meant for the purposes and where piping will be done, the pipes will pass along the way-leaves of public roads within the beneficiary community.

3.6. Relevant International Conventions and Treaties

Kenya has ratified various international conventions on environment that are applicable to this project. The Ministry of Foreign Affairs deals with international treaties at the primary stages of negotiation. The ministry offers advisory guide to the government on the need to ratify such a treaty if considered to be of national interest. Implementation portfolio then moves to the line ministry, relevant departments and co-operating agencies. If some international issues arise, various international agreements listed above or that exist will be applied for this project. Conventions are agreements that are legally binding on states that have become parties to them Kenya is signatory to several international conventions and treaties that would need to be

adhered to in implementing this project and are geared towards environmental protection and conservation. Some of these include;

3.6.1. International Convention on Biological Diversity (1992)

The convention promotes the protection of ecosystems and natural habitats, respects the traditional lifestyles of indigenous communities, and promotes the sustainable use of resources.

3.6.2. Ramras Convention 1971

The convection governs wetlands of international importance. The convention was entered into force in Kenya in 1990 and it governs Lake Nakuru, Lake Baringo, and Lake Natron, which is a shared ecosystem between Kenya and Tanzania. Kenya is therefore committed to avoid degradation of wetlands under its jurisdiction. Kenya has also ratified the Agreement of the Conservation of Eurasian Migratory Water Birds (2001) and the African Convention on the Conservation of Nature and Natural Resources (1968), the Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES) 1973 which prohibits trade in species such as Dugongs and also in Ivory. The proponent will need to ensure that these important conventions are not violated during construction, operation or decommissioning of the proposed projects.

3.6.3. The United Nations Framework Convention on Climate Change (UNFCCC)

This is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from 3rd to 14th June, 1992. The objective of the treaty is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The treaty itself sets no mandatory limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding. Instead, the treaty provides for updates (called "protocols") that would set mandatory emission limits. The principal update is the Kyoto Protocol, which has become much better known than the UNFCCC itself.

4.0 BASELINE INFORMATION

4.1 Introduction

This chapter gives the background information on the socio-economic and infrastructural information that has a bearing on the development of the project area. It provides description of the area in terms of the location, physiographic and natural conditions, infrastructure, and socio-economic status of the beneficiaries, demographic profiles as well as the administrative and political units.

4.2 Site Administrative location

The proposed water pan desilting project administratively is in Mathingira Location, Leshau Sub-location, Raiciri village in Leshau Pondo ward, Ndaragwa Sub-county of Nyandarua County.

4.3 Site Fauna and Flora

The proposed site vegetation is dominantly grass which is easily established. There are no endangered plant species in the area as only water plants like papyrus are growing around the water pan. There are also no major wild animals noted at the site except for the few water ducks at the existing water pan.

4.4 Physical and Topographical features

The site slopes gently (less than 4%) from South to North. There is no rivers or lake within the area as the only waterways are shallow valleys through which the flood water passes and drains into the water pan. The area soils are well drained clay soils with some areas having stones cropping up due to erosion.

4.5 Ecological Conditions

The areas surrounding the project area are in the highland savannah zone, characterized by scattered trees with expansive grass cover. Most of the natural vegetation has been cleared leading to environmental hazards such as environmental degradation which has claimed large portions of arable land (Figure 4). This has had some negative effects such as reduced rainfall, global warming, soil erosion, climate change, poor health and reduced food production.

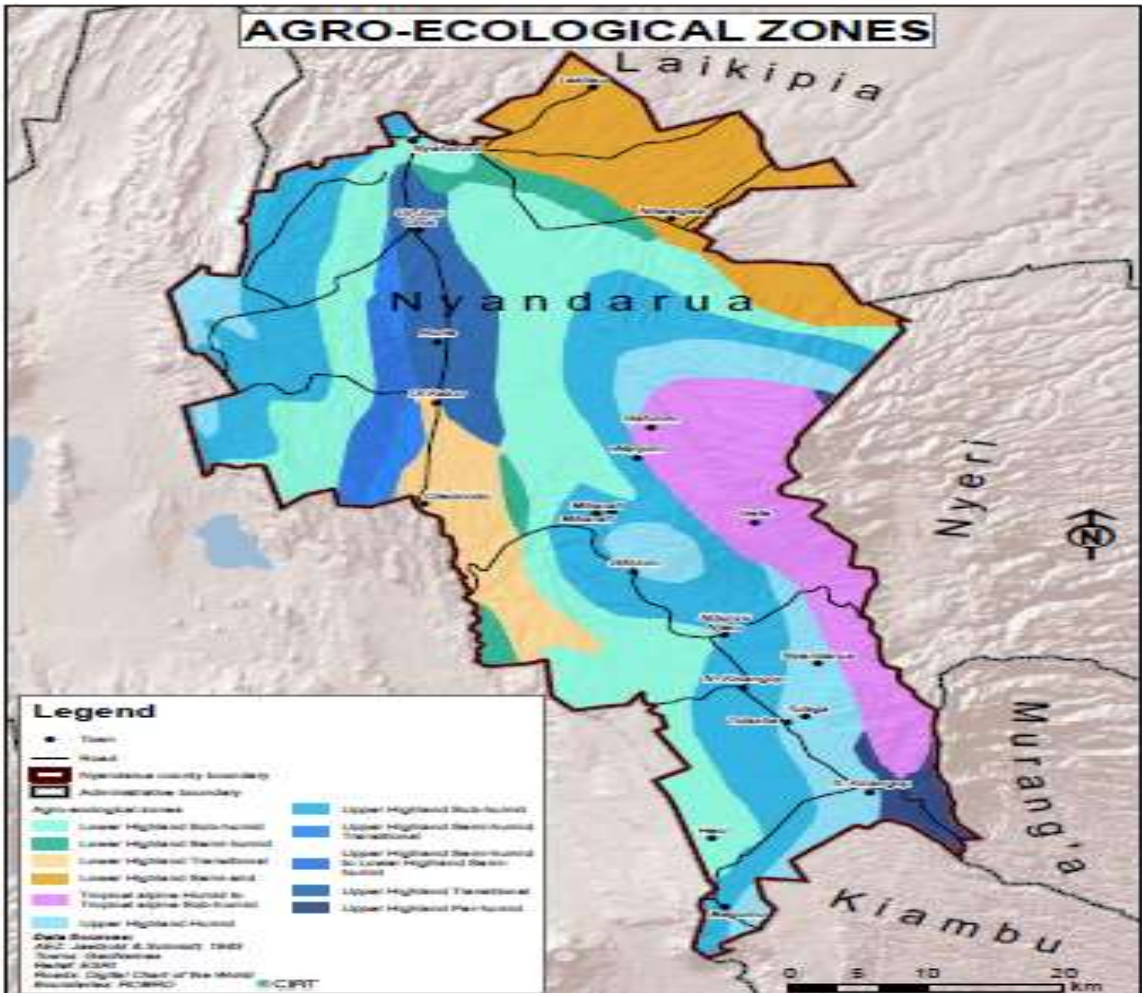

Figure 4: Ecological zone map

4.6 Climatic Conditions

The area experiences moderate to low temperatures. The highest temperatures are recorded in the month of December, with a mean average of 25^{o}C while the lowest is recorded in the month of July, with a mean average temperature of 12^{o}C. The area experiences two rainy seasons: Long rains from March to May with a maximum rainfall of 1000mm and short rains from September to December and with a maximum rainfall of 500mm. The rainfall at times is scanty and erratic.

4.7 Energy

4.7.1 Cooking Fuel

According to a survey by KNBS & SID (2018) energy sources for cooking in Nyandarua households' are; 78% use firewood, 19% use charcoal, 1% of residents in use liquefied petroleum gas (LPG), and 1% use paraffin (Figure 5).

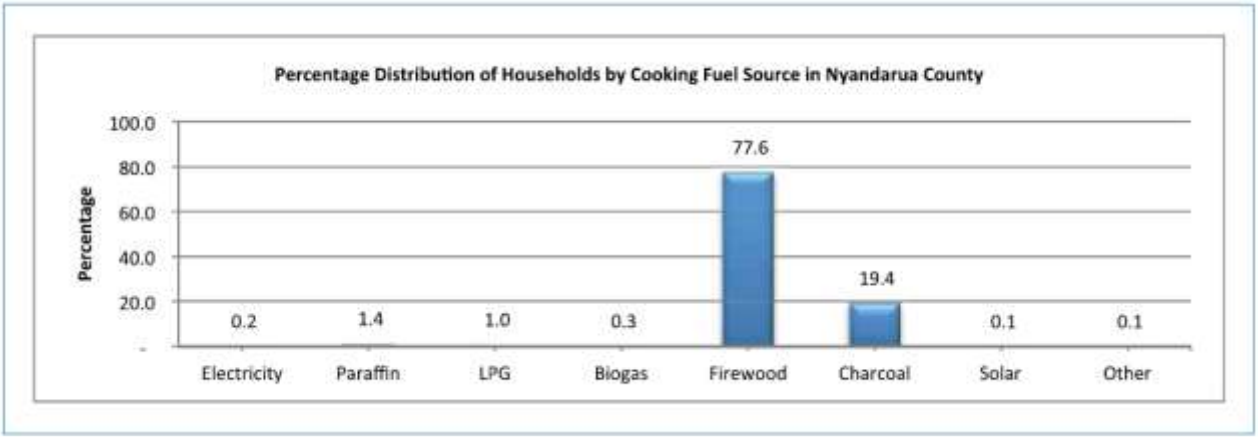

Figure 5: Cooking fuel graph

5.7.2 Lighting

A total of 11% of households in project area use electricity as their main source of lighting. A further 56% use lanterns, 26% use tin lamps and 6.1% use solar for lighting. Less than 1% use fuel wood. The most common lighting source among male-headed households is lanterns at 56% and the same holds for female-headed households at 55%.

4.8 Housing Types

Most of the houses in the project area are walled by use of timber which constitutes 42.9% of the total houses. Other walling materials include: mud/wood 33.4 %, stone 13.5 %, corrugated iron sheets 3.1 %, mud/cement 3 %, brick/block 2.6 % and tin 0.1 %.

In the same area 29% of residents have homes with cemented floors, while 68% have earth floors. Less than 1% has tiles.

Majority of the houses in the project area are roofed by use of corrugated iron sheets (at 95.1 %) while asbestos and tiles account for 2 and 0.6 % respectively.

4.9 Infrastructure access

The project site is accessible from Mairo Inya centre via a murram road through Leshau Shopping Centre. The road is in motorable condition during dry seasons but impassible during rainy seasons.

4.10 Posts and Telecommunications

The project area enjoys high mobile network coverage of 90% provided by all mobile phone service providers. The area is serviced by two post offices situated in Ndaragwa and sub-post office in Mairo-inya.

4.11 Land and Land Use

The land in the area was bought through two land buying companies and sub-divided among the members. Most of the land held by farmers is in small scale with a mean land holding size of 2.5 acres per household. With the increasing population and emergence of urban centres, the holding sizes are expected to reduce as sub-division and sale of land continues.

Approximately 93 % of farmers in the county have title deeds. In cases where title deeds have not been issued to farm owners, the reason could be due to either non-clearance of Settlement Fund Trustee (SFT) moneys or incomplete processing of succession cases. Within the project area, the farmers have individual title deeds for their parcels of land.

4.12 Agricultural Activities

In the project area, major crops grown are Irish potato, beans, wheat and maize. Farmers' also carryout livestock farming in small scale. Livestock kept in the area include cattle, mainly Sahiwal crosses for both meat and milk production, sheep, goats and local poultry. These are the most important agricultural value chain commodities in terms of food security, production and income generation.

4.13 Education Institutions & Literacy Level

The project area has 2 Early Childhood Development (ECD) Centres (Raiciri & Ndogino) which are public, 2 primary schools (Raiciri & Ndogino) which are public, 2 public secondary schools (Raiciri & Ndogino) and 1 Youth Polytechnics (Mathingira).

The literacy rate at the project area is 86.3%. This population can read. However, the proportion of the population that can write is 85.2% while the proportion that can read and write is 83.8 %. This implies that about 13.7% of the population cannot read.

4.14 Water Sources

The project area people get their water from water pans within the area that include the one to be desilted. The average distance to the nearest water point is 1.5km.

4.15 Sanitation

The main form of disposal for human waste is pit latrines. 92 % of the households have toilets out of which 81 % have pit latrines. There is no sewerage system in the project area. On the other hand, the most common mode of disposal for solid garbage is by garbage pit at 32.8 % of the households. 28 % of households dispose by burning while 25 % dispose in their gardens.

4.16 Access to Health

There are two public health facilities near the project area, namely Ndogino Health Centre Shauri Health Centre. The average distance to the nearest health centre (Ndogino) from the project is 3.2 km.

5.0 PUBLIC PARTICIPARTION AND STAKEHOLDER CONSULTATION

5.1 Introduction

This chapter describes the process of the public consultation and participation followed to identify the key issues and impacts of the proposed project. Views from the general public who in one way or another would be affected or interested in the proposed project were sought through public meetings as stipulated in the Environment Management and Coordination Act, 1999.

5.2 Objectives of the public consultation

The objectives of public consultations for this Environmental and Social Impact Assessment were:

- To seek and examine views on health, safety, social and environmental issues from the potentially affected community;
- To lay the foundation for future negotiations on any issues that may arise so as to build consensus and reach a mutually acceptable resolution of issues.
- Provide the establishment's neighbors/community with a forum to air any issues or concerns they may have with the establishment's operations on Health Safety, social and Environment (HSSE)
- To facilitate the integration of plausible HSSE management practices into the Environmental and Social Management Plan (ESMP) as recommended by neighbors/community

5.3 Community Meeting

The environmental and social assessment public participation exercise was conducted on 22nd October 2020 by the expert in collaboration with KSCAP and County team. The public meeting was organized by the area chief and was held at the project site. The meeting was conducted in accordance with the COVID_19 guidelines where social distancing was observed and all those present had put on nose/mouth masks. 59 community members attended the public participation meeting of which 34 were male and 25 were female. The lead expert explained to those present in the meeting what ESIA was and the reason for the meeting. The community members were given opportunity to express their views which were documented. Community members were aware of the proposed project because several meetings had been held earlier on regarding the same project and the community agreed on the proposed site. They cited possible benefits, negative impacts and mitigation measures.

Perceived Benefits

- Improved livelihood of the local people through alternative means food production and income generation like growing of vegetables for consumption and for sale through irrigation.
- Job creation to the locals during implementation stage and operation stage
- Improved food security as they will be able to cultivate throughout the year
- Increase in fodder for their animals as they will be able to plant grass
- Improved environment as they will be able to plant trees creating on their farms

Perceived Negative Impacts/Concerns/Issues

- Danger of drowning of animals or children
- Breaking of the embankments which may be disastrous
- Possibility of conflict between community members over distribution of the water recourse
- Also raised is the case of feeling left out if the project does not cover all community members.

Mitigations

- Fencing of the site
- Forming a Project Management Committee (PMC) to manage the project
- Multiplication of the project to cover more areas
- Equitable distribution of the water resource among all community members
- Constructing an embankment that can resist forces caused by water waves and splash floods by strictly following specifications and instructions from the site engineer.
- Capacity building PMC on project management, conflict resolution, gender inclusion, natural resource management and environmental conservation.

	
ward admin	Area chief addressing the crowd
	
Standing- male youth present at the meeting	Standing- female youth present at the meeting

Figure 6: Community meeting photos

5.4 Focus group discussion

During the public participation meeting, focus groups discussions were carried. Twelves groups were formed each having a minimum of five participants. The groups were divided according to various community clusters to ensure fair representation of every part of the community. A questionnaire was given to each group which was used to guide the discussion. Views collected during the discussions were later consolidated and analyzed. The community was of the view that desilting of the water pan will enable them have sufficient water for domestic use and for their animals and kitchen gardens thus improving their well-being. From the discussion, it was also highlighted that job opportunities will be created, food security will improve, and environment of the area will improve tree planting. The youths expressed optimism in the project as there were opportunities for them such as fish farming and establishment of commercial tree nurseries. The women viewed the project as big relief to them since the time and distance for

fetching water will be reduced. The project was supported overwhelming across all the groups (**See Appended Questionnaire – Appendix 9).**

5.5 Stakeholders

Interviews held with key stakeholders of the project indicated that their activities were solely dependent on the success and the sustainability of the project. The stakeholders were in support of the project.

NAME	TELEPHONE	ORGANIZATION	POSITION
Patrick N. Nyaga	0723640720	Clarion Solutions	Consultant
Miriam Muthoni N	0729604951	Nyandarua County	Deputy Director Environment
Titus W. Waithaka	0722888611	GOK	Asst. Chief
Mary M. Muturi	0721454875	Nyandarua County	Ward Livestock Development Officer (WLDO)
Geofrey Ndirangu	0722495258	Nyandarua County	Ward Agricultural Officer (WAO)
Kariuki Njunge	0722401506	KCSAP	CESSCO
Nelly Kiptoo	0723418559	Nyandarua County	Social Services Officer

5.6 Project Acceptance

From the public meeting, the project has been accepted overwhelmingly and the community members are ready to support it. Also the stakeholders support the project.

6.0 ANTICIPATED IMPACTS AND MITIGATION MEASURES

6.1 Introduction

Environmental Social Impact Assessment (ESIA) study must take place in such a manner that is a preventive factor concerning environmental destruction, in confronting investment wastage, attaining development objectives and improvement in the socio- economic sphere. Thereby, in such conditions, not only the actual value of ESIA study will be specified, but the consequences and the obstacles of the plan will be decremented and ESIA report can be utilized as guideline by the project designers. Totally, what ESIA can do is ensure political decision makers are making their decision based on a complete, clear, quantified (where possible) description of the positive and negative impacts to achieve sustainable developments.

The proposed water pan will have a number of impacts on environment, health, safety and social well-being in the project area. The impacts will be positive and negative, short-term and long term, reversible and irreversible, local or regional impacts. The extent, magnitude and severity of the impacts determine their environmental and social significance. The impacts are discussed in this chapter and necessary mitigation measures suggested where necessary. The objective of this report therefore is to ensure that the proposed project does not cause significant degradation of the total environment.

6.2 Environmental and Social Impacts

6.2.1 Impacts during Construction Phase

6.2.1.1 Positive Impacts

Employment

The construction activities of the water pan and associated infrastructures offer various job creation opportunities in the project area to include; unskilled, semi-skilled and the skilled worker category that leads to increment of income of the inhabitants. This beneficial effect mostly is seen in the project area of Raichiri. But, these kinds of occupations are temporary and do not create a long lasting effect on aspects such as job security, welfare and income increment for the local inhabitants. This effect is assessed as a positive and direct impact, with medium suitability and importance.

Transfer of skills

During the implementation of the project, the local community who will be involved in the project implementation will gain new skills from the construction workers.

Enhancement

- Ensure that the local community get opportunities to work at the site

Improving the Aesthetic Value

With the construction of the water-pan, there is high chance that the area will be vegetated with fast growing trees which will change the way the area look like boosting the aesthetic value of the land as compared to the current almost bare situation.

6.2.1.2 Negative Impacts

Air Emissions and Ambient Air Quality

a) Gaseous Emissions

Emissions associated with combustion of fuel from the construction vehicles and equipment. These emissions may be in the form of oxides of nitrogen as well as volatile organic carbons. Similar to other combustion processes, emissions from vehicles include CO, NOx, SO_2, and VOCs. Emissions from the construction vehicles should be minimized by complying with national or international standards.

Mitigation measures

i. Vehicles be driven on low speeds at the construction site
ii. Regular maintenance of the vehicles and the construction machines & equipment to reduce emission
iii. Recruit staff from the surrounding communities to decrease the travelling distance thus reducing emissions from vehicular traffic.
iv. Machines must not be left idling for unnecessary periods of time in order to save fuel and reduce emissions.

b) Particulate Matter

The most common pollutant involved in fugitive emissions is dust or particulate matter (PM). This is released during excavations, transportation and open storage of solid materials, as well as from exposed soil surfaces such as unpaved roads.

Mitigation measures

i. Suppress dust at the site by covering stockpiled material and wetting dry areas
ii. Ensure that all trucks carrying aggregate and sand are covered during delivery to the site.
iii. All raw materials must be sourced as close as possible to the construction site thus reducing the dust from vehicular traffic.
iv. All waste must be transported off-site for processing or dumping and should not be burned or stored for longer than is absolutely necessary

v. Availing dust masks to the construction workers.

Water quality

The activities involved in this phase of the development may cause a major negative long-term impact on the surface and ground water quality within the area. There will be deterioration in water quality downstream. During construction, waste in form of rubble and other forms may cause pollution to water quality that can affect downstream users. Potential sources of water pollution include site runoff and drainage from construction activities in the camps, effluent from general construction activities and sewage effluent from the construction workforce. Though the project magnitude is not that big, care and caution has to be taken to ensure no spills take place at the site.

Mitigation Measures:

i. Provide workers at the development site with toilets during this phase of the development.
ii. Store all raw materials away from the vicinity of water bodies located on the project area to avoid contamination in these areas.
iii. General waste generated during this phase of the development must be stockpiled in one central area of the project site, away from existing reservoir and collected, transported and disposed of appropriately at the designated disposal site by county government.
iv. Avoid discharge of contaminated water to water channels.
v. Ensure that no oil/ fuel spills at the site which may affect the water quality. Restrict vehicle/ machine servicing to designated yards equipment with sump to contain used oil, or restrict servicing and fueling to licensed dealers' yards

Soil Erosion and Contamination

The construction activities may have a major negative but short-term impact on soil. This is due to the removal of vegetation from the water pan site which will leave considerable areas of soil exposed to the elements, leading to soil erosion. Heavy machinery will be traversing the site due to the construction activities leading to soil compaction and erosion of the soil.

Mitigation Measures:

i. Only remove vegetation from areas meant for water pan construction;
ii. Install appropriate drainage systems to direct water away from slopes;
iii. Avoid as far as possible the traversing of bare soil by vehicles to reduce soil compaction;
iv. Designate a main access route for heavy machinery;
v. Avoid site preparation in period when wind velocities are highest.

vi. Train beneficiaries on soil and water conservation
vii. Restore cleared areas through tree planning and grassing of embankments

Noise & vibration

Site preparation and excavation may cause ambient noise and vibration in the project area. A number of measures may be undertaken by the contractors to reduce the impact of noise on the existing and potential residents as well as the workers involved in the project. This is temporary, however, and the aim at this point is to make the increase in noise as small as possible until this phase is complete. The cumulative impact of the construction activities occurring simultaneously may increase the noise and vibration levels in the area significantly.

Mitigation Measures:

i. Where possible silenced machinery and instruments should be employed to reduce the impact of noise on the existing residents and workers.
ii. Machinery, vehicles and instruments that emit high levels of noise should be used on a phased basis to reduce the overall impact.
iii. Ensure that construction activities for the development of the project are staggered to decrease the levels of noise and vibration in the area;
iv. Construction hours should be limited to the time between 8:00 a.m. and 6:00 p.m. daily.

Occupational Health and safety

Use of heavy machinery during construction presents safety hazards to the construction workers and people passing by. Vehicular movements can cause accidents resulting in injuries and probably death.

Mitigation Measures:

i. Ensuring that the drivers and machine operators hired to work on the site are qualified.
ii. Workers on site must be provided with appropriate PPE.
iii. Appropriate signs must be erected on the site to warn workers and visitors.
iv. There should be safety policy clearly displayed on the site.
v. Machines should be properly maintained.
vi. A first aid kit should be provided and a trained first aider should always be on site.
vii. Fire extinguishers should be provided.
viii. Train workers on emergency preparedness and response
ix. Use machines/equipment for the intended purpose.

x. No worker should be allowed on site while under the influence of alcohol or other inebriating substances.
xi. The abstract of the Occupational Safety & Health Act 2007 must be displayed at prominent places within the site.
xii. Ensure the working hours are well scheduled and controlled to avoid overworking or employees working hours beyond the acceptable limit for purposes of gaining extra pay.
xiii. Ensure that all site personnel are provided with an adequate supply of safe drinking water, which should be at accessible points at all time.
xiv. Provide conveniently accessible, clean, orderly, adequate and suitable washing facilities within the site

Construction Site Wastes

The proposed project will generate liquid and solid waste during construction. The solid waste generated will be unusable excavated soil, packaging materials, used oil & grease containers, oil & fuel filters, used machine parts, left over foods, water bottles, worn out PPE, used masks and gloves among others. Liquid waste will come from washrooms at the site and spilt oils and fuel. The excavated soil will be used for embankment backfilling of the borrow sites. Although this impact is short term, the disposal mechanism of the wastes can have long term consequences.

Mitigation measures

i. All solid waste will be collected at a central location at each site and will be stored temporarily until removal to an appropriately permitted disposal site.
ii. No dumping within the surrounding area is to be permitted. Where potentially hazardous substances (oils and greases) are being disposed of, a chain of custody document should be kept with the environmental register as proof of final disposal.
iii. Waste generated at the site should be sorted out by the contractor and disposed of in recommended manner into different waste streams.
iv. Provide waste skips/ bins to contain wastes on-site
v. Wherever possible recycling should be carried out.
vi. Engage registered waste handlers to regularly collect and dispose the wastes
vii. Train workers and beneficiaries on waste management

Gender Based violence and Sexual Harassment

This impact is triggered during Project Construction Phase when the Contractor fails to comply with the following provisions;

i. Gender Inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule.
ii. Failure to protect Human Risk Areas Associated with, Disadvantaged Groups, Interfering with Participation Rights, and interfering with Labour Rights.

Mitigation Measures of Human Rights and Gender Requirements

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

Sexual Harassment

Sexual harassment can occur between workers, particularly male workers against female workers, when there is insufficient sensitization of workers against prohibitions for sexual harassment, as well as the absence of reporting and disciplinary measures.

Mitigation Measure to Protect against Sexual Harassment in the Workplace

i. Ensure clear human resources policy against sexual harassment that is aligned with national law
ii. Integrate provisions related to sexual harassment in the employee COC
iii. Ensure appointed human resources personnel to manage reports of sexual harassment according to policy

Labour Influx Effects

This impact is triggered during Project Construction Phase due to the Project attracting various categories of workers from local and national markets. This therefore leads to concentration of people in one area drawn from diverse social and cultural backgrounds often resulting to a number of issues as listed below;

i. Strain on various resources especially water resources
ii. Grievances from local community members over job opportunities
iii. Sexual Exploitation and Abuse
iv. Unwanted Pregnancies
v. Spread of communicable diseases (eg HIV, COVID-19)

Mitigation Measures to Labour Influx Impacts

i. The contractor awarded the Project will develop a labour Management Plan (LMP) in consultation with local leaders.
ii. The contractor will ensure effective community engagement and strong grievance mechanisms on matters related to labour, with a discrete mechanism for safely and confidentially reporting issues of SEA and GBV at the community level triggered by the Project
iii. Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx, the contractor should engage a local community liaison person who is also trained in PSEA.
iv. The contractor will ensure proper records of labour force on site while avoiding child and forced labour
v. The contractor will ensure compliance to provisions of Workplace Injuries and Benefits Act (WIBA) 2007
vi. The contractor will develop and implement Children Protection Strategy. This strategy will ensure that no child under the legal age of 18years is employed in the Project.

HIV /AIDS

During construction, the project is likely to bring in a significant population of workers and traders from outside the project area. These workers/traders may relate sexually with the locals leading to increased transmission of HIV/AIDS and STI

Mitigation measures

i. Sensitization of construction workers on HIV /AIDS and STDs by the contractor

ii. Provision of protective condoms;
iii. Construction site should be adequately barricaded from the general public and conspicuous warnings posted in national language

Child Protection

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

Mitigation Measures to Child Protection

i. The contractor will develop and implement a Children Protection Strategy that will ensure that minors are protected against negative impacts associated with the Project including SEA...
ii. All staff must sign Child Protection Policy, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behaviour
iii. Children under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.
iv. Wherever possible, ensure that another adult is present when working in the proximity of children.
v. Not invite unaccompanied children to workers home, unless they are at immediate risk of injury or in physical danger.
vi. Refrain from physical punishment or discipline of children).
vii. Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
viii. Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation

Sexual Exploitation and Abuse (SEA)

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

Mitigation Measures to Risk of SEA

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

ii. The SEA action plan will include how the project will ensure necessary steps are in place for:

iii. Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;

iv. Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management;

v. Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights;

vi. Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistleblower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

Health Impact – Spread of COVID-19 amongst construction workers

The World Health Organization declared COVID-19 a global pandemic after assessing both its alarming levels of spread and severity, and the alarming levels of inaction. Consequentially, WHO issued various guidance and measures to prevent the spread of the virus. The measures have been adopted worldwide. Similarly, the Kenyan government has since then issued several guidance and directives after the first case was registered on March 13th 2020. These included complete cessation of movement to and from areas considered hot spots and night curfew, social distancing guidelines, closure on non – critical and

essential enterprises, closure of places of worship and public gatherings, mandatory use of masks in public places, among others.

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

Recently, the WHO has warned that the virus is here to stay for a long time and might persist and become our new way of life. The Government of Kenya has also lifted some of the initial movement controls and allowed the resumption of business, with certain industry specific guidelines being enforced. The duty of care has now been transferred to individual citizens and enterprises. Recognizing the potent risk this may present, it's difficult to clearly outline exhaustive mitigation measures under the mitigation impacts. As such, there is need for the client and the contractor to develop and adopt COVID-19 Standard Operating Procedure (SOPs) in line with the World Bank guidance, Ministry of Health Directives and site-specific project conditions. These SOPs need to be communicated to all workers and enforced to the latter without fail. In addition to the requirement of the SOPs, the following mitigation measure shall also be adopted:

COVID-19 – Mitigation Measures:

i. The Contractors will develop SOPs for managing the spread of COVID-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilization. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions;
ii. Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including workers and visitors;
iii. Avoid concentrating of more than 15 persons or workers at one location. Where more than one person has gathered, maintain social distancing of at least 1.5 meters. All workers and visitors accessing worksites every day or attending meetings shall be

subjected to rapid COVID-19 screening which may include temperature check and other vital signs;

iv. The project shall put in place means to support rapid testing of suspected workers for COVID-19;

v. Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used;

vi. Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of work stations, door knobs, hand rails etc;

Spread of COVID-19 amongst community members during consultations

During consultations for ESIA, various activities will be undertaken. For efficient and meaningful engagement, a wide range of individual participants, groups in the local community and other stakeholders will be involved. The consultations will involve verification of PAPs covering the occupants of the affected area and vulnerable persons and groups; awareness raising, sensitization of PAPs and gauging attitude to the project; training and capacity building for livelihoods restoration grievance redress, execution of site - specific Surveys among others. The activities will lead to close interaction between the proponent and the community members leading to a high risk of spreading COVID–19 amongst community members during the consultation process.

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

COVID-19 mitigation measures

i. Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible. One-on-one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced;

ii. Avoid concentrating of more than 15 community members at one location. Where more than one person are gathered, maintain social distancing of at least 1.5 meters;

iii. The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet;

iv. Hold meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration.

6.2.2 Impacts during Operation phase

6.2.2.1 Positive impacts

Water Supply

Indeed, the major long term effect on water supply is positive as it will benefit the community in terms of improved efficiency of supply, increased coverage, and will boost sustainable agricultural development thus improving the economy to the area and the county at large.

Enhancement

- Distribution of water from the water pan should cover as many beneficiaries as possible.

Biodiversity conservation and enhancement

Landscaping and planting of trees in the pan area will enhance the aesthetics and enhance biodiversity of the area. The group nursery will enhance access to seedlings to the community contributing to environmental conservation and reduction of Greenhouse Gas emissions.

Enhancement

- The proponent will ensure that the group managing the tree nursery is trained on nursery management for better results

Improved health status

Once the water pan is complete and water piped to the households, the drudgery of fetching water especially by women and girls will be eliminated. The saved labour and time will enable them engage in other productive activities resulting to improved food security and health of their households.

Enhancement

- Educate the beneficiaries on crop management
- Sensitize the beneficiary on efficient water use.

Food and Nutritional Security

With the introduction of small scale irrigation at household level, farmers will be able to diversify their crops to include irrigated and high value crops such vegetables and fruits to boost their household need and sell the surplus to earn incomes. This will contributed to improved food supply and nutrition at household level as well as incomes.

Crop and Livestock Farming

Improvement of crop production through small scale irrigation and livestock farming will result to direct impacts of the Water Pan to the beneficiaries.

Land Value

With the desilting of the water pan, the area is assured of a water source for a longer period unlike before. Reliable water source as a factor for settlement will lead to the land value increasing leading to development.

Income Generation Opportunities

Operation of the project will create job opportunities especially to the vulnerable and marginalized groups (VMG) especially the youths and people living with disabilities (PLWD) as they engage in the tree nursery and greenhouse farming as earmarked for them within the water pan area

6.2.2.2 Negative Impacts

Water quality & pollution

The pan's water quality in the long run will be threatened by land use activities in the upstream area. New developments will provide substantial additional sources of polluted runoff or otherwise substantially degraded water quality in the project area.

Mitigation Measures

i. Avoiding degradation of water quality by ensuring that there are no discharges of wastewater or storm water into the water pan
ii. Fencing of the water pan area to avoid direct access to the water by human and livestock.
iii. Minimizing alteration to catchment hydrology, including localized drainage patterns.
iv. Sensitize the beneficiaries on solid and liquid waste management, and provide sanitary facilities (toilets) at the pan.

Sedimentation

Typically, water pans intercepts close to 90% of sediments from the catchments. Sediment loads, which are dependent on the catchment characteristics, are likely to be the major challenges to the lifespan of the proposed water-pan.

The slope of the area is estimated at be less than 1% and the flow of run-off is physically sluggish, a situation that indicates a higher retention and storage capacity and ability compared to the transportation speed (no measurements were carried out in this regard). In addition the sediment load accumulation will lead to gradual reduction of storage capacity of the water-pan.

Mitigation

i. Provide check dams upstream of the water pan.
ii. Encourage the local community to adopt sustainable land management practices to include planting of cover crops and trees in their farms
iii. Establish a tree nursery in the area
iv. Restore areas cleared of vegetation by planting trees. Plant trees and grasses on the embankments
v. Train beneficiaries on soil and water conservation and undertake tree planting within the catchment

Health and safety concerns

The proposed water pan will have several negative implications on health and safety of the local community. These will include:-

1) The water pan will serve as a breeding ground for disease vectors such as mosquitoes and bilharzia snails. If measures are not taken, there could be an increase in incidence of malaria and bilharzia in the area.
2) Consumption of untreated water from the pan could result in increased incidence of water-borne diseases such as typhoid, cholera and diarrhea.
3) The pan will also be a safety risk to children and animals that could drown in it.

Mitigation measures

i. Capacity building the community on the potential health and safety risks and the need to treat the water before drinking water
ii. Sensitize the community neighboring the pan on the need to use mosquito nets
iii. Stocking the water pan with fish which eat the mosquito larvae
iv. Fencing the water pan area
v. Provision of toilet facilities at the pan

vi. General education on hygiene and sanitation around the pan and the area in general.

6.2.3 Impacts during Decommissioning

The project can be decommissioned when the design period ends or due to one of the following reasons:

(i) The water source may become inadequate due to unexpected change in climate rendering the project inefficient

(ii) Dilapidation of infrastructure overtime

Under these circumstances, the proponent will demolish all the structures including pump house, pipe works; remove the salvage materials and restore the sections affected to the original state.

The resultant waste should be sorted into re-recyclables and non-recyclables before disposal at the designated site in accordance to NEMA regulations on Solid Waste. The recyclables e.g. pump sets, GI pipes, plastic materials could be re-used in new projects or sold to recyclers.

6.2.3.1 Negative Impacts

When the design life comes to an end or is put out of service, the under listed negative impacts are expected.

a) Soil erosion will occur as a result of opening up previously firm ground to remove buried pipelines;

b) Visual impacts are anticipated as a result of draining the water pan and demolition of other concrete installations;

c) Generation of waste material

d) Risk of accidents

Mitigation Measures

i. Soil conservation works should be maintained until the site stabilizes;

ii. Landscaping should be done to rehabilitate the open trenches;

iii. Visual impact as a result of decommissioning should be mitigated by planting grass and other native vegetation in the restored trenches and reservoir area;

iv. Waste from decommissioning of the pipeline and concrete structures should be carted away and disposed off in a manner that is acceptable under EMCA;

v. Fence off all unsafe and potentially dangerous areas.

6.3 Social Impact

6.3.1 Positive Impacts

Promotion of social cohesion

The proposed project will enhance social cohesion in the sense that residents in this area will be engaged in communal activities such as environmental conservation thus forming a bond. Relations between and within communities suffer when people lack basic necessities; a strong social fabric is formed when community members are involved in resource mobilization activities that would improve their livelihoods and this is an important indicator of social progress.

6.3.2 Negative Impacts

6.3.2.1 Social tensions and conflicts

These emerge mainly due to: acts of omission or commission by project Proponent or Contractor for example delay in honouring agreements, employment opportunities and misunderstanding amongst stakeholders.

Mitigation Measures

i. Immediate action undertaken as soon as possible and within 24 hours of receipt of a complaint;
ii. Investigations completed within seven days of receipt of complaint;
iii. All corrective actions implemented by due date;
iv. All incidents or complaints about either environmental or social issues will be managed in accordance to the existing procedure in line with the legal framework;
v. All incidents and complaints will be recorded in the contractors incident reporting system;
vi. Additional environmental awareness training of the workforce with respect to procedures to be followed for environmental incidents or complaints;
vii. Sensitize workforce on cultural sensitivities;

7.0 PROJECT ALTERNATIVES

7.1 Introduction

This section analyzes the project alternatives in terms of site, material, technology and social options. The consideration of alternatives to a proposal is a requirement of many ESIA systems. It lies at the heart of the ESIA process and methodology. During the scoping process, alternatives to a proposal are generated or refined, either directly or by reference to the key issues identified. A comparison of alternatives helps to determine the best method of achieving project objectives while minimizing environmental and social impacts or, more creatively, indicate the most environmentally friendly or best practicable environmental options (Eskom, 2006), (USAID, 2006). The development of identified feasible alternatives, to meet the overall objectives of the proposal called for certain types of information and knowledge. During this process, for example, reference was made to: available technology, policy objectives, social attitudes, ecosystem attributes, conflict levels, site constraints and project economics. The current site and technology was selected based on the following criteria:-

- Compatibility with the environment
- Intended use of the water from the water pan
- Landscape and
- Availability of land

7.2 No Project Alternative

The No Project option in respect to the proposed project implies that desilting and expansion of the existing pan is not undertaken. This option will, however, not help address the water challenges being faced by the communities occupying Raichiri and her neighboring villages. The communities in this area will continue suffering from effects of perennial water shortage and prolonged droughts and hence subject them to abject poverty. This situation is inconsistent with the national development agenda. The No Project Option, therefore, is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The economic status of the local people would remain unchanged.
- Reduced land utility and productivity.
- No income generation opportunities for the locals and the VMGs emanating from project implementation
- Poor farming practices will continue as the opportunity to capacity build the community will have be thwarted.

- Stakeholders such as traders expecting benefit from the success of the water pan will be locked out

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people, county, and the government of Kenya.

7.3 Alternative technologies

There are various technologies which can be used as analyzed below:

Alternative	Suitability	Remarks
Water pans	These are more versatile in ASAL areas. They are easy to establish and operate. They are however affected by rainfall patterns, the water quality in water pans is poor, they can easily be silted after a few years thus making them unusable, water pans can only be constructed along drainage channels and the water losses are high through seepage and evaporation. If appropriate measures are taken to address the aforementioned limitations water pans can significantly help reduce water insecurity which can also be used to supply water for small-scale irrigation depending on their volume.	• Cheap option
Earth dams	These are embankments built across a valley or drainage channel such that a reservoir is created behind the dam. This has same limitations as water pans.	• The lack of well define drainage channels in addition to the landscape makes it hard to establish earth dams in the area.
Abstraction from rivers	The area has no permanent rivers. River Ewaso Ngiro is the only permanent river traversing near the project area. It is more than 10Km away. Although the river would guarantee reliable supply of fresh water to the Raichiri community, it would require a huge budgetary commitment that is beyond the allocation. In addition, the project will also take a long time to complete, many logistical issues and its maintenance	• Too high cost implication • Resistance from people living to the downstream side of the abstraction point on the river.

	costs are also high.	
Water trucking	The county government can practice water trucking in the ward. This practice is however very costly and will make the community dependent on support organizations for a long time. This dependency syndrome is not suitable for national and local development.	• High cost of operation • Is neither reliable nor sustainable
Roof Harvesting	This can be implemented on household level where each household harvest water during the rainy season and store it. Majority of the household in the area have iron sheet roofing which enhances roof catchment. This requires reservoir tanks to enable storage up to the next rainy season since the rains are not reliable in the area. Most household can only afford storage of low capacity which may not sustain them to the next season when utilizing it for domestic use only.	• Limited capacity of storage at household level.
Boreholes	There is only one borehole sunk within the project area, although we could not access water analysis report, it was said that the water was of high quality and suitable for human consumption but the yield is very little thus serving few people. Exploitation of ground water in this area could significantly help reduce the problem of water insecurity in the area. Boreholes are less prone to contamination, have better quality of water and are less affected by droughts. In addition, their initial investment costs are low (about KES 3 million per borehole). The main constraint to the exploitation of groundwater is the high cost of maintenance especially in areas where there is no electricity. Many boreholes in Nyandarua have been closed due to high cost of repair and maintenance and low water yield. Besides the high cost of repair and maintenance at the backdrop of high poverty level in	• High cost of operation, low yield and maintenance of boreholes could make them unsustainable. • Selection of appropriate technologies to supply power can make boreholes better alternatives especially based on their reliability, water quality and protection against contamination.

	ASAL areas, boreholes offer better alternatives to the problem of water in these areas.	

Comment:

Water pan is the best alternative to address the water challenge in the area as it is less expensive and at the same time fits with the environment.

7.4 Alternative site

The proposed site was identified by the local community. The area was categorically selected due to the existence of the silted water pan done during the colonial era and the fact that the community had reserved the site for the same purpose during land subdivision. By the time of this assessment, the possible site had already been identified and a design prepared. In addition, it was noted during the community public participation that there were no conflicts over the desilting of the pan at the proposed site. The land where the proposed site is has been community land set aside for the purpose of the water pan. The land has been surrendered by the community to the county government of Nyandarua as required by law to be the trustee of the public lands. Furthermore, a visit to the site indicated that it is suitable for the proposed project and that the impacts on the environment will also be minimal. Based on the fore-going, the need for an alternative site does not arise at this stage. The current site was selected based on the following:

- ✓ There is less farmland in the catchment, hence less silting is expected
- ✓ It is centrally located within the target project beneficiaries
- ✓ The soils within the site are clay soils which are suitable for use in constructing the embankment.
- ✓ The hard pan soil structure and bed-rock at the base of the reservoir will reduce infiltration and seepage

8.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

8.1 Introduction

This project is geared towards improving the livelihoods and building resilience of smallholder farmers to effects of climate change in the project area. The project should also observe environmental conservation requirements in accordance to the established laws and regulations.

To realize this goal, acceptability by a majority of the stakeholders and minimal effects to the physical environment will require to be integrated in the project cycle through constant consultations, evaluations and review of the project aspects throughout the project coverage.

An Environmental and social management and monitoring plan as part of the recommendation has been developed that recommends mitigation measures for the significant negative environmental and social impacts which includes the timeframe, the responsible party for implementing the recommended measures and a performance indicator.

The management plan complements the mitigation measures identified under chapter 6 above. It provides a matrix to link key impacts to actors who will undertake action and monitor the mitigation of impacts identified. Action taken shall restore if not compensate damages and losses in the environment occasioned by the development of the project.

8.2 Objectives of the ESMP

The plan provides a middle corridor for the proponent in an effort to restore the loss exerted by the project. The objective of the plan is to:

a) Provide a development framework for the project.

b) Guide those involved in project implementation in achieving ;

- ✓ Sound waste management
- ✓ Enhanced health and safety of the project stakeholders
- ✓ Tolerable noise and dust levels
- ✓ Economic use of the available resources and other infrastructure and services
- ✓ Protection of bio-diversity and their habitat

8.3 Scope of the EMP

The scope of this ESMP is to give guidelines to all parties involved during construction, operation and utilization of the project in fulfillment of environmental and social requirements. The management plan has a long-term objective to ensure that:

i. Environmental management conditions and requirements are implemented from the beginning of the project, construction and post-construction period,

ii. The social interests of the local community and all stakeholders are considered throughout the project cycle

iii. Maximum economic benefits to the immediate communities

iv. Precautions against damages to environment, biological diversity and sensitive habitats

8.4 Management Responsibilities

In view of the above objectives and scope, the project management system is expected to commit itself on the following aspects;

- The Contractor will engage an environmentalist/social expert to oversee and monitor the implementation of the management plan on a pre-agreed schedule
- The project implementation shall uphold national policies, World Bank Policies and legal requirements on environmental and social risk management at all times during the project implementation,
- Ensure the proposed environmental protection measures in the ESMP and Monitoring plan are integrated in the project implementation plan to the extent possible,
- Resolve problems and complaints arising from project within reasonable timeframes to ensure a smooth flow of construction operations and reduce social conflicts,
- Implement and continuously review this Environment and Social Management and Monitoring Plan for the benefit of acceptability of the project to all stakeholders.

8.5 Environmental and Social management plan (ESMP)

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
Gaseous emissions	• Vehicles be driven on low speeds at the construction site	-	Contractor
	• Regular maintenance of the vehicles and the construction machines & equipment to reduce emission	-	
	• Recruit staff from the surrounding communities to decrease the travelling distance thus reducing emissions from vehicular traffic.	-	
	• Machines must not be left idling for unnecessary periods of time in order to save fuel and reduce emissions.	-	
Particulate matter	• Suppress dust at the site by covering stockpiled material and wetting dry areas	60,000	Contractor
	• Ensure that all trucks carrying aggregate and sand are covered during delivery to the site.	-	
	• All raw materials must be sourced as close as possible to the construction site thus reducing the dust from vehicular traffic.	-	
	• All waste must be transported off-site for processing or dumping and should not be burned or stored for longer than is absolutely necessary	5,000	
	• Availing dust masks to the construction workers.		
Water quality	• Provide workers at the development site with toilets during this phase of the development.	50,000	Contactor

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	• Store all raw materials away from the vicinity of water bodies located on the project area to avoid contamination in these areas.	-	
	• General waste generated during this phase of the development must be stockpiled in one central area of the project site, away from existing reservoir and collected, transported and disposed of appropriately at the designated disposal site by county government.	-	
	• Avoid discharge of contaminated water to water channels.	-	
	• Ensure that no oil/ fuel spills at the site which may affect the water quality. Restrict vehicle/ machine servicing to designated yards equipment with sump to contain used oil, or restrict servicing and fueling to licensed dealers' yards	-	
Soil erosion & contamination	• Only remove vegetation from areas meant for water pan construction;	-	Contactor
	• Install appropriate drainage systems to direct water away from slopes;	20,000	
	• Avoid as far as possible the traversing of bare soil by vehicles to reduce soil compaction;	-	
	• Designate a main access route for heavy machinery;	-	
	• Avoid site preparation in period when wind velocities are highest.	-	
	• Train beneficiaries on soil and water conservation	160,000	
	• Restore cleared areas through tree planting and grassing of embankments	140,400	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
Noise and vibration	• Where possible silenced machinery and instruments should be employed to reduce the impact of noise on the existing residents and workers.	-	Contractor
	• Machinery, vehicles and instruments that emit high levels of noise should be used on a phased basis to reduce the overall impact.	-	
	• Ensure that construction activities for the development of the project are staggered to decrease the levels of noise and vibration in the area;	-	
	• Construction hours should be limited to the time between 8:00 a.m. and 6:00 p.m. daily.	-	
Occupational Safety	• Ensuring that the drivers and machine operators hired to work on the site are qualified.	-	Contractor /CESSCO/PMC/ Directorate of Occupation Health & Safety
	• Workers on site must be provided with appropriate PPE.	30,000	
	• Appropriate signs must be erected on the site to warn workers and visitors.	30,000	
	• There should be safety policy clearly displayed on the site.	-	
	• Machines should be properly maintained.	-	
	• A first aid kit should be provided and a trained first aider should always be on site.	5,000	
	• Fire extinguishers should be provided.	10,000	
	• Train workers on emergency preparedness and response	25,000	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	• Use machines/equipment for the intended purpose.	-	
	• No worker should be allowed on site while under the influence of alcohol or other inebriating substances.	-	
	• The abstract of the Occupational Safety & Health Act 2007 must be displayed at prominent places within the site.	600	
	• Ensure the working hours are well scheduled and controlled to avoid overworking or employees working hours beyond the acceptable limit for purposes of gaining extra pay.	-	
	• Ensure that all site personnel are provided with an adequate supply of safe drinking water, which should be at accessible points at all time.	12,000	
	• Provide conveniently accessible, clean, orderly, adequate and suitable washing facilities within the site	-	
Construction waste	• All solid waste will be collected at a central location at each site and will be stored temporarily until removal to an appropriately permitted disposal site.	-	Contractor
	• No dumping within the surrounding area is to be permitted. Where potentially hazardous substances (oils and greases) are being disposed of, a chain of custody document should be kept with the environmental register as proof of final disposal.	-	
	• Waste generated at the site should be sorted out by the contractor and disposed of in recommended manner into different waste streams.	-	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	• Provide waste skips/ bins to contain wastes on-site	5,000	
	• Wherever possible recycling should be carried out.	-	
	• Engage registered waste handlers to regularly collect and dispose the wastes	-	
	• Train workers and beneficiaries on waste management	20,000	
Gender Based Violence	• Ensure clear human resources policy against sexual harassment that is aligned with national law	-	Contactor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration GBV Expert Local CBO/NGO
	• Integrate provisions related to sexual harassment in the employee COC	-	
	• Ensure appointed human resources personnel to manage reports of sexual harassment according to policy	-	
	• The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse		
	• The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: ✓ effective and on-going community engagement and consultation, particularly with women and girls; ✓ review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc.	10,000	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	• the contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; etc		
	• The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.	-	
Sexual Harassment in work place	• Ensure clear human resources policy against sexual harassment that is aligned with national law	-	Contactor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration
	• Integrate provisions related to sexual harassment in the employee COC	-	
	• Ensure appointed human resources personnel to manage reports of sexual harassment according to policy	-	
Labour Influx	• The contractor awarded the Project will develop a labour Management Plan (LMP) in consultation with local leaders.	5,000	Contracor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration/ Children Department
	• The contractor will ensure effective community engagement and strong grievance mechanisms on matters related to labour, with a discrete mechanism for safely and confidentially reporting issues of SEA and GBV at the community level triggered by the Project	-	
	• Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx, the contractor should engage a local community liaison person who is also trained in PSEA.	-	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	• The contractor will ensure proper records of labour force on site while avoiding child and forced labour	-	
	• The contractor will ensure comply to provisions of Workplace Injuries and Benefits Act (WIBA) 2007	-	
	• The contractor will develop and implement a children Protection Strategy, this strategy will ensure that no child under the legal age of 18years in employed to the Project.	-	
	• The contractor awarded the Project will develop a labour Management Plan (LMP) in consultation with local leaders.		
HIV/AIDS	• Sensitization of construction workers on HIV /AIDS and STDs by the contractor	25,000	Contractor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration/ Public Health
	• Provision of protective condoms;	5,000	
	• Construction sites should be adequately barricaded from the general public and conspicuous warnings posted in national language	-	
Child Protection	• The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project including on SEA...	15,000	Contractor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration/ Children Department
	• All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behaviour	-	
	• Children under the age of 18 years should not be hired on site as provided by	-	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	Child Rights Act (Amendment Bill) 2014.		
	• Wherever possible, ensure that another adult is present when working in the proximity of children.	-	
	• Not invite unaccompanied children to workers home, unless they are at immediate risk of injury or in physical danger.	-	
	• Refrain from physical punishment or discipline of children).	-	
	• Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.	-	
	• Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation	-	
Sexual Exploitation & Abuse(SEA)	• Develop and implement an SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).	5,000	Contractor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration/ Children Department GBV Expert Local NGO/CBO
	• The SEA action plan will include how the project will ensure necessary steps are in place for:	-	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	• Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;	-	
	• Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management;	-	
	• Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights;	20,000	
	• Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistleblower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.	-	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
Health impact- Spread of COVID-19 among construction workers	• The Contractors will develop SOPs for managing the spread of Covid-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilization. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions;	-	Contractor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration/ Public Health
	• Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including workers and visitors;	36,000	
	• Avoid concentrating of more than 15 persons or workers at one location. Where more than one person are gathered, maintain social distancing of at least 2 meters. All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and other vital signs;	-	
	• The project shall put in place means to support rapid testing of suspected workers for covid-19;	50,000	
	• Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used;	12,000	
	• Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of work stations, door knobs, hand rails	5,000	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	etc;		
Spread of COVID -19 among community members during consultation	• Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible. One on one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced;	Present budget allocation for implementation of mitigation measures-	Contractor/CESSCO/PMC/ Gender Offices/Social Services Offices/ Local Administration/ Public Health Communications Expert/Stakeholder Engagement Expert
	• Avoid concentrating of more than 15 community members at one location. Where more than one person are gathered, maintain social distancing of at least 2 meters;	-	
	• The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet;	-	
	• Hold meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration.	-	
Water Quality & Pollution	• Avoiding degradation of water quality by monitoring that there are no discharges of wastewater or storm water into the water pan	-	Contractor/PMC/ CTD/CPCU
	• Fencing of the water pan area to avoid direct access to the water by human and livestock.	1,600,000	
	• Minimizing alteration to catchment hydrology, including localized drainage	-	

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
	patterns.		
	• Sensitize the beneficiaries on solid and liquid waste management, and provide sanitary facilities (toilets) at the pan.	-	
Sedimentation	• Provide check dams upstream of the water pan.	160,000	PMC/ CTD/CPCU/NEMA
	• Encourage the local community to adopt sustainable land management practices to include planting of cover crops and trees in their farms	-	
	• Establish a tree nursery in the area	50,000	
	• Restore areas cleared of vegetation by planting trees. Plant trees and grasses on the embankments	30,000	
	• Train beneficiaries on soil and water conservation and undertake tree planting within the catchment	50,000	
Health & Safety	• Capacity building the community on the potential health and safety risks and the need to treat the drinking water	50,000	PMC/ CTD/CPCU/ Public Health
	• Sensitize the community neighboring the pan on the need to use mosquito nets	150,000	
	• Stocking the water pan with fish which eat the mosquito larvae	100,000	
	• Fencing the water pan area	-	
	• Provision of toilet facilities at the pan	400,000	
	• General education on hygiene and sanitation around the pan and the area in general		

Anticipated impacts	Proposed mitigation	Cost (KES)	Responsibility
Impacts during decommissioning	• Soil conservation works should be maintained until the site stabilizes;	-	PMC/ CTD/CPCU/NEMA
	• Landscaping should be done to rehabilitate the open trenches;	50,000	
	• Visual impact as a result of decommissioning should be mitigated by planting grass and other native vegetation in the restored trenches and reservoir area;	-	
	• Waste from decommissioning of the pipeline and concrete structures should be carted away and disposed off in a manner that is acceptable under EMCA;	-	
	• Fence off all unsafe and potentially dangerous areas.	150,000	
Social tension & conflicts	• Immediate action undertaken as soon as possible and within 24 hours of receipt of a complaint;	-	CESSCO/PMC
	• Investigations completed within seven days of receipt of complaint;	5,000	
	• All corrective actions implemented by due date;		
	• All incidents or complaints about either environmental or social issues will be managed in accordance to the existing procedure in line with the legal framework;	-	
	• All incidents and complaints will be recorded in the contractors incident reporting system;	-	
	• Additional environmental awareness training of the workforce with respect to procedures to be followed for environmental incidents or complaints;	20,000	
	• Sensitize workforce on cultural sensitivities;	-	

8.6 Environmental and Social Monitoring Plan (ESMonP)

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
Gaseous emissions	• Drivers to drive on low speeds at the construction site; • Regular maintenance of the construction machine & equipment to reduce emission • Recruit staff from the surrounding communities to decrease the travelling distance thus reducing emissions from vehicular traffic. • Machines must not be left idling for	Air pollution level Frequency of equipment and vehicles serviced Vehicle / Machine operation hours Type and number of signage installed	Maintenance records of vehicles & equipment Inventory of signages installed Vehicle/machine operation hours	Weekly (at peak of the activities	CESSCO/PMC	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	unnecessary periods of time; this will save fuel and reduce emissions.					
Particulate matter	• Suppress dust at the site by covering stockpiled material and wetting dry areas • Ensure that all trucks carrying aggregate and sand are covered during delivery to the site. • All raw materials must be sourced as close as possible to the construction site thus reducing the dust from vehicular traffic. • All waste must be transported off-site for processing, not burnt or stored for any longer	PM10 level Dust accumulation at site No of dust related complaints No of trucks carrying aggregates/ sand covered	Air pollution records Records of wetting of site Inventory of dust catchers^ covers Material source records and agreements	Weekly (at peak of the activities		50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	than is absolutely necessary.					
Water quality	• Provide workers at the development site with toilets during this phase of the development. • Store all raw materials away from the vicinity of water bodies located on the project area to avoid contamination in these areas. • General waste generated during this phase of the development must be stockpiled in one central area of the project site, away from existing water bodies and collected, transported	No. of toilets at site Availability of material storage area Availability of waste collection area Number of waste bins/ skips provided Environmental management policy at site Amount of waste accumulated at the site	Records of toilet construction at site Waste management records Environmental management policy plant Water quality analysis records	Monthly		30,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	and disposed of appropriately at the designated disposal site by county government. • Avoid discharge of contaminated water to water channels. • Ensure that not oil/ fuel spills at the site which may affect the water quality	No of trainings on waste management conducted/ Number of workers and beneficiaries sensitized on waste management				
Soil erosion & soil contamination	• Only remove vegetation from areas meant for water pan construction; • Install appropriate drainage systems to direct water away from slopes; • Avoid as far as possible the traversing of bare soil by vehicles to	Area vegetation have been cleared Amount of carried soil at site No of Drainage system installed Site work schedule	Inspection reports on vegetation cleared and soil eroded Record of soil deposited at site Design of drainage system Records of work schedule	Monthly		30,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	reduce soil compaction; • Designate a main access route for heavy machinery; • Avoid site preparation in period when wind velocities are highest.					
Noise and vibration	• Where possible silenced machinery and instruments should be employed to reduce the impact of noise on the existing residents and workers. • Machinery, vehicles and instruments that emit high levels of noise should be used on a phased basis to reduce the overall impact. • Ensure that construction	Noise levels No of machines emitting noise & vibrations Work schedule	Noise level records Records of work schedule for noise machines Inventory of noisy machines	Weekly (at the peak of activities)	CPCU/ CESSCO/ NEMA/ DOSH	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	activities for the development of the project are staggered to decrease the levels of noise and vibration in the area; • Construction hours should be limited to the time between 8:00 a.m. and 6:00 p.m. daily.					
Occupational Safety	• Ensuring that the drivers and machine operators hired to work on the site are qualified. • Workers on site must be provided with appropriate PPE. • Appropriate signs must be erected on the site to warn workers and visitors.	No. of qualified drivers ^ machine operators hired No. of PPEs provided No. of signboard at site Presence of Safety policy Frequency of	Records of human resource Inventory of PPEs Records of signages at site and the meaning Health and Safety policy Code of conduct at workplace	Weekly	PMC, CESSCO Directorate of Occupation Health & safety	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	• There should be safety policy clearly displayed on the site. • Machines should be properly maintained. • A first aid kit should be provided and a trained first aider should always be on site. • Fire extinguishers should be provided. • Proper scheduling of activities to avoid workers being overworked. • Machines/equipment for the intended purpose. • No worker should be allowed on site while under the influence of	machine/ vehicle servicing No. of first aid boxes Machine operation manuals Work hour schedules No. of fire extinguishers No. of hand wash places No.of incidents reported	documents Inventory of first aid box and fire extinguishers Records on hand wash places available Reports on incidents and Accidents			

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	alcohol or other inebriating substances. • The abstract of the Occupational Safety & Health Act 2007 must be displayed at prominent places within the site. • Ensure the working hours are controlled and that employees are not allowed to extend the working hours beyond an acceptable limit for purposes of gaining extra pay. • Ensure that all site personnel are provided with an adequate supply of safe drinking water, which should be at					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	accessible points at all time. • Provide conveniently accessible, clean, orderly, adequate and suitable washing facilities within the site					
Construction waste	• All solid waste will be collected at a central location at each site and will be stored temporarily until removal to an appropriately permitted disposal site. • No dumping within the surrounding area is to be permitted. Where potentially hazardous substances (oils and greases) are being	Amount of waste generated at site Waste segregation at site Presence of a Waste management plan	Reports on waste disposal Records on amount of waste disposed at designated site Waste Management plan	Weekly	PMC, CESSCO Directorate of Occupation Health & safety	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	disposed of, a chain of custody document should be kept with the environmental register as proof of final disposal. • Waste generated at the site should be segregated by the contractor and disposed of in recommended manner into different waste streams. • Wherever possible recycling should be carried out.					
Gender Based Violence & Sexual Harassment	• Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related	No. cases of GBV and SEAs reported No. of sensitizations of	Records of GBV/SEAs reported and filed. Sensitization	Weekly	CESSCO, Gender &Social Officer, Community, PMC GBV Expert Local CBO/NGO	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	to sexual harassment in the employee COC • Ensure appointed human resources personnel to manage reports of sexual harassment according to policy • The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse • The contractor will implement provisions that ensure that gender-	GBV done No. of persons sensitized on GBV	reports of GBV.			

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	based violence at the community level is not triggered by the Project, including: ✓ effective and on-going community engagement and consultation, particularly with women and girls; ✓ review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc. • the contractor shall develop specific plan for mitigating these known risks, e.g. sensitization					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	around gender-equitable approaches to compensation and employment; etc • The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.					
Sexual Harassment	• Ensure clear human resources policy against sexual harassment that is aligned with national law • Integrate provisions related to sexual harassment in the employee COC • Ensure appointed human resources personnel to	No. cases of SH reported No. of sensitizations of SH done No. of persons sensitized on SH	Records of SH reported and filed. Sensitization reports of SH.	Weekly	Gender &Social Officer, PMC, CESSCO	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	manage reports of sexual harassment according to policy					
Labour Influx	• The contractor awarded the Project will develop a labour Management Plan (LMP) in consultation with local leaders. • The contractor will ensure effective community engagement and strong grievance mechanisms on matters related to labour, with a discrete mechanism for safely and confidentially reporting issues of SEA and GBV at the community level triggered by the Project	No. of labour related cases reported No. of sensitization on labour matter	Records of labour related cases reported and filed. Sensitization reports of labour maters	Monthly	PMC, CESSCO, Labour office	30,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	• Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx, the contractor should engage a local community liaison person who is also trained in PSEA. • The contractor will ensure proper records of labour force on site while avoiding child and forced labour • The contractor will ensure comply to provisions of Workplace Injuries and Benefits Act (WIBA) 2007 • The contractor will develop and implement a					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	children Protection Strategy, this strategy will ensure that no child under the legal age of 18years in employed to the Project.					
HIV/AIDS	• Sensitization of construction workers on HIV /AIDS and STDs by the contractor • Provision of protective condoms; • Construction sites should be adequately barricaded from the general public and conspicuous warnings posted in national language	No. of local recruited for the project No.of Trainings on records on No. of condom dispensers Site fenced	Recruitment process reports Training records and manuals Records on condoms dispensed -Site inspection reports	Monthly	Gender &Social Officer, PMC, CESSCO,Public Health	30,000
Child Protection	• The contractor will develop and implement a Children Protection	No. of Children working at site Incidences of	Complaints records on child abuse	Weekly	Gender &Social Officer, PMC, CESSCO, Children	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	Strategy that will ensures minors are protected against negative impacts associated by the Project including on SEA. • All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behaviour • Children under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014. • Wherever possible, ensure that another adult is present when working in the proximity of	Early pregnancies associated with the project Incidence of school dropouts	Monitoring records Records from children department		Department	

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	children. • Not invite unaccompanied children to workers home, unless they are at immediate risk of injury or in physical danger. • Refrain from physical punishment or discipline of children). • Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	• Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation					
Sexual Exploitation & Abuse	• Develop and implement an SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment	No. cases of SEA reported No. of sensitizations of SEA done No. of persons sensitized on SEA	Records of SEA reported and filed. Sensitization reports of SEA.	Weekly	Gender &Social Officer, PMC, CESSCO GBV Expert Local CBO/NGO	50,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	Project Financing involving Major Civil Works (Sept 2018). • The SEA action plan will include how the project will ensure necessary steps are in place for: • Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials; • Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management; • Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights; • Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistleblower protection and investigation and disciplinary procedures; training for all project management;					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.					
Spread of COVID -19 among workers	• The Contractors will develop SOPs for managing the spread of Covid-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilization. The SOPs shall be in line with the World Bank guidance on	No. of PPEs provided No. of test done No. of workers at the site	Records of incidents reported. Reports of training Records of no. of Records of face mask used, temperature checks done, no. of hand sanitizers	Daily	Public Health, CESSCO, PMC	20,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	COVID-19, Ministry of Health Directives and site-specific project conditions; • Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including workers and visitors; • Avoid concentrating of more than 15 persons or workers at one location. Where more than one person are gathered, maintain social distancing of at least 2 meters. All workers and visitors accessing		and soap used			

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	worksites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and other vital signs; • The project shall put in place means to support rapid testing of suspected workers for covid-19; • Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used; • Ensure routine sanitization of shared					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	social facilities and other communal places routinely including wiping of work stations, door knobs, hand rails etc					
Spread of COVID-19 among community members	• Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible. One on one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced; • Avoid concentrating of more than 15 community members at one location. Where	No. of PPEs provided No. of Hand wash points No. of sensitization done.	Records of PPEs Records of face mask used, temperature checks done, no. of hand sanitizers and soap used	During the public participation	Public Health, CESSCO, PMC Communication expert/ stakeholder engagement Expert	40,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	more than one person are gathered, maintain social distancing of at least 2 meters; • The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet; • Hold meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration.					

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
Social Tension & conflict	• Immediate action undertaken as soon as possible and within 24 hours of receipt of a complaint; • Investigations completed within seven days of receipt of complaint; • All corrective actions implemented by due date; • All incidents or complaints about either environmental or social issues will be managed in accordance to the existing procedure in line with the legal framework; • All incidents and	No of conflict/incidents reported from families Behavioral change Project delay No. of training conducted	Complaints reports Incidence recording mechanism in place Communication	Weekly	Gender &Social Officer, PMC, CESSCO	30,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	complaints will be recorded in the contractors incident reporting system; • Additional environmental awareness training of the workforce with respect to procedures to be followed for environmental incidents or complaints; • Sensitize workforce on cultural sensitivities;					
Water Quality& Pollution	• Avoiding degradation of water quality by monitoring that there are no discharges of wastewater or storm water into the water pan	Length of Fence at the water pan Number of Storm water control systems installed	Inspection report of the check dam Fence Monitoring records of waste water	Annual	PMC/CPCU	20,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	• Fencing of the water pan area to avoid direct access to the water by human and livestock. • Minimizing alteration to catchment hydrology, including localized drainage patterns.					
Sedimentation	• Provide check dams upstream of the water pan. • Encourage the local community to adopt sustainable land management practices to include planting of cover crops and trees in their farms	No of check dams constructed No. of trees planted by the community members Proportion of beneficiaries practicing soil and water conservation	Check dam inspection report Inspection report on trees ^ crop planted Monitoring reports on crop farming in the area	Annual	PMC/CPCU	30,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
Health & Safety concerns	• Capacity building the community on the potential health and safety risks and the need to treat the drinking water • Sensitize the community neighboring the pan on the need to use de mosquito nets • Stocking the water pan with fish which eat the mosquito larvae • Fencing the water pan area • Provision of toilet facilities at the pan • General education on hygiene and sanitation around the pan and the	No.of persons in the community trained on health and safety No. of incidents reported No. of persons treated for named diseases No. of mosquito nets provided Length of fence at the water pan No. of toilet facilities at site No. of training on hygiene and sanitation	List of training attendants Training material and trainer Inspection report of the toilet facilities	Annual	PMC/CPCU	30,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	area in general.					
Soil Erosion	• Soil conservation works should be maintained until the site stabilizes;	Soil conservation plan Vegetation planted	Site inspection reports	During decommissioning period	PMC/CPCU	10,000
Visual Impact	• Landscaping should be done to rehabilitate the open trenches; • Visual impact as a result of decommissioning should be mitigated by planting grass and other native vegetation in the restored trenches and reservoir area;	Trenches & open holes Grass & vegetation planted	Site inspection reports Inventory of vegetation planted	During decommissioning period	PMC/CPCU	10,000
Waste Generation	• Waste from decommissioning of the pipeline and concrete structures should be carted away	Amount of waste at site Waste management procedures	Waste generated records Waste management plans	During decommissioning period	PMC/CPCU	10,000

Impacts	Mitigation Measures	Monitorable Indicator	Means of verification	Frequency of monitoring	Responsible	Cost (KES)
	and disposed off in a manner that is acceptable under EMCA; • Fence off all unsafe and potentially dangerous areas					

9.0 CONCLUSION AND RECOMMENDATIONS

This report has highlighted the relevant legislation for the project and documented evidence based baseline data on the project. The measures proposed herein in the report need to be implemented to enhance the good utilization of our environment sustainably. It is hereafter reinforced that Project specifications, guidelines, licenses and permits must be in the possession of the contractor and the contracting department prior to commencement of construction. Through regular safety meetings, all water pan construction employees and contractors working on the project will have to be made aware of these documents and their contents. To enhance the proposals in this report, all employees and contractors should comply with all Kenyan Regulatory requirements and World Bank Guidelines relating to the construction, operation and decommissioning of the water pan project and facilities. Environmental management and monitoring programs will have to be conducted in full cooperation with local authorities.

The negative environmental and social impacts on the implementation of this project are minimal and will be addressed through implementation of the environmental and social impacts management plans. These measures are part of the project component and will bring no added cost in the implementation process. The advantages of implementing the project are enormous and it will minimize a chronic water shortage that has affected the community for a long time. Water borne diseases may occur to include malaria, bilharzias and typhoid as the pan may act as breeding site for mosquitoes and other bacteria. These will be addressed through creation of awareness to the public on prevention and control of the diseases. In summary the potential negative impacts of the project are low and easy to mitigate, therefore they should not prevent the project from proceeding. The positive impacts and the benefits to the community are immense and welcome.

Thus, on behalf of the team, I recommend that NEMA should consider issuing a license for the implementation of the project.

REFERENCES

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12.Kenya Gazette Supplement Acts Physical Planning Act, 1999, Government Printers, Nairobi

13.Kenya Gazette Supplement Acts Water Act, 2002, Government Printers, Nairobi

Kenya Gazette Supplement Acts Public Health Act (Cap. 242) Government Printer, Nairobi

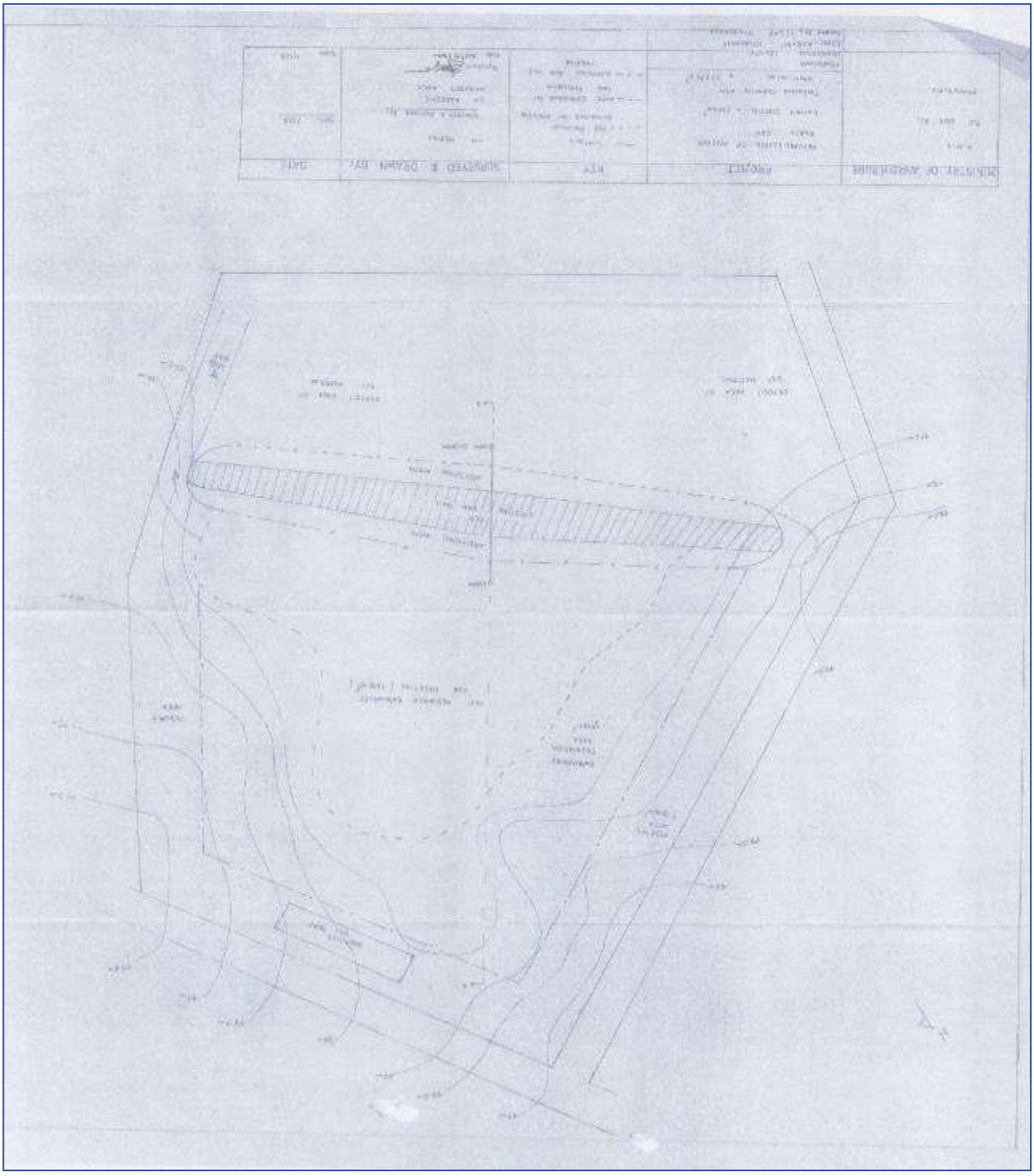
The Noise Prevention and Control Rules, 2005, Legal Notice No. 24, Government Printers, Nairobi

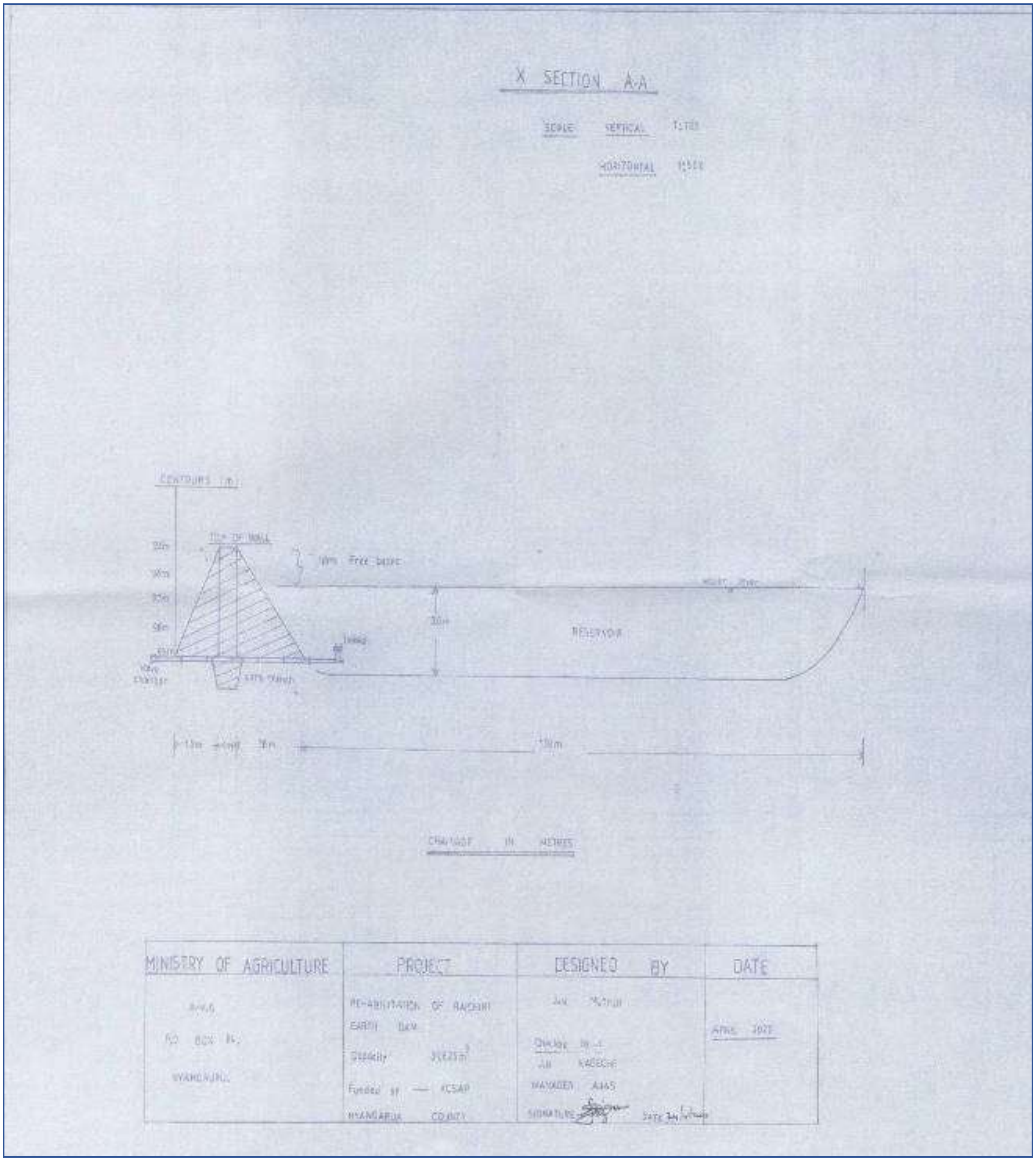
The Occupational Safety and Health Act, 2007, Government Printers, Nairobi

Nyandarua County Integrated Development Plan2018-2022

World Bank Guidance Notes on Tool for Pollution Management-Environmental Impact Assessment.

APPENDIX 1: PROJECT DESIGNS




X SECTION A-A
RESERVOIR
CHAINAGE IN METRES
MINISTRY OF AGRICULTURE
PROJECT
DESIGNED BY
DATE
Funded by — KCSAP

APPENDIX 2: LAND OWNERSHIP DOCUMENTS

RAICIRI FARMERS COMPANY LIMITED

P.O. Box 107, Nyahururu

Telephone Ndogino 1Y4

No. 391 Date 11/05/202

RE: TITLE-DEED CLEARANCE CERTIFICATE

This is to certify that

COUNTY GOVERNMENT OF NYANDARUA

ID. No. ..... is the Registered owner of Land

Parcel No. 23 in (Area) .....

AND WE HAVE NO OBJECTION TO YOUR RELEASING SAME TO HIM/HER

NOTE: please keep this card in a safe place. No Title-Deed can be issued unless on production of this card.

A separate Card will be issued for each parcel owned. This card should be produced to the Registrar of Titles for easy identification.

RAICIRI INVESTMENT CO. LTD

P.O. 22041-00400, NAIROBI
TEL: 254721641513
254724542384
EMAIL: raiciriinvestment@yahoo.com

11/05/2020

THE REGISTRAR

MINISTRY OF LANDS

NYANDARUA COUNTY GOVERNMENT

Dear Sir/Madam,

REF: SURRENDER OF RAICHIRI DAM LESHAU BLOCK 3 PLOT NO. 23 TO THE COUNTY GOVERNMENT

Greetings!

Captioned by the above reference the Board of Directors of Raiciri Investment Co. Ltd. Have resoluted to surrender one Raichiri dam situated on Raichiri Scheme plot No 23 of LESHAU BLOCK 3 (RAICHIRI)

This will smoothly facilitate the appropriate development that will be deemed necessary by the government hence the only way the dam can be of maximum use to the community.

Kindly facilitate the necessary legalities for ownership and control of the dam to the county government. Thank you for your support and great services to the people of Raichiri and Nyandarua county as whole.

Enclosed please find Title Deed clearance certificate.

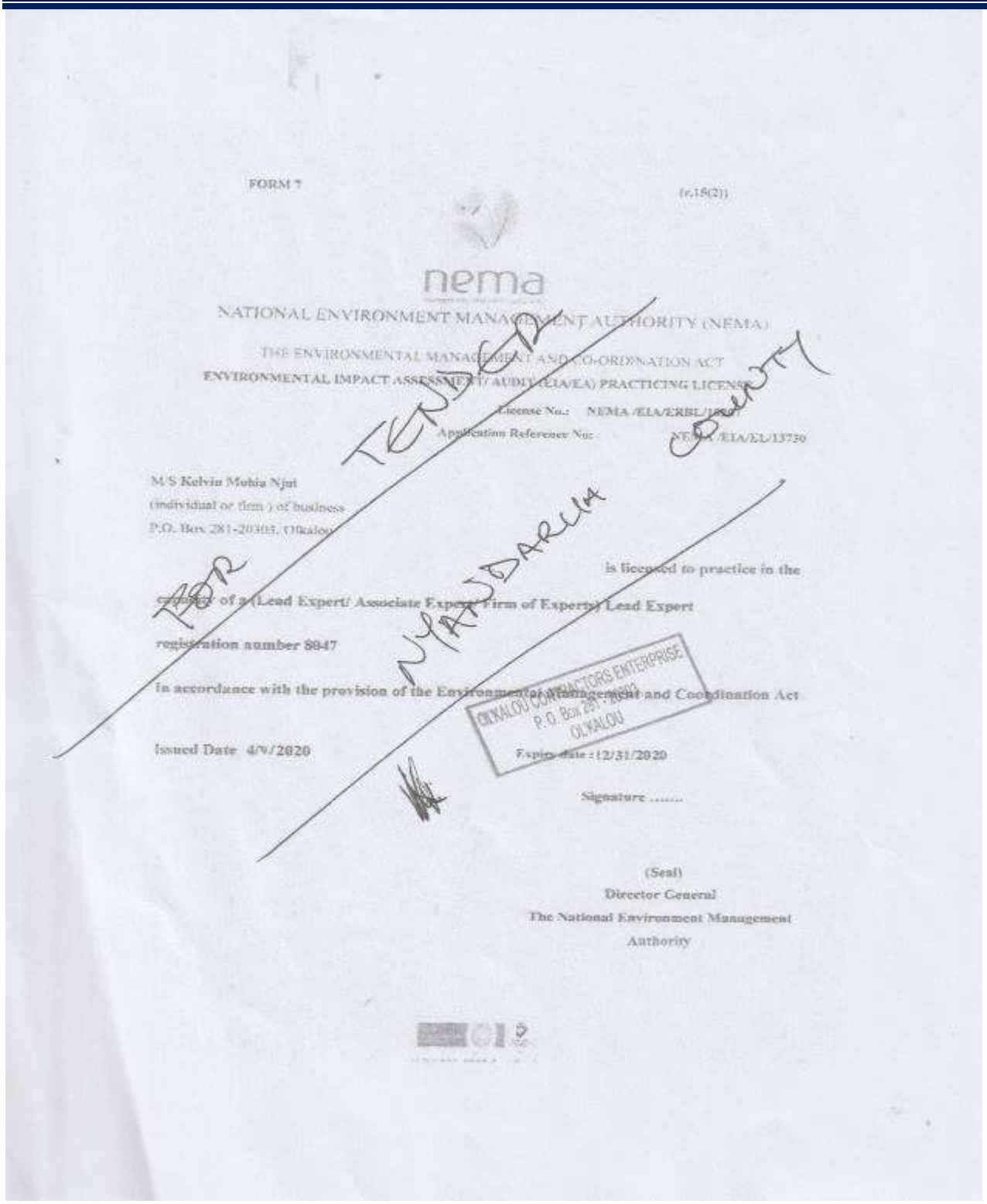
Yours faithfully,

CHAIRMAN JAMES KIARIE NGONYE ID NO 1309523 Signature

SECRETARY JOSEPH MUNG'ORA MUYA ID NO 0559374 Signature

RAICIRI INVESTMENT COMPANY LTD
P. O. Box 22041 - 00400
TOM MBOYA STREET
NAIROBI

APPENDIX 3: EXPERT LICENCE



FORM 7 (r.15(2))

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

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

License No.: NEMA /EIA/ERBL/18847

Application Reference No: NEMA /EIA/EL/13730

M/S Kelvin Muhia Njui

(individual or firm) of business

P.O. Box 281-20305, Olkalou

is licensed to practice in the

category of a (Lead Expert/ Associate Expert/ Firm of Experts) Lead Expert

registration number 8947

in accordance with the provision of the Environmental Management and Coordination Act

Issued Date 4/9/2020

OLKALOU CONTRACTORS ENTERPRISE
P. O. Box 281 - 20305
OLKALOU

Expiry date :12/31/2020

Signature .....

(Seal)

Director General

The National Environment Management

Authority

APPENDIX 4: MINUTES OF CTAC MEETING THAT PROPOSED THE SUB-PROJECT

MINUTES FOR THE CTAC MEETING HELD AT THE TEWAN HOTEL ON 10TH OCTOBER 2019

The meeting was called to order at 11:30 am by the Director of Agriculture and the chairman of the County Technical Advisory Committee. He welcomed the members present and called them to self-introduction. In his opening remarks, the chairman thanked the members for forfeiting their holiday to help the people of Nyandarua. He observed that climate change was real and the effects were felt now more than ever. For this reason, he felt that the work the team was doing needed a lot more support from everyone. He encouraged the committee members to actively participate and assist the project implementers to achieve their objectives. He then invited the coordinator to steer the meeting.

MEMBER PRESENT

S/NO	NAME	ORGANISATION
1	Simon Maina Kabutu	Kenya Meteorological Department
2	S. M. Karega	Environmental Conservator
3	Benard Mwai	Tourism
4	Miriam Muthoni	Dep. Director Environment
5	Joshua O. Bosire	County Director Fisheries
6	Samuel Kalabata	NEMA
7	Dr. Rose Oyolo	County Director Veterinary Services
8	Kariuki Njunge	Senior Agricultural Engineer
9	Wambugu Irene	County Director of Livestock Production
10	Maathai Ndungu	KALRO
11	Grace Kamanja	KCSAP
12	Boniface Mwangi	KCSAP
13	John Wachira	KCSAP Coordinator
14	Simon Njoroge	Agriculture Sector Development Strategic Project
15	Wathinja Joseph	County Director Agriculture
16	James Mwakio	KCSAP Accountant

AGENDA

1. Opening remarks
2. Reading and confirmation of previous minutes
3. Highlights of proposed implementation projects
4. Approval of micro-project proposals
5. Discussion of producer organizations and subproject proposals
6. Closing remarks

1

The records for the CIG should go back six months prior to the call for proposals with the key areas of delivery being expansion, years of existence, rate of success as well as other activities undertaken by the group.

MIN 5- 10/10/2019 – SUB- PROJECT AND PRODUCER ORGANIZATION DISCUSSIONS

The Secretary informed the members that the County Project Coordination Unit (CPCU) in partnership with the County Technical Department went out to the field to vet and evaluate the subproject proposals submitted to them. They were able to come up with 19 subprojects as appended below;

i) Sub project vetting

S/No	Sub Project	Discussion	Recommendation	Action
	Soko Mpya upgrading	The members felt that even though this would be a great sub project, the traders there were somewhat opposed to the idea. 52 stalls in this market are currently not occupied.	The members unanimously agreed to forego this project.	
	Umoja Mbuyu irrigation scheme	The project was approved last financial year. There is a felt need for water both for irrigation and domestic use.	Passed	B. M. Mwangi
	Excavation of Kabati Kituga Waterpan	The land meant for the project is private	The members should look for a public land for the water pan and irrigation	
	Gichigirira Waterpan	The land is sufficient for a water pan but requires an embankment.	Passed but suspended due to the cost implication	Mr. Njunge
	Jimbiri dam	There is a cattle dip next to the Jimbiri dam which is a health issue for the residents	The NEMA person needs to give the way forward on Jimbiri dam.	Mr. Kalabata
	Kamukunga feed Processing Plant	The sub project is on public land. The land was given to the group by the community to act as its custodian. The group only has 80 people.	The members agreed that the group sounded more private than public. Not passed	To be considered for a cooperative
	Raishiri water Pan	The dam needs de-silting but there is room to excavate another dam downstream with the existing dam acting as a silt trap.	This project was passed.	
	Agiginyani Bus stop traders Market	Relocation is predicated on the relocation of the matatu operators. There is an MoU to this effect.	The members felt that since around 500 persons will be affected, a resettlement action plan needs to be done. The group members unanimously agreed to suspend the	

Closing remarks

One member felt that the allowances for the committee need to be reevaluated to cater to the strenuous work the members have to do especially during proposal evaluation.

Public participation should be carried out before any of these sub-projects are passed. There should always be an element of environmental safeguards before any project is undertaken and all the certifications should be sought.

Secretary

John M. Wachira Signature..... Date..23·10·2019

Chairman

Joseph Wathinja Signature..... Date..23.10.2019.

APPENDIX 5: MINUTES OF CPSC MEETING

MINUTES FOR THE CPSC MEETING HELD AT THE TEWAN HOTEL ON 11TH OCTOBER 2019

The meeting was called to order at 11:30 am by the Director of Agriculture and the chairman of County Technical Advisory Committee. He welcomed the members present and called them to self introduction. In his opening remarks the chairman thanked the members for forfeiting their holiday to help the people of Nyandarua. He observed that climate change was real and the effects were felt now more than ever. For this reason, he felt that the work the team was doing needed a lot more support from everyone. He encouraged the committee members to actively participate and assist the project implementers to achieve their objectives. He then invited the coordinator to steer the meeting.

MEMBER PRESENT

S/NO	NAME	ORGANISATION
1	Dr. James Karitu	CEC Agriculture, Livestock & Fisheries
2	Dr. D. M. Gikaara	CO Agriculture, Livestock & Fisheries
3	Miriam Muthoni	Dep. Director Environment
4	Joshua O. Bosire	Director Fisheries
5	Dr. Rose Oyolo	Director Veterinary Services
6	Kariuki Njunge	Senior Agricultural Engineer
7	Wambugu Irene	Director Livestock Production
8	Maathai Ndungu	Kenya Agricultural Livestock Research Organization
9	Grace Kamanja	KCSAP
10	Boniface Mwangi	KCSAP
11	John Wachira	KCSAP Coordinator
12	Wathinja J. W.	Director Agriculture
13	Paul Kamau	Rep. Trade Department

AGENDA

1. Opening remarks
2. Reading and confirmation of previous minutes
3. Highlights of implementation progress including the status of micro-projects
4. Approval of producer organizations and sub projects.

5. Closing remarks

MIN 1- 11/10/2019: READING AND CONFIRMATION OF PREVIOUS MINUTES

The chairman called the meeting to order at 11.00 and thanked the CTAC members present in CPSC for their dedication to the project. He commented that it is not common to come across civil servants willing to forfeit a holiday to do the kind of work the team did during the vetting of CIG proposals. He however noted that this kind of dedication is what we require to move our county to greater heights.

He called on one of the members to say a word prayer before handing over the mantle to the Secretary who went through the previous minutes. The minutes were proposed by the **director Fisheries department and seconded by the director Agriculture.**

MIN 1- MIN 2-11/10/2019: MATTERS ARISING FROM PREVIOUS MINUTES

1. Repair of motor vehicle- the vehicle was repaired as directed by the CEC and is now mobile.

2. Environmental safeguards should be captured before any project is undertaken.

MIN 3-11/10/2019: HIGHLIGHTS OF PROPOSED IMPLEMENTATION PROJECTS

CIGS: In his presentation the coordinator informed the members present that CTAC had recommended 93 micro projects for funding. The micro projects may not all be funded depending on availability of funds. CTAC may be authorised by CPSC to make random spot checks and confirm whether the work done on the vetting of this micro projects was comprehensive. The work done on the ground is however quite commendable.

Discussions

- One member felt that the VMGs should be pulled out of the CIGs as the requirement for funding was different and they should therefore be given special consideration.
- The grievance redress mechanism should be in place and activated.

Subprojects

The CPCU was expected to come up with at least 20 subprojects for submission to CTAC for vetting. Out of the 19 subprojects submitted, CTAC came up with the following subprojects listed in order of priority.

1. Umoja Mbuyu
2. Raichiri Water pan
3. Peas Grading shed
4. Potato collection centers
5. Cooler infrastructure

Proposals for the subprojects need to reach the office as soon as possible. The Umoja Mbuyu water pan should be expedited so that it can collect water during the expected rainy season in November and December.

A member felt that this process may not be as fast because it requires procurement. The Director Agriculture informed the members that the excavation can be done by the AMS department and even if they do not have enough equipment, the equipment can be borrowed from other departments notably the department of roads. The CEC agriculture was tasked with the responsibility of bringing the recommendation to the Governor. This should only be done once the logistics are in place. To this end, the project Coordinator was tasked with the responsibility of coming up with the BoQs as well as the timelines for starting the work. One member reminded the members that the BoQs should include catchment conservation.

Producer organization Ranking

1. Tulaga farmers Dairy Cooperative
2. Umoja Dairy Cooperative
3. Njabini Dairy Cooperative
4. Kamukunga Itura Self Help Group
5. Gathanga Dairy Cooperative society

Even though all these producer organizations have been passed, it is imperative that we consider their location for equity purposes. There is also need to have the CPCU revisit these producer organizations to verify their suitability.

Closing remarks

The Chairman thanked the members for their active participation. He requested the Coordinator to pass the committees concerns for the allowances paid to the committees saying the same should be in line with the salaries and remuneration commission.

He also directed that everyone tasked with the responsibility of submitting proposals on subprojects should do so as soon as possible. He also requested the members to keep their eyes open for any potential subproject that could be implemented in any part of the county.

The meeting ended at 2.00 pm with a word of prayer.

Secretary

John M. Wachira Signature..... Date.....

Chairman

Dr. James Karitu Signature..... Date.....

APPENDIX 6: ENVIRONMENTAL & SOCIAL SAFETY SCREENING CHECKLIST

ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREENING CHECK LIST

Section A: Background information

1. **Name of County**: Nyandarua County
2. **Name of CPCU**: .KCSAP Nyandarua.
3. Details of the Sub-Project:
   a) Name of Sub-Project: RAICHIRI WATER-PAN DE-SILTING PROJECT
   b) Postal Address: 672 NYAHURURU
   c) Name of Contact Person: RAPHAEL MUNURI Cell phone: 0720239247
4. Location of the Sub-Project:
   a) Sub-County NDARAGWA Ward LESHAU PONDO
   b) GPS Coordinates N0°4'58.449" ; E 36°27'15.21"
5. Funds Allocated to the Sub-Project: KES 24,555,300
6. Number of Direct Beneficiaries 155 Males 62 Females 93
7. Approximate size of land area available for the Sub-project: Six acres
8. Objectives of the Sub-Project:
   Conserving flood water for irrigation, Livestock and domestic use.
9. Activities to be undertaken: a) De-Silting of the water-pan b) Erection of Wall c) Fencing the water-pan & Fx Installation of Solar Pump
10. How was the Sub-project chosen? Through Public participation
11. Expected Sub-project duration:

Section B: Environmental Issues

Will the Sub-project:	Yes	No
Create a risk of increased soil erosion?	✓	
Create a risk of increased deforestation?		✓
Create a risk of increasing any other soil degradation?		✓
Affect soil salinity and alkalinity?		✓
Divert the water resource from its natural course/location?		✓
Cause pollution of aquatic ecosystems by sedimentation and agro-chemicals, oil spillage, effluents, etc.?		✓
Introduce exotic plants or animals?	✓	
Involve drainage of wetlands or other permanently flooded areas?	✓	
Cause poor water drainage and increase the risk of water-related diseases such as malaria?	✓	
Reduce the quantity of water for the downstream users?		✓
Result in the lowering of groundwater level or depletion of groundwater?		✓
Create waste that could adversely affect local soils, vegetation, rivers and streams		✓

1

or groundwater?		✓
Reduce various types of livestock production systems?		✓
Affect any watershed?		✓
Focus on Biomass/Bio-fuel energy generation?		✓

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

Section C: Socio-economic Issues

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

Section D: Natural Habitats

Will the Sub-project:	YES	NO
Be located within or near environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands) or threatened species?		✓
Adversely affect environmentally sensitive areas or critical habitats – wetlands, woodlots, natural forests, rivers, etc.)?		✓
Affect the indigenous biodiversity (Flora and fauna)?		✓
Cause any loss or degradation of any natural habitats, either directly (through project works) or indirectly?		✓
Affect the aesthetic quality of the landscape?	✓	
Reduce people's access to the pasture, water, public services or other resources that they depend on?		✓
Increase human-wildlife conflicts?		✓
Agrochemical use		
Will the Sub-project:		
Involve the use of pesticides or other agricultural chemicals, or increase existing use?		✓
Cause contamination of watercourses by chemicals and pesticides?		✓
Cause contamination of soil by agrochemicals and pesticides?		✓
Experience effluent and/or emissions discharge?		✓
Export produce? Involve annual inspections of the producers and unannounced inspections?		✓
Require scheduled chemical applications?		✓
Require chemical application even to areas distant away from the focus?		✓
Require chemical application to be done by vulnerable group (pregnant		✓

mothers, chemically allergic persons, elderly, etc.)?		
Use irrigation system in its implementation?	✓	

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

Section E: Pesticides and Agricultural Chemicals

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

1) *Pest Control practices* — Not applicable

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

Yes___ No If yes,	Name of pesticides	Name of pest, disease,	Number of times applied/ season	When do you apply (growth stage or month) Quantity purchased)

If No, WHY? _____

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

Application location: Yes…… No……

Date of application: Yes…… No……

Pesticide product trade name: Yes……No……

Operator name: Yes…… No……

If No, WHY?

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

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

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

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

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

(v) Others (specify)____

d) Do you use a knapsack sprayer? Yes_____ No_____

If yes,

(i) Do you own it? Yes_____ No_____

(ii) Do you rent it? Yes_____ No_____

(iii) Do you borrow it? Yes_____ No_____

e) From your experience, are there any negative/harmful effects of using pesticides?

Yes _____No_____

f) If yes, list the negative effects:

(i) .....

(ii) .....

(iii) .....

(iv) .....

(v) .....

g) Do you use any kind of protective clothing while applying or handling pesticides? Yes___ No_____

Why? _____

h) If YES, what kind?_____ — Not applicable

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

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

Sometimes Always_____Never__

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

Sometimes_____Always_____Never___

c) Do you mix pesticides with your hands?

Sometimes___ Always_____Never_

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

Sometimes___ Always_____Never_

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

Sometimes___ Always_____Never_

f) Do you store pesticides in a secure, sound and well-ventilated location?

Sometimes___ Always_____Never_

g) Do you make a cocktail before applying the pesticides? (i.e., mix more than one chemical and apply them at once?)

Sometimes___ Always_____Never_

h) Where do you store your pesticides?_____

Why do you store them there?

_____

i) What do you do with your pesticide containers after they are empty?

_____

j) Do you know of any beneficial insects (insects that can destroy harmful insects)?

Yes..... No.....

K)If yes, name them:

i)_____ ii)_____ iii)_____

3. Pesticides and Health – Not applicable

a) Have you witnessed that pesticide application affects the health of:

b) Persons regularly applying pesticides?

Sometimes___ Always_____Never_

c) Persons working in fields sprayed with pesticides

Sometimes_____Always_____Never_

d) Persons harvesting the produce

Sometimes_____Always_____Never_

4.Options to Pesticides – Not applicable

a) From your experience, are you aware of other methods for controlling insects diseases and/or weeds besides pesticides?

Yes..... No.....

b) If yes, describe the practices:

i)_____

ii)_____

iii)_____

iv

5. Information

a)What information do you think you need for improving your crop production and marketing?

_____

_____

6. Training

a) Have you ever received any training on any of the following topics related to use of pesticides in crop and/or animal production?

a) Integrated Pest Management Yes..... No.....

No. of times/past yr. .....

No. of times/past yr. .....

c) Pesticide Safety Yes..... No.....

No. of times/past yr. .....

d) Insect Identification Yes..... No.....

No. of times/past yr. .....

e) Disease Identification Yes..... No.....

No. of times/past yr. .....

f) Quality aspects of production Yes..... No.....

No. of times/past yr.....

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

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

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

Are there:	Yes	NO
People who meet requirements for OP 4.10 living within the boundaries of, or near the project? (PLWHIV/AIDS, Elderly, Youths, People recovering from Drug and substance, abuse, widows/widowers, PLWD)	✓	
Members of these VMGs in the area who could benefit from the project?	✓	
VMGs livelihoods to be affected by the Sub-project?	✓	

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

Section G: Land Acquisition and Access to Resources

Will the Sub-project:	Yes	No
Require that land (public or private) be acquired (temporarily or permanently) for its implementation?		✓
Use land that is currently occupied or regularly used for productive purposes (e.g. gardening, farming, pasture, fishing locations, forests)		✓
Displace individuals, families or businesses?		✓

6

Result in temporary or permanent loss of crops, fruit trees and pasture land?		✓
Adversely affect small communal cultural property such as funeral and burial sites, or sacred groves?		✓
Result in involuntary restriction of access by people to legally designated parks and protected areas?		✓
Be on monoculture cropping?		✓

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

Section H: Proposed action

(i) Summarize the above:	(ii) Guidance
☐ All the above answers are 'No' ☑ There is at least one 'Yes'	• If all the above answers are 'No', there is no need for further action; ✓• If there is at least one 'Yes', please describe your recommended course of action (see below).

(iii) Recommended Course of Action

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

☑ CPCUs and County Director of Environment (CDE) will provide detailed guidance on mitigation measures as outlined in the ESMF; and

☑ Specific advice is required from CDE and CPCUs regarding Sub-project specific ESIA(s) and also in the following area(s)

☑ All Sub-project applications/proposals MUST include a completed ESMF checklist. The KCSAP-CPCU and CDE will review the Sub-project applications/proposals and the CDEs will sign off;

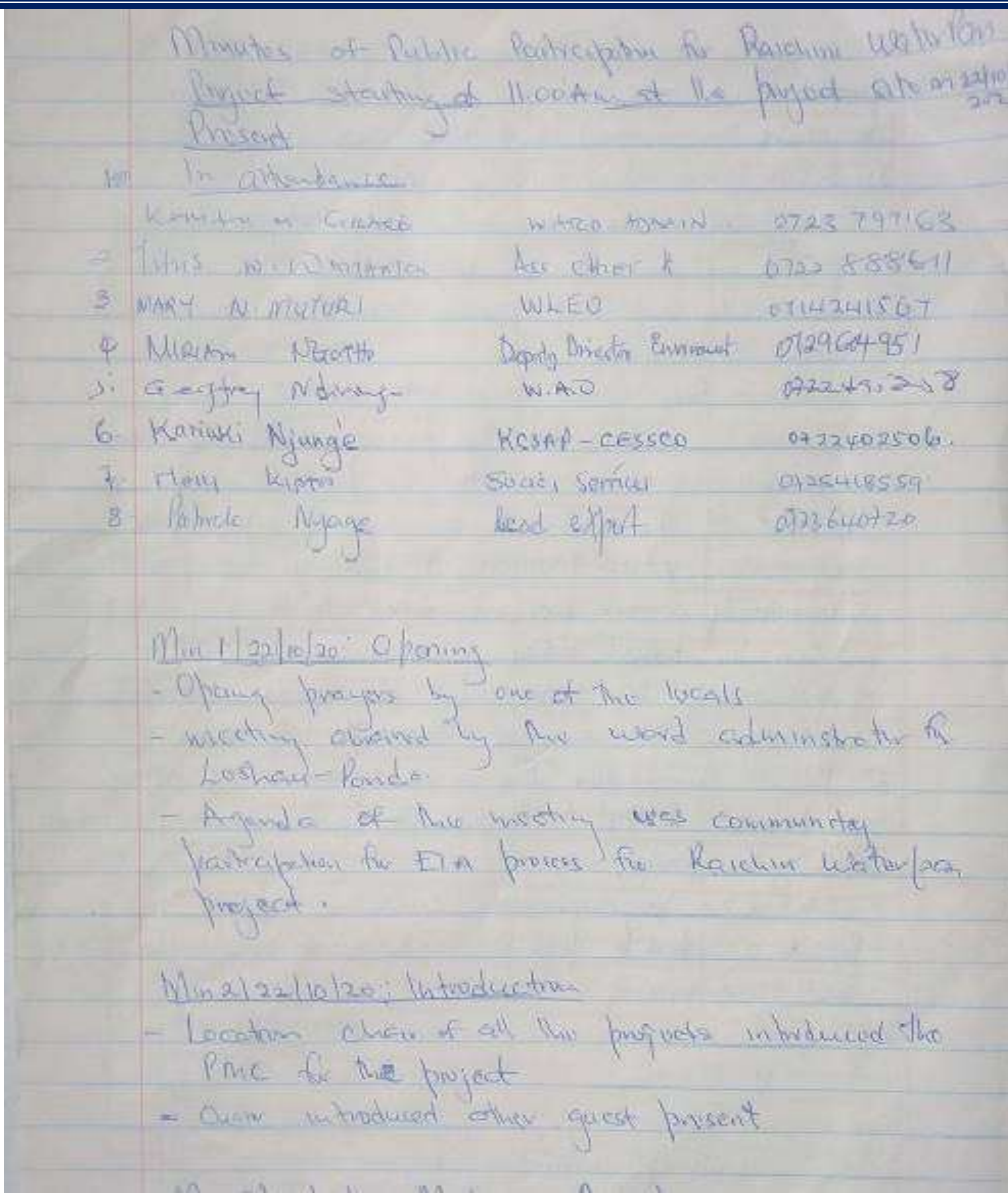
☑ The proposals will then be submitted to NPCU for clearance for implementation by group members of the proposed Sub-projects.

Completed by: ESS Team Members and a member of the Sub-project:-

1. Name: Kariuki Njunge Department Agric. Livestock & Fisheries (KCSAP)
   Designation CESSCO Signature [signature] Date 5th March 2020.
2. Name: Kanyeke James Department ALF – ATMS Nyahururu
   Designation Ams Manager Signature [signature] Date [illegible]
3. Name: ______ Department ______
   Designation ______ Signature ______ Date ______

7

APPENDIX 7: MINUTES OF PUBLIC PARTICIPATION& LIST OF ATTENDANCE



Minutes of Public Participation for Raichiri Water Pan Project starting at 11.00AM at the project site on 22/10/202[illegible]

Present

No In attendance

No	Name	Designation	Phone
1	Kamau [illegible] Gichuki	Ward Admin	0723 797163
2	Titus W. [illegible]	Ass chief [illegible]	0722 888611
3	MARY N. MUTURI	WLEO	0714241567
4	Miriam Nzeotto	Deputy Director Environment	0729604951
5	Geoffrey Ndungu	W.A.O	0722 [illegible] 8
6	Kariuki Njunge	KCSAP – CESSCO	0722402506.
7	[illegible] Kiptoo	Social Service	0725418559
8	Patrick Njage	lead expert	0723640720

Min 1/22/10/20: Opening

- Opening prayers by one of the locals
- meeting chaired by the ward administrator for Loshau-Ponda.
- Agenda of the meeting was community participation for EIA process for Raichiri Water pan project.

Min 2/22/10/20: Introduction

- Location chief of all the projects introduced the PMC for the project
- Chair introduced other guest present

project and take care of it called on the community to share the resource peacefully without conflicts

2) Social Service officer - Nelly Kiptoo - Sub-county
- emphasized on the need of the community to accept the project and evaluate the project benefits & impacts
- Community sighted project as beneficial in terms of water availability.
- distance from water point will shorted
- Social issues of the project addressed and community have accepted the project
- Talked to the community on need of have good committee & sub-committee to manage the project
- Community concern was on locals to be given opportunities when the project issues
- Community have intervened on ~~secret~~ moral decay in the Social through life skills

3) Project Co-ordinator Eng. Kamuta Njuage - KCSAP
- Introduced KCSAP to the members and evaluated on projects done by the group
- KCSAP is the key organization doing the project
- Project aimed to produced water for household use through small scale farming
- Project activities
  i) Desilting
  ii) Fencing
  iii) Pump installation (50

List of Attendance 22/10/2020
to public participation

	Name		Id no	Telephone	Sign
1	Simon	Mukoyia	9810 529	0714027672	
2	Dennis	Kamau	10245535	0707369384	
3	George	Kamuyu	12416462	0721960836	
4	Samuel	Ndungu	20555977	0728206867	
5	Joseph	Kio			Kiyo
6	James	Kioni	2386943	0705913264	
7	Francis	Machime	7013558	0723918751	
8	James	Kinyanjui	6248451	0717336628	
9	Patrick	Waitine	0	0745168703	
10	Charles	Ndirangu Machariа	24007642	0727669292	
11	James	Ngugi	22160436	0758285187	
12	Joseph	Kariuki	13263672	0715243947	
13	Michael	Gitonga	9392682	0727223393	
14	PETER	NJERGA	14428240	0700235011	
15	James	WAIRIU	20584316	0707282961	
16	RICHARD	MBARI	26613442	0727092426	
17	ELVIS	MAINA	28664824	0729606054	
18	David	Njuku	13646057 ~~0729748617~~	0729748617	
19	Duncan	Ngige Ngonyi	4671259		PLOUMA
20	John	M. Kilili	6435031	0721231183	
21	David	Ndegwa Mwai	0615816	0723883565	
22	JOSEPH	MUIRU	4538707	0713402004	
23	Samuel	Gakere Gitau	5777759	0713218408	
24	Gilbert	Kamau Maina	0615853	0726745467	
25	JOHN	MURIGI CHEGE	467422	0727397768	
26	Simeon	Gatundu Karuki	2320551	0727406077	
27	Esther	Wanjiru	2740026	0758281813	
28	Christine	Kariuki			
29	CECILIA	WANGUI	23897741	0701702342	CAROS
30	ANN	WAIRIMU		0745237778	
31	Alice	Wangui Mwai	7994108	0728092073	
32	KEZIAH	WAMBUI NDUNGU	28337192	0741056524	

	Name		Id no.	Telephone	Sign
33	Virginia	Wangari	14428234	0715031592	[illegible]
34	Ruth	Kamau	24944428	0726299095	[illegible]
35	John	[illegible] Karanja	0614357	0723 743723	[illegible]
36	Jane	[illegible]	0802544	0712245975	Jane
37	Raphael	[illegible]	0344 0032	0720229247	[illegible]
38	Harun	Kungu	21904152	0716847234	[illegible]

APPENDIX 8:CBO CERTIFICATE OF REGISTRATION

Republic of Kenya

MINISTRY OF LABOUR, SOCIAL SECURITY AND SERVICES

Certificate No. 41105

Certificate of Registration of Community Based Organization (CBO)

This is to Certify that

RAICHIRI PONDO DAM COMMUNITY BASED ORGANIZATION (CBO)

is registered with the office of the Sub County Social Development Officer (SCSDO) as a Community Based Organization (CBO)

NYA/NORTH/REG/CBO/151	31ST JANUARY, 2019
Registration No.	Date of Registration
	Division
PONDO	NYANDARUA NORTH
Sub-location / Ward	Constituency / Sub County
MATHINGIRA	NYANDARUA
Location	County
F. G. NYANGI	31ST JANUARY, 2019
For: Sub County Social Development Committees	Date of Issue

THIS CERTIFICATE IS VALID UP TO 31ST JAN. 2020

Note: The Contents of this Certificate should not be erased, altered or defaced in any way.

APPENDIX 9: SAMPLE QUESTIONNAIRE

PUBLIC VIEWS QUESTIONNAIRE

The Department of Agriculture, Livestock and Fisheries Nyandarua County, through the Kenya Climate Smart Agriculture Project (KCSAP) has contracted an Environmental Impact Assessment (EIA) expert to carry out an Environmental and Social Impact Assessment (ESIA) report for the **PROPOSED RAICHIRI WATER-PAN DE-SILTING PROJECT FOR SMALL SCALE IRRIGATION** on **NYANDARUA/ LESHAU BLOCK 3 (RAICHIRI) PLOT No. 23, NYANDARUA COUNTY.**

Public participation is a requirement according to Regulation 17 (1) of the EIA/ Audit Regulations of 2003.

The objective of public participation is to ensure that all people who are likely to be affected by a proposed project, either positively or negatively are fully informed, and given an opportunity to raise their concerns.

The contracted expert kindly seeks the views and opinions of the community likely to be affected by the proposed project. You are requested to fill in this form, thus providing information helpful in decision making in regard to the proposed project. Your views will be handled with confidentiality. **Your cooperation is highly appreciated.**

1. **Are there BENEFITS (positive impacts) you think will arise from the establishment of the proposed development?**

(a) Yes [✓] (b) No [ ]

If YES, please name them:

- creation of job opportunities
- Clean water for home consumption & livestock
- Irrigation of kitchen garden
- Increase Production of livestock & crops
- Schools will have access of clean
- It will reduce the workload of water fetching
- Trees will be established (nursery) and planting more trees
- more time to cater for crops & livestock

2. **Are there ENVIRONMENTAL PROBLEMS (negative impacts) you think will arise from the establishment of the proposed development?**

(a) Yes [✓] (b) No [ ]

1

If YES, please name them:

- Disease like malaria caused by water
- life risks due to drowning of people in the dam.
-

3. **Are there SOCIAL RELATED PROBLEMS you think will arise from the establishment of the proposed development?**

(a) Yes ☑ (b) No ☐

If YES, please name them:

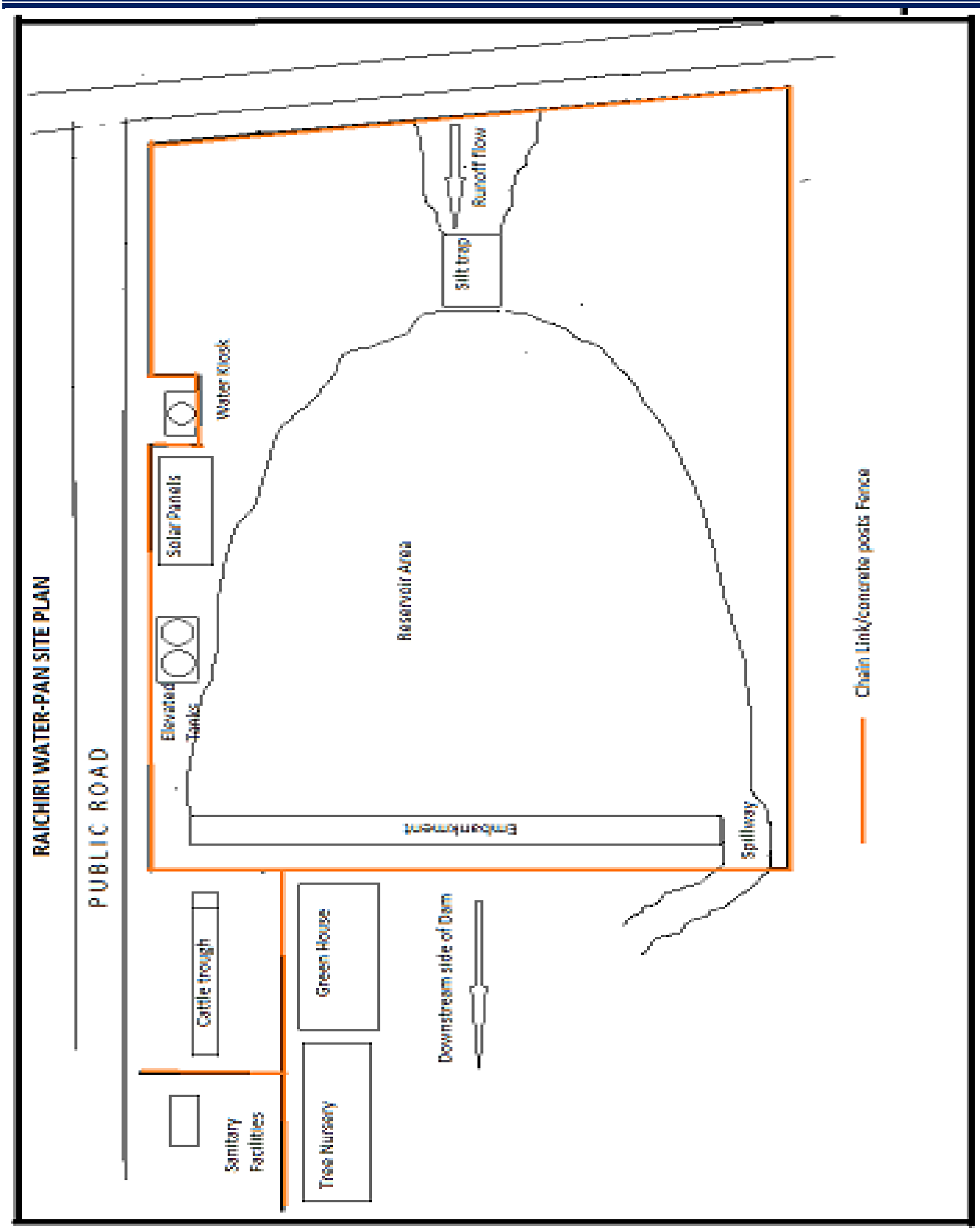
- Dust
- Relocation of watering point
- Air pollution from noise & smell from the machines
- Building the dam
- Newcomers in the area who will lead to our girls/boys degrade their morals
-

4. **Suggest ways in which the negative problems identified in 2 and 3 above can be addressed**

- community to have mosquito nets in their homes.
- fencing to prevent an entrance to the dam.
-

2

APPENDIX 10: RAICHIRI PROJECT SITE PLAN



APPENDIX 11: NO OBJECTION LETTER ON ROAD RESERVE USE FOR PIPELINE

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF NYANDARUA

TRANSPORT, ENERGY AND PUBLIC WORKS

P.O BOX 701-20303 Ol' Kalou

NYA /CONT.GOVT/TEPW/GEN./1\ (144) 22ND FEBRUARY 2021

The Coordinator,
Kenya Climate Smart Agriculture Project,
NYANDARUA

Thro'

The Chief Officer,
Livestock and Fisheries
NYANDARUA

RE: NO OBJECTION TO THE DEVELOPMENT WORKS FOR RAICHIRI DAM

Reference is made to your letter Ref: KCSAP/NYA/GEN/VOL.2/47 dated 19th February 2021 forwarded to this department through the Chief Officer Livestock and Fisheries on 22nd February 2021.

The Department of roads has **"No Objection"** to the plans by the Kenya Climate Smart Agriculture Project (KCSAP) to lay pipes on the extreme edges of the roads around Raichiri Water Dam. However, to ensure that this activity does not interfere with the continuous road works, I insist on having a member of staff from the department of roads present during that period.

Kind regards,

County Government of Nyandarua
Transport, Energy & Public Works
CHIEF OFFICER

Lawrenee Gitau
Chief Officer - Roads, Transport, Energy and Public Works
NYANDARUA