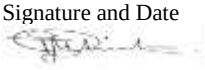
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT FOR THE PROPOSED REHABILITATION OF KAMOLA WATER PAN, EAST YIMBO LOCATION BONDO SUB COUNTY IN SIAYA COUNTY

Certification

This is to certify that the Lead Expert hereunder as per the requirements of the National Environment Management and Coordination Act, 1999, carried out this Environmental Impact Assessment.

Name of The Expert	NEMA Reg.NO.	Contact Details	Signature and Date
Dr. Volenzo Tom Elijah	7332	+254 724222154	

Proponent

I, the undersigned, certify that all kinds of information provided for the purpose of this Environmental Impact Assessment project report, without any prejudice, is true to the best of my Knowledge

Willis Atiang
Project Coordinator,
KSCAP, Siaya

Date and Seal: 12.02 .2020

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List of Acronyms

AEZ	Agro- Ecological Zonation
AIDS	Acquired Immune Deficiency Syndrome
CBO	Community Based Organization
C- ESMP	Contract specific Environment and Social Management Plan
CESSCO	County Environment and social Officer
CIDP	County Integrated Development Plan
CITES	Convention on International Trade in Endangered Species
COVID 19	Corona Virus disease
CPP	Consultation and Public Participation
CPU	County Project Coordination Unit
CSA	Climate-Smart Agriculture
EA	Environmental Audit
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Co-ordination Act
EMP	Environmental Management Plan
EMS	Environmental Management System
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social safeguards
ERP	Emergence Response Plan
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHGs	Greenhouse gases
G.o.K	Government of Kenya
HACCP	Hazard Analysis Critical Control Point
GPS	Geographical Positioning System
HIV	Human Immunodeficiency Virus
ILO	International Labour Organization
KCSAP	Kenya Climate Smart Agriculture Project
KBS	Kenya Bureau of Standards
KFS	Kenya Forest Service
KWS	Kenya Wildlife Service
LM	Lower Middle Zone

Mg/L	Milligrams per Litre
MOU	Memorandum of Understanding
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NLC	National Land Commission
NOX	Nitrogen Oxides
OSHA	Occupational Safety and Health Act
PAPs	Project Affected Persons
PCB	Polychlorinated biphenyls
PCR	Physical Cultural Resources
PPE	Personal Protective Equipment
RAP	Relocation Action Plan
SEA	Sexual exploitation and Abuse
SH	Sexual Harassment
SOP	Standard Operating Procedure
TIMPs	Technology, Innovation and Management Practices
WHO	World Health Organization
WRA	Water Resources Authority

Executive Summary

Kenya is predominantly an agro based economy where small-scale farmers dominate with about 75% of the populations' livelihoods directly linked to agriculture. Agriculture is thus key to overall national development, equity objectives and sustainable growth. Intuitively, weather-related disasters, particularly droughts, present a major challenge to the predominant rain fed agricultural production system with profound adverse impact on the economy. The adverse effects negatively affect foreign exchange earnings, food security and nutrition, employment and rural livelihoods. Adaptation to extreme weather impacts is thus a priority under National Adaptation Programme Action plans (NAPAs). Among other objectives, NAPAs envisages improved crop productivity through irrigation. Building farmer resilience to climate change risks is the main objective under the Agricultural Sector Transformation and Growth Strategy, which in agriculture operationalizes the climate change Act.

The Kenya Climate Smart Agriculture Project (KCSAP) under the Support of World Bank (WB) intends to increase agricultural productivity and build resilience to climate change risks in the targeted smallholder farming and pastoral communities in Kenya, and in the event of an eligible crisis or emergency, to provide immediate and effective response. This includes the containment of pests such as locusts. The Project activities will contribute to these objectives by up-scaling Climate-Smart Agriculture (CSA) Practices and supporting smallholder farmers to adopt integrated climate-smart Technology, Innovation and Management Practices (TIMPs) and also support investments through a community driven development approach in smallholder agro-pastoral production systems as well as extensive pastoral production systems in selected 24 counties of Kenya. It's against this backdrop that the County government of Siaya, one of the recipient counties is seeking to undertake Environmental and Social Impact Assessment for sub-projects which fall under the second Schedule of Environment Management Act (EMCA).

In accordance with the requirements of the National Environment Management and Coordination Act (EMCA), 1999 (REVISED 2015), Environmental and Social impact Assessment for the proposed facility has been undertaken as it warrants such scrutiny under the second schedule of the Act, as well as in fulfilment of the world Bank operational guidelines Environmental and Social safeguards (ESS). The objective for this is to integrate environmental and social concerns in the project planning and implementation processes. This report was carried out in line with EMCA, 1999 and the Environment Impact Assessment and Audit Regulations, 2003 and the World Bank Environment and social safeguards guidelines OP 4.01.

This ESIA has considered all the relevant legal, policy and institutional framework, key among them; the World Bank Environment and Social Safeguards Policies, the existing environmental regulatory framework EMCA Cap 387 and the Environmental (Impact Assessment and Audit) Regulations of June 2003, Occupational Health and Safety Act (2007), the Water Act (2016), wastes disposal regulation of 2006, environmental standards, and sustainable use of natural resources principles. Other relevant legislations to this EIA that were considered include the public health, physical planning, land planning Acts and gender promotion, HIV/AIDS prevention and control Act, and sexual offences Act.

The ESIA process was achieved through public participation exercise and consultation involving 4 key informant (KI) interviews and Focus Group Discussions (2) as well as desk reviews of critical planning documentation such as Project Development Objective (PDO). The report gives a summary of the findings. The proposal is in line with vision 2030, CIDP and National adaptation Action Plan (Napas). Though the analysis from the assessment reveals positive livelihood and environmental impacts, a number of social risks such as Gender Based Violence are likely. Minor environmental impacts such as solid waste and emissions, public health and safety, water quality management, emissions to air and energy consumption are also anticipated.

Measures to mitigate these impacts are as follows: Solid waste, there is need to provide collection facilities and encourage waste segregation through sensitizing workers and community on waste management practices and ensure recycling of recyclable wastes such as paper, metals, and plastic. To mitigate public and o~~O~~ccupational health and safety the proponent will provide suitable personal protective equipment during construction to avoid muscular strains, ensure water is treated and safe for workers and community, the pan area will be fenced to reduce risk if accidental drowning of children and livestock, and~~s~~ sensitizing the surrounding community on risks of drowning. To mitigate on the use of pesticides, farmers will be trained on safe and effective use of pesticides including disposal of used pesticides and containers. The proponent will

also undertake surveillance, monitoring of water quality and regular desiltation. Measures to mitigate air, dust and noise pollution are sprinkling to minimize dust emission during construction, ensure regular servicing and maintenance of vehicles and machinery. The proponent will ensure that all COVID 19 prevention measures are enforced e.g. keeping social distance, wearing masks rightly, sanitizing and washing of hands regularly.

The proponent as agreed during the public participation to review and incorporate agreed changes in the procurement plan as well coordinate and oversight the implementation of the recommendations thereof. The main issues and concerns raised during public consultation and meetings relate to Gender based violence (GBV), employment by the contractor and design issues such as the number of toilets and maintenance of the project. The issues were addressed by various stakeholders including the project engineer who was tasked with the revision of the bill of quantities to incorporate the need for separate toilets for each gender. The PCU and the contractor will in coordination with the local leadership undertake community awareness on GBV and put in place grievance redress mechanisms (GRM) for tracking and resolving any emerging issues during the Project implementation.

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 such as adherence to Ministry of Health Standard operation procedures on social distancing, open air congregation, and use of masks, hand washing and limiting the number of participants.

Based on the assessment, the project is, therefore the subproject is recommended for approval by the National Environment Management Authority (NEMA). The conditional license will be tracked through annual environmental and social audits after operating for one year. Implementing the ESMP will cost Kes 1.8 million and shall be part of the project contract. The Proponent should share the ESMP with the selected Contractor and the latter will be required to develop and implement a Contractor-Specific ESMP (C-ESMP). The CPCU will follow up and monitor implementation of the ESMP. The CPCU/ CESSCO, contractor, the supervising water engineer, the proponent and the Siaya county environmental committee will be required to ensure that the mitigation measures proposed for the construction, operation and decommissioning phases in the ESMP are followed.

CHAPTER ONE

1.0. INTRODUCTION

1.1. Project Background

The overall national development objectives of the Government of Kenya are accelerated economic growth and rising productivity of all sectors, equitable distribution of national income, alleviation of poverty through provision of basic needs, enhanced agricultural production, industrialization, accelerated employment creation and improved rural-urban balance. These objectives are facilitated through a myriad of interventions that are funded through local and international resource mobilization. The extent to which these objectives can be realized on a sustainable basis and in an environmentally sound manner is dependent on the degree and economic efficiency with which critical factors of production are made available and combined with each other to produce the desired results.

Access to clean and adequate safe drinking water and basic sanitation as stipulated in Article 43 of the Constitution of Kenya is a basic human right as well as critical objective of Sustainable Development Goal (SGD), No.6. Thus, this calls for significant capital investments in the sector to guarantee service provision. Siaya County has relatively low and inadequate water supply. Access to piped water is still a major challenge in the project area where a few households are served with piped water, hence inadequate access to portable water, with less than ten percent of the population having access to piped water. Approximately 80 per cent of the households thus do not have access to adequate clean water. The existing sources of water include water pans, rivers and boreholes. The only reliable water sources are sub surface water which are mostly contaminated and aggravates the cases of water borne diseases i.e. typhoid. The county thus requires massive investment in the water sector for it to address the water shortage problem.

The proposed water pan sub-project has more positive impacts on the community than negative impacts: provision of water for domestic uses, irrigation and livestock, and creation of employment opportunities. It represents a key adaptation intervention to climate change that can cushion livelihoods from erratic weather patterns. Since the proposed project falls under the category of the second schedule of EMCA, its implementation calls for consideration of likely adverse social, cultural and economic impacts. The Environmental and Social Impact Assessment (ESIA) report predicts the likely impacts, their significance, and proposes mitigation measures for identified impacts. The Environmental and social Impact Assessment (ESIA) study for the project was conducted in January, 2020. The assessment considered all the impacts of the project from construction, operation and decommissioning. The Environmental and Social Management Plan (ESMP) from the exercise will form part of the contract and will be provided to the contractor, who will be required to implement the outlined mitigation measures.

1.2. Purpose and Nature of the Project

The purpose for which the project is initiated is to increase access to water for agricultural productivity and climate change mitigation and adaptation. The overall objective of the project is to build resilience to climate related risks, poverty alleviation and environmental sustainability. The specific aims of the Environmental and Social impact assessment were to:

- Provide a detailed description of the proposed project in terms of location, objectives, design, activities, materials, inputs outputs, products and waste
- Provide a detailed description of the baseline environment and socio-economic conditions of the project area
- Review the relevant legal policy and institutional framework applicable in the implementation of the proposed project
- Provide a detailed description of the potentially affected environment
- Identify, predict and analyze the environmental and socio-economic impacts of the project , including seeking neighbor's and public views and or/concerns
- Provide an analysis of the project alternatives in terms of site, design , implementation technologies and provide reasons for preferred options

- Provide a detailed Environmental Management Plan proposing measures for mitigating negative environmental impacts, cost for offsetting such measures, timeframes, responsibility and monitoring frequency and indicators to implement the measures
- To provide an action plan for management of the occupational/public health and safety concerns

1.3. Terms of Reference

The key instructions to the ESIA expert/ consultant were as follows:

- ✓ Describe the proposed project activities with a focus on potential adverse impacts of inputs during construction, waste generation and disposal
- ✓ Elicit community and stakeholder views for effective decision making in line with World Bank ESS guidelines, EMCA and County government Act
- ✓ Review Kenya's environmental governance/legislation, World Bank group ESS policies and other standards related to the operation of the project and concise description of the same
- ✓ Establish Environmental baseline while identifying areas likely to be impacted by the project as per the laid down legislation and guidelines on the Environment
- ✓ Produce an ESIA report that identify key environmental and social aspects impacted on by the proposed project while recommending appropriate mitigation measures in accordance with Environmental Impact and Audit regulations, 2003 policies and relevant legal framework and World bank operation procedures, policies and safeguards OPs.
- ✓ Develop an Environmental & Social Management Plan (ESMP) outlining measures for minimizing, eliminating or mitigating the adverse impacts on the environment and ensuring the health and safety of the workers and community
- ✓ Recommend mitigation and action plans as reference for performance on Environmental management for internal and external stakeholders

1.4. Methodology

1.4.1 Environmental Screening Criteria

Screening exercise was undertaken to identify pertinent issues for coverage in line with the TOR (Appendix II) to complement the world bank EMSF screening checklist findings (Appendix I). The pertinent issues are as outlined. The three important aspects of the ESIA process included: Collecting information, evaluating the information and presenting relevant social & environmental information for use in project planning, implementation, decommissioning, Monitoring and evaluation. The data collection achieved through administration of 45 questionnaires (Sample provided in Appendix X with a response of 90%), 4 gender (Youth, Women, Men and community leadership) segregated Focus Group Discussions (Appendix IX) and one community public baraza (Appendix XII-XIII, attendance of 66 persons)

Expert Consultations and scenario building were led by Volenzo Tom, (Lead Expert and Agroecologist/ Disaster Risk Reduction Specialist), Anne Kaee (sociologist), Dayan Achieng (Hydrologist) and Richard Oruko (Environmental Scientist). Some of the Key documents reviewed as source of secondary data include;

- ✓ The KCSAP Project Appraisal Document (PAD)
- ✓ EMCA Cap 387 and EMCA Amendments 2015
- ✓ Siaya County CIDP 2018-2022
- ✓ 2019 Census Reports Volumes I and II.
- ✓ The World Bank Environment and Social Safeguard Framework
- ✓ Socio-economic survey reports (2015/16 Kenya Integrated Household Budget Survey (KIHBS)
- ✓ Hydrology Assessment Study Report
- ✓ The World Bank Screening Checklist already administered by the CPU and approved by NEMA
- ✓ Sessional papers and s~~S~~ectoral policies on ~~Environment~~environnent, ~~Agriculture~~agriculture, water, forests, wildlife, fisheries, and natural resources.

1.4.2. Data Collection Procedures

The Consultant used screening and scoping report to avoid unnecessary data. The data collection was carried out through questionnaires/standard interview schedules, key stakeholders' meetings, use of checklists, observations and photography, site visits and desktop environmental studies, where necessary in the manner

specified in Part V (section 31-41) of the Environmental (Impact Assessment and Audit) Regulations, 2003 and World Banks ESS guidelines. The lead expert practicing certificate is attached in Appendix (III). The questionnaire and Key informant Interview schedule (KII) are in appendix X and XI respectively. The findings of the ESMF screening which informed the necessity for an ESIA Project report is in appendix (I) of this report. The exercise was conducted through desk studies and field work. Before the fieldwork, specific areas were identified for subsequent site visits. These included areas where major operations and work would take place during construction and operation of the project. In many sections of this study, the history, designs, engineers', layout, Key informant and Focus Group Discussions feasibility report was used to inform the study. The general steps followed during the assessment were as follows:

- ✓ Environmental/social scoping that provided the key environmental issues
- ✓ Desk Stop studies and interviews
- ✓ Physical inspection of the site and surrounding areas
- ✓ Reporting

1.4.3. Environmental Screening and Scoping

This step was applied to determine whether an ESIA was required and what level of assessment was necessary. This was done in reference to requirements of the EMCA, 1999, and specifically the second schedule and World Bank Safeguard policies. Issues considered included the physical location, sensitive issues and nature of anticipated impacts. The Scoping process helped narrow down onto the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects whose analysis as given in Appendix II. The project does not trigger involuntary displacement and resettlement.

1.4.4. Desktop Study

This included review of existing documents in regard and review of proposed activities, project documents, designs policy and legislative framework (specified in section 1.4.1 above), as well as the environmental setting of the area among others. This was complemented with discussions with managers and design engineers and interviews with community.

1.4.5. Site Assessment

Field visits were carried out for physical observations of vegetation, water resources, physiography, geology and soil. At the visited sites, documentation on geology, soil characteristics and landscape were recorded. Photographs at selected sites were taken for inclusion in this report to further emphasis these observations. Field visits meant for physical inspections of the site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts were conducted. It also included further interviews with the community and key stakeholders.

1.4.6. Public Consultation

The ESIA experts, in consultation with KSCAP, Siaya sought the views of persons who may be affected by the proposed project. The public consultations were preceded by the identification of stakeholders and project affected persons (PAPs- appendix XIV) and plates 11-13. Public meetings were undertaken at the proposed site and the project area (Appendix on public baraza attendance- appendix VIII). The general public baraza was attended by 66 persons while FDGs was attended by 35 persons. The record of minutes is provided in Appendices XII to XIII. Evidence of attendance (photos) is provided in Appendix plate 11-13

1.4.6.1. Key Stakeholder Consultation

KII were carried out with the objective of improving the understanding of the procedures and key concerns in the ESIA process in general. The KII schedule is provided in Appendix (XI). A total of government 10 officers (lead agencies) were interviewed on specific issues of concern to the project implementation (administrative, legislative, policy instruments). The following were consulted

- ✓ Kenya Wildlife Service (KWS)
- ✓ Kenya Forest Service (KFS)
- ✓ County Environment Officers
- ✓ Department of Agriculture
- ✓ National Museums of Kenya (NMS)
- ✓ Governor office/ Ward office
- ✓ WRA (Water Resources Authority)

- ✓ Water Department
- ✓ Fisheries Department
- ✓ Chief- East Yimbo Location

1.54. Questionnaires

The aim of administering questionnaires was to capture community perception on the project's benefits, potential problems and possible solutions and whether they felt the project should be implemented or not. 90 % of the questionnaires were returned (sample in appendix X)

1.65. Data Analysis

The ESIA expert used past experience and knowledge, scenario building, community input and expert opinion to analyze the data from the desk studies and field visits in order to determine the potential impacts of the proposed project, the severity of effects arising from these impacts and how any adverse impacts can be best mitigated and positive impacts enhanced. This analysis provides the framework for the recommendations on corrective actions and remedial measures and provides the basis for the formulation of the environmental and social management plan as the actionable output from the ESIA process. The data was considered in terms of occupational health and safety with respect to the construction and operational phases of the proposed projects, as well as sustainability concerns such as global environmental protocols and impacts.

In analyzsings of Environmental and social impacts the following were considered (provided in the checklist on appendix II)

- ✓ The current land use and impact of proposed project
- ✓ General land use of the adjacent sites
- ✓ Sensitive area and habitats or critical habitat
- ✓ Threatened plant and animal species
- ✓ Effects on Ambient/Natural Environment
- ✓ Drainage systems and storm water flow (including pollution indicators, impacts on water flow patterns and quality aspects, user interference and contamination)
- ✓ Topography- especially landscape and soil erosion
- ✓ Water quality aspects
- ✓ Soil conditions and potential contamination, landscape/aesthetics degradation
- ✓ Drainage patterns in relation to waste water/effluents, oil spillages
- ✓ Air quality in relation to atmospheric emissions and vehicles/machinery
- ✓ Noise and vibration
- ✓ Social issues
- ✓ project alternatives considerations such as scheduling, location, demand, technology, inputs and process alternatives

1.86. ESIA Responsibilities

The ESIA was to be carried out to full completion within a period of 21 days from the date of consultancy award. The Consultant (Lead Expert) coordinated the day-to-day functions and any related institutional support matters. The Consultant ensured constant briefing of the client during the exercise. The ESIA Report from the findings was compiled in accordance with the World Bank ESS guidelines as well NEMA and the findings where the (summary of the ESMP) subjected to community disclosure (Appendix viii) on 6th June 2020 where 20 community members attended under strict observation of Containment measures on COVID 19 and Ministry of Health Standard operating procedures (SOPs). Description plans and sketches showing various activities are part of the Appendices (Structural layout of latrines and fencing in appendix V and VI; Ground layout and topographical map in Appendix VI and VII respectively).

1.97. Organization of the ESIA Report

The report is organized into nine substantive chapters. Following this introductory chapter, Chapter 2 discusses the Project activities. Chapter 3 gives the environmental and social baseline, chapter 4 discusses the project alternatives Chapter 5 discusses Policy, Legal, Institutional and Administrative Framework.. Chapter 6 analyses public participation and its outcomes. Chapter 7 identifies the Potential environmental and social impacts and mitigation measures. Chapter discusses while chapter 8 provides the ESMP monitoring plan. Chapter 9 provides the conclusions and recommendation. This is followed by some of the literature sources consulted (References) and Annexes to the report.

1.10~~8~~. Project Budget and Timelines

The estimates cost for constructing the water pan (Appendix) is estimated at a cost of Kes. 15,122,774. The project construction and auxiliary works should be completed within 6 months will subject to satisfactory mainstreaming of World Bank ESS guidelines and operating procedures and upon NEMA and requisite statutory approvals.

CHAPTER TWO
2.0. NATURE OF PROPOSED PROJECT AND PROPOSED ACTIVITIES

2.1. Location and Scale of Project

The proposed project is primarily rehabilitation and modernization of existing silted and debilitated auxiliary facilities at existing water pan in Siaya County. Siaya County is one of the six counties in Nyanza region. It has a land surface area of approximately 2,530 km² and water surface area of approximately 1,005 km2. It borders Busia County to the North West, Vihiga and Kakamega counties to the North East, Kisumu County to the South East and Homa Bay County across the Winam Gulf to the South. The water surface area forms part of Lake Victoria (the third largest fresh water lake in the world). It approximately lies between latitude 0º 26´ South to 0º 18´ North and longitude 33º 58´ and 34º 33´ East.

The proposed development is a community subproject located in Kamola village, Othach sublocation, East Yimbo location of Bondo Sub County, Siaya County. The GPS coordinates are 0, 01', 43.8'' S and 34, 09', 28.2'' E. The land parcel measures 1.25 Ha under the trustee of Siaya County government registration East Yimbo/Nyamonye/ 2370 (Government Land Ownership document by Registrar of lands appendix IV). It is approached from Nyamonye center along Bondo-Usenge through a weather road approximately 1.5 km off the Bondo- Usenge highway.

2.1.1: Project Description

The subproject is being undertaken to rehabilitate, expand and improve on the already existing but heavily silted water pan that has been in existence for over 40 years. The proposed capacity of the water pan is 20000M^3 with potential to serve a catchment of 500 Households (2000 People) and can serve the community in an event of domination of dry weather patterns resulting to drought (Commonly referred to as meteorological drought) Plates 1 to 3 provides information on vegetation, livelihood activities and status of the pan. Components of the Proposed Water Pan are as outlined:

- ✓ Pan area
- ✓ Outlet drains
- ✓ Bank of basin
- ✓ Cattle trough
- ✓ Draw off outlet /Community water point
- ✓ Earthworks
- ✓ Toilet, bathroom (Construction of ablution block consisting male and female toilets)
- ✓ Biodigester
- ✓ Solar powered raised water tanks (2.NO)

2.1.2: Pan Reservoir

The planned capacity is 20,000m3 with embankment which can serve the community for at least 3 months in the worst scenario of drought, it will mainly consist of desilitation works and stabilization of embankments as well as a silt trap and spillway

2.1.3: Spillway

The spillway is a critical part of water pan construction. An under-designed spillway will result in the water pan over-topping or serious spillway erosion during peak runoff. These situations can cause major water losses, potential flooding and water panage downstream, in addition to the costs to repair the water pan. The

spillway shall have a masonry wall (rip rap) towards the exit and its walls. The spillway shall be PVC pipe 3000mm (12 inches) diameter buried underground, with masonry inspection chambers along the pipeline.

Plate 1: Vegetation and Livelihoods:

Vegetation mostly shrub dominated by Acacia species and cattle as one of the livelihoods for farmers in the area grazing in the vicinity of the proposed water pan. The rehabilitation Project will not interfere with the grazing land but rather enhance water for livestock production. The ESMP has integrated measures to address erosion in the pan area and catchment at large

2.1.4: Embankment
Embankment constructed will be constructed using soil excavated from the pan area s and this will greatly reduce solid waste generation during construction phase. Plate 3 provides some of the risks to be considered in the Environmental and Social Management plan (ESMP) as well as the Emergency Response Plan (ERP)

2.1.5: Draw off outlet /Community water point
The water point will be constructed to the eastern side of the water pan with riprap lining the walls to reduce erosion.

Plate 2: Heavily silted pan with Cyprus weeds growing in the pan

Risks of siltation will have to be addressed in the ESMP and catchment conservation plan

2.1.6: Earthworks
The volume of earthworks will be determined by specifications in the appendix (VI). The details on dimension and pan volume variables are provided in appendix. The project will be built as an upgrade of existing facility which is heavily silted. All construction activities will be done with clear regards to provision of drainage channels. The water pan will be rehabilitated to the highest standards to safeguard against breakage of embankments and possible disruptions of traffic on the lower end of the water pan.

2.1.7. Toilet and bathroom Facilities
Toilet facilities will be provided during construction and operation phases. The dilapidated toilets in plate (4) provides valuable information on design issues to be addressed in the new project. The toilets will adhere to the following recommendations:

- ✓ Toilet rooms must not have direct access community water point. An anteroom or a 90-degree turn into the toilet room is satisfactory.

- ✓ Gender sensitivity by constructing two toilets, one for men and the other for women.
- ✓ Toilet rooms shall be equipped with self-closing doors.
- ✓ A floor drain should be provided in each toilet room.
- ✓ Toilet rooms must be finished with durable and impervious materials and equipped with soap and towel dispensers

2.1.8. Silt trap

Silt traps are important auxiliary structures in water pans construction and maintenance. The proponent will thus adhere to structural standards that contribute to mitigation of siltation

Plate 3: Breached embankment of the existing water pan to be rehabilitated

This is evidence of erosion and downstream flooding risks in the event of abnormal rainfall year calling for high structural standards and an Emergency Response Plan (ERP)

2.1.9. Scope of Construction Activities

The scope of the technical works for the Proposed development ranges from excavation and earth moving, compacting and filling, reinforcement, form/structure works, carpentry, masonry, plastering, electrical works and painting.

2.1.9.1. Construction Inputs and Raw materials

Construction raw materials includes sand, cement, stones, crushed rock such as gravel/ballast, ceramic, steel metals, roofing materials including tiles, painting materials among others. All these will be obtained from licensed dealers and especially those that have complied with the environmental management guidelines and policies.

2.1.9.2 Machinery and Equipment

Trucks, concrete mixers tools and other relevant construction equipment will be utilized for the removal of debris, transportation of materials, and resulting construction debris. Most of the machinery will use petroleum products to provide energy.

2.1.9.3 Labour

The labour force, most of which is local will be both skilled and non-skilled workers and will require services such as energy, water supply and sanitation facilities. The contractor will as much as possible hire local labour as provided for in the ESMP and part of conflict minimization effort.

2.1.9.4 Water

Water for construction purposes which will be supplied from an existing silted pan reservoir. In case large volumes of water are required, the contractor will use bourses to transport the water from nearby streams or rivers for construction works.

Plate 4: Dilapidated toilets at the current site

The rehabilitation Project will use biodigester technology to address the problem of high-water table and risks of biological hazards, all which has been captured in the ESMP

2.1.9.5. Power

The pumping of water to the overhead tank will be powered through installation of a free maintenance solar system to reduce on running costs and contribute to use of clean energy as one the sustainability measures.

2.1.9.6. Construction Activities

Construction activities will include the following; -

- ✓ Excavation of top soil, laying of foundation and building works
- ✓ Procurement of construction materials from approved dealers
- ✓ Storage of the construction materials

- ✓ Transportation of construction materials and disposal of the resulting construction wastes/debris using heavy and light machinery
- ✓ Disposal of debris and excavated materials on sites approved by the local council engineer
- ✓ Electrical and civil works including sewer and water reticulation
- ✓ Landscaping works on completion of the proposed development
- ✓ Completion of the development and occupation

In order to mitigate any negative impacts emanating from the construction and operation activities of the proposed development, relevant and cost-effective measures have been proposed in the Environmental Management Plan.

2.1.9.7 General Approach to Site Management

The proposed development shall be constructed while ensuring that:

- ✓ Any soils that are excavated during construction will be covered during transportation to minimize inconveniencing the neighbours and other users within the project site.
- ✓ All soils under slabs and external foundation to be treated for termite control using recommended and approved pesticides Foundation depth to be determined on site and to structural engineer's approval.
- ✓ All plumbing and drainage to comply with specifications
- ✓ Minimum slope in the drain pipes to be 1%
- ✓ All electrical conduits must be laid before plastering
- ✓ Sanitary facilities shall be provided to cater for staff during the construction and operation period
- ✓ All construction material waste shall be put together during construction and later collected at proper intervals and appropriately disposed of
- ✓ Solid wastes shall be collected in a waste holding station from within the project site and regularly emptied at a designated area on the compound and later released to an appointed waste disposal firm that shall transport it away from the site to designated waste disposal areas in accordance with NEMA and County Government regulations on waste collection, handling and disposal.

To ensure ease of accessibility and enhance environmental sustainability, sensitization of the community on catchment protection and household sanitation should be done. The proponent and contractor will implement the ESMP to ensure the current economic activities, including access to the available water in the pan are not unnecessarily interfered with during construction phase. The siting of cattle troughs should be planned in such a manner to decrease pressure at one point (i.e. two troughs in opposite directions).

CHAPTER THREE

3.0 ENVIRONMENTAL AND SOCIO ECOLOGICAL BASELINE INFORMATION

3.1 Environmental conditions

The section describes the geomorphological, climate and related features of the physical environment in the project area.

3.1.1. Topography

The County consists of relatively flat low-lying landscape, hills and minor carps with some hilly areas not exceeding 25%. Though vulnerability to soil erosion is moderate, disturbance of the soils during construction phase can increase soil erosion risks. The project site is in a flat area and less vulnerable to soil erosion risks and/or denudation.

3.1.2 Soils

The soils in the project area are predominantly heavy cotton soils that are poorly drained. The soils favour water retention and are thus suitable for water pan. Due to their poor workability during rainy season, the proponent will endeavour to undertake the construction during relatively dry season so as to mitigate on energy losses and emissions.

3.1.3 Hydrology

The county has two major rivers namely; Yala and Nzoia w~~W~~hich form County's drainage systems into ~~drain~~ Lake Victoria. Smaller rivers include Hwiro, Uludhi, Nyamonye, Wuoroya, Sese, Dhene and Seme Awach. Rivers are important sources of water for farming and domestic use. There are also several swamps, wetlands, dams and pans in the county. The major lakes in the County are Lake Victoria, Lake Kanyaboli and Lake Sare. Generally, the County has good potential of ground water underlying the Nyanzian rock aquifer system. The potential however, diminishes as one approach the lake. Though there is abundant surface water in the county, underground water potential is marginal in Bondo and Rarieda Sub Counties with water pans being critical in such areas, such as Uyoma, Asembo, Sakwa and parts of Alego Usonga.

3.1.4 Climate

The county has an inland equatorial climate modified by the effects of altitude, relief and the influence of the large body of water of Lake Victoria. The long rains are in March to May and short rains in September to December. The mean annual rainfall is 1000mm with 60% of the annual total falling during long rains with 60% reliability. The county is drier in the southern part towards Bondo and Rarieda sub-counties but wetter towards the higher altitudes in the northern part (Gem, Ugunja and Ugenya sub-counties). The highlands receive between 800mm – 2,000mm of rainfall while lower areas receive rainfall ranging between 800 – 1,600mm. Temperatures vary with altitude rising from 21° C in the North East to about 22.5° C along the shores of Lake Victoria while in the South, it ranges from mean minimum temperature of 16.3° C and mean maximum temperature of 29.1° C. Humidity is relatively high with mean evaporation being between 1,800mm to 2,200mm. The relative humidity ranges between 73 % the morning and 52 % in the afternoon.

3.2. Socio-Economic Characteristics

The sub-county has several wards that are inhabited mainly by the Luo, and whose statistics is as indicated in Table 1. Rapid population growth is putting pressure on environmental resources especially land, water, wildlife and forests. This has been a catalyst for deforestation, cultivation in ecologically fragile areas like steep slopes, river banks and swamps, as well as sub-division of land into small uneconomical units below 2Ha per household hence reducing carrying capacity and land degradation risks. At 62 %, poverty index is one of the greatest challenges facing the county and a major underlying driver of environmental degradation. Environmental degradation, further fuels incidences of poverty and limits the capacity of the people to escape from the ravages of poverty. Fishing, subsistence farming and livestock rearing is the dominant economic activity in the area.

3.2.1 Land Use patterns

An agro-ecological zone describes agronomic conditions on basis of landform, soil types, rainfall, temperature and water availability which in turn influences the type vegetation, length of growing season and crop adaptability [FAO, 1996]. The County spreads across agro-ecological zones LM1 to LM 5. The major land uses in the county are conservation, settlements, and agriculture. The Sub County is predominantly rural with minor agro processing and small-scale fishing. Increasing ecological destruction and changes in land use are exerting tremendous pressure on ecosystem, placing millions of livelihoods within the county at risk.

Artisanal fisheries are a major employer and source of livelihood for many households especially those bordering the shores of L. Victoria.

According to the Kenya Soil Survey and Integrated Regional Development plan for the Lake Basin Development Authority, the lower part of the County and especially the shores of Lake Victoria can be categorized into semi-humid, semi-dry Lower Midland zones (LM4 and LM5). These zones cover the whole of Uyoma in Rarieda Sub-County and Yimbo in Bondo Sub-County where the current sub project is being undertaken. The lower central parts of the County, covering the whole of Sakwa and Asembo in Bondo and Rarieda Sub-counties respectively and the lower parts of Boro Division are classified as the midland zone LM3.

Table 1: Population and Key Indicators on human welfare in subproject Area of Yimbo East- Location

Parameter	2009	2018	2022*
Size (Sq.Km)	159		
Density	244 (388)		
Ratio of males: Females	47: 53		
Number of Persons	27189	31684	33913
Pit latrines		82.4	
HIV prevalence	38	24.8	
Average Farm size		2.0Ha	
Average Distance to water point		0.5 Km	
Access to Water		61% (65%)	
Unemployment		40%	
Water point per SQ.KM		I water point per 2.5 KM2	

Source: CIDP Siaya 2018-2022 (Figures in parentheses refer to County Level totals). *Extrapolated

The northern part of the County comprising Gem, Ugunja and Ugenya Sub-counties and the upper parts of Boro Division in Alego Usonga Sub-County are classified as the low-midland zones (LM2 and LM3). These are sub-humid and humid zones with reliable precipitation. There are also pockets of upper midland zones (about 30sq.kms) in Yala Division, Gem Sub-County with a high potential for agricultural activity. Table 2 shows the agro-ecological zones on the County and crops grown in each zone.

Table 2: Agro-ecological zonation of Siaya County

Zone	Division /Subcounty	Suitable crops
LM1	Gem, Yala	Sugarcane, Maize, beans, finger millet, coffee, sweet potatoes and horticulture
LM2	Alego Usonga	Maize, beans, tobacco, finger millet, coffee, sweet potatoes and rain fed rice
LM3	Sakwa and Asembo	Maize, beans, finger millet, sorghum, cotton
LM4	Uyoma in Rarieda Sub-County and Yimbo in Bondo Sub-County	Sunflower, sorghum, cassava
LM5	Uyoma in Rarieda Sub-County and Yimbo in Bondo Sub-County	Sorghum, Millet

Source: Jaetzold et al.

Commented [WU1]: Which year?

3.2.3. Livestock Production

Livestock-keeping is an important sector among the people residing in the county. Meat, milk and eggs provided by livestock serve as important sources of high-quality protein to complement diets that are based on starchy crops like maize, bananas, millet and cassava. Cattle are important in a few homes for traction and manure. The main type of cattle kept by farmers is of the Zebu type. The number of cattle households on average in the project area is 10 head of cattle and 10 chicken. The production level for milk remains low at 2litres per cow per day.

3.2.4 Forestry

Siaya County shares a diversity of tree species with agro-climatic zonation dictating the distribution of both exotic and indigenous tree species. This include shrubs, grasslands, herbs, heathers, lianas, moss, lichens and other forms of vegetation. Some of the potential agroforestry species that can perform well in the project area are evidenced in plate (5). The county has two gazette forests namely, Got Ramogi and Got Abiero. The main forest products are timber, firewood, and charcoal. Due to limited forest cover, most of the forest products used in the County are mainly from neigbouring counties such as Nandi, Kisii, Kakamega, Vihiga and Uasin Gishu and at times from Uganda. Some of the most common trees in the county include *Markhamia lutea, Albisia corarria, Ficus sycomora, Melicia excels, Eucalyptus camaldulensis Grivellea robusta and Jacaranda mimosifolia. Project implementation will take this into consideration in their planning of catchment conservation interventions.*

4.2.5 Wildlife

The varieties of wildlife found in the County include hippopotamus (Lake Victoria, Rivers Nzoia and Yala), crocodiles (Yala Swamp, parts of the Lake Victoria), Sitatunga (Yala Swamp) and monkeys and leopards. The County has several species of fish, but the most popular ones are Nile perch, Omena (*Rastrineo bolaargentea*), Fulu (*Hatlo chromines*) and Nile Tilapia. Nile perch is mainly exported to Nairobi and abroad. Other wild life includes bush pig mainly in Yala Swamp, Hyenas in Got Abiero, snakes e.g. pythons, cobras and various species of birds. There is a proposal for Lake Kanyaboli National Reserve.

Plate 5: Fauna in the site

Calliandra species which is critical in livestock nutrition and nitrogen fixing for soil fertility improvement hence green growth pathways and climate change mitigation earlier planted at the pan area. The same technology can be scaled up in the catchment

3.2.6. Industrial Activities

The county has limited industrial activities mainly in agro processing, quarrying and artisanal mining. The County's industrial potential especially for agro-processing has not been fully tapped. Equally the county has a relatively under developed service industry such as banking, insurance transport and hospitality facilities.

3.2.7. Tourism

Siaya County has diverse tourism attractions, ranging from natural, historical, flora and fauna and cultural attractions. The main categories of tourism attraction include:

- ✓ Cultural Tourism: Ramogi Hill (Got Ramogi), Jaramogi Oginga Odinga Mausoleum and Museum, Achieng'Oneko Mausoleum, Holy Got Adodi, Justice Ayanga Museums, Huluwino Blacksmiths, Chief Odera Akang'o Office and Cells in Yala and Cultural Activities in Siaya County
- ✓ Eco Tourism: Lake Kanyaboli, Yala Swamp Wetland, Dominion Farm Birds Sanctuary, Anyiko Wetlands, Uwasi/Muluhwa Rice Scheme, Elmolo Crocodile Park, Lake Namboyo, Lake Bob, Lake Sare and Lake Victoria Fish Cages in Lake Victoria.
- ✓ Nature based Tourism: Ndanu Falls, Mahira Falls, Godha Falls, Mageta Island, Sirigombe Island, Rawalo Hills and Naya Hills
- ✓ Leisure based Tourism: Goye Beach, Madundu Beach and Luanda Kotieno

3.2.8 Education

Kenya adult literacy rate was at level of 81.5 % in 2018, up from 78.7 % in 2014. The literacy levels in the area is more than 85%, which is relatively higher than the national average. The county has many learning institutions among them Jaramogi Oginga Odinga University, a public chartered university and many middle level colleges. The ward has 15 primary and 5 secondary schools.

3.2.9. Livelihood and Economic Activities

The project area community members are predominantly small-scale farmers who practice mixed farming with local cattle, goats, sheep, and indigenous chicken being the main livestock while maize, beans, sorghum and horticultural farming dominate crop farming. Petty trade, mining and off-farm employment contribute to livelihoods of the community. However, Unemployment is relatively high and stands at 38% with the unemployed relying on earning from petty trade, farming, artisan fishing and remittances from relatives.

3.2. 10. Vulnerable and Marginalized Groups (VMGs)

The KCSAP PAD recognizes VMGs as the unemployed youth, elderly women and men, widows and orphans and people living with HIV/AIDS. Orphan hood in Siaya County is estimated at 15 per cent (KNBS, 2018). Percentage distribution of orphans between the ages of 0-14 years is about 12 as per the same survey. According to the KIHBS survey old age dependency ratio is 13% of the population of Siaya (KNBS, 2018). Vulnerability is driven largely driven by the HIV/Aids related mortalities.

3.2.11 Religious beliefs and cultural practices

The people living here are Christians affiliated to ~~protestants~~Protestants, Catholics and indigenous churches whose spread and distance varies. ~~–~~Strong attachment to African traditional religious practices, though declining is adhered to with w~~W~~idow inheritance being common and a driver of high HIV infections. Family leadership is patrilineal though women have some decision-making power that allows them effectively participate in local political, economic and social discourses (i.e. the village elder in the project area is a female). However, land use and inheritance are largely controlled by men. Accordingly gender sensitive agricultural technologies need to be considered.

3.2.12 Electricity, energy sources and network coverage

The area is supplied with electricity though household connectivity remains low. Sources of energy for lighting are fuelwood (39%), tin lamp (15%), paraffin lantern (10%), solar (8%) and battery lamp/torch about 4%. The main source of energy for cooking is fuelwood (firewood and charcoal) at about 95%. The project proposes the use of a solar powered water pump for a shallow well to be constructed near the water pan which will hopefully provide incentive for adoption at household level. The mobile network coverage in the area is relatively high at 82% compared to an average of 70%~~ of the same~~ for the county but slower than the national average~~compared to the and national connectivity~~ of 85%. Network coverage is fairly good with all networks well represented.

3.2.13. Housing and house types

The major housing type in the area is mud walled iron roofed houses. Table 3 provides a comparison of housing type in the area with the county aggregated statistics. As housing type reflect wealth status, the Project area could be said to be relatively poor to other areas of the county.

Table 3: Housing type in the project area

Housing type	% of Households in the Project site	County level indicators
Earth floor	81	90
Cement Floor	19	12
Mud walled	76	82
Corrugated Iron Roof	66	61
Grass thatched	12	25
Brick /Stone wall	14	5%

Source: ESIA team field data analysis, 2020

3.2.14. Land tenure

Land in the County is categorized as per the Article 61 of Kenya's Constitution, Land Act, 2012 and Community Land Act, 2016. The first category of land that constitutes bulk of the land parcels is private land. The community land is further categorized as registered community land and unregistered community. The second category is the public land which are mostly land owned by National, Governments, public institutions and they include road reserves, riparian, ridges, lakes and forests the land for the proposed Kamola water project in Yimbo East is under the defunct county council of Siaya and currently under the trustee of County Government of Siaya. The site is a pre-existing site set aside for water pan construction and has the blessing of the county administration.

3.2.15. Communication

Table 4 provides the ownership and means of communication in the subproject area. Access to the means of communication is relatively high especially the mass media. This could be advantageous in advocacy initiatives on issues such as GBV.

Table 4: Ownership and access to means of communication

Communication channel	% of Households with access/ownership
Radio	68 (75)
Tv	16 (13)
Mobile Phone	92 (90)
Computer	1 %

Source: Field data collection, 2020

3.2.16.- HIV/AIDS prevalence, Knowledge, Attitudes and Practices

The HIV prevalence in Siaya is above the national rate at 24.8 % and among the highest prevalence in Kenya. However, this has been going down from a high of 38% in 2010 and 27 % in 2015 (CIDP, Siaya). Drivers of HIV in the county can be attributed to several social, economic and cultural factors related to polygamy, circumcision, wife inheritance and poverty. This ESIA study did established the existence of HIV/AIDS cases in Lela community. The employment and influx of job seekers in the project site during construction of the proposed Kamola water pan may escalate the spread of HIV/Aids in absence of Mitigation measures proposed in the ESMP such as sensitization of the workers and involved in the construction, promotion of the use of protective devices and encouragement of voluntary testing

3.2.17. Energy sources and their accessibility

Energy is critical driver in development, livelihood activities, food security and health outcomes. Table 5 provides the energy sources and their accessibility at household level in the project area. Most households still use what is classified as dirty energy with far reaching implications on welfare of the community and the environment. The use of solar in the pumping water may spur adoption solar energy at household level and indirectly contribute to green growth development and climate mitigation. Clearly there is need for household energy source interventions with agroforestry providing an opportunity for meeting household fuel wood needs while providing for other co-benefits such as soil fertility improvement and carbon sequestration. This intervention should go hand in hand with technologies that mitigate indoor pollution risks for fuel wood.

Table 5: Energy and their sources in Yimbo East location

Energy source Type	%Households
Paraffin	75 (70)
Electricity	12(24)
Gas Lamps	4 (6)
Fuel wood	81(84)
Charcoal	13 (15)

Source: Field data analysis, 2020; Parenthesis refer to county aggregated levels and basis of comparison

3.2.18. Water Access and Sanitation

Streams, wells, boreholes, roof catchment, rivers, Lake Victoria, water holes, dams, ground catchments and piped supplies are the main sources of water supply to communities. The distribution of water sources, surface and underground in the County are naturally widely spaced and make people walk long distances to fetch water. Though the long-term objective of the Government to enable households access water within 500m of their settlement, the intervention measures the Ministry of water has put in place so far in terms of piped schemes, point water sources like boreholes, shallow wells and spring protection has not met the target. For example, access to water in the southern part (Bondo and Rarieda) is less than one water point per 2.5km², while the north and north-eastern parts have a water point access at more than 3 per km². Moreover, a large number of water points are seasonal as in the project area. The average distance to a water point in the project area is 0.6 Km and it takes about 45 minutes which above the county average of 0.5 Km and Time of .5 hours to reach. The only permanent river in the area is River Nyamonye, on average 10 Km away from the project area. 82% of the residents have pit latrines but there is no sewerage system in the area. This could imply risk of surface water contamination with fecal material.

Plate 6: ESMP feedback meeting and sensitization on GRM to the PMC and community

Note the observation of social distancing, open air meeting and limited group as well as use of masks in compliance with World Bank guidelines and Ministry of Health SOPs.

3.3 Common Conflicts and their resolution in project area ~~Grievance Resolution Mechanism (GRM)~~

The main grievances were those involving succession and inheritance, natural resources, grabbing of public utility spaces and land boundary disputes, tenancy and labour. Domestic violence relating to sexual exploitation and abuse and gender-based violence are some the cases relevant to project implementation. Several methods are used in resolving these household conflicts as reported during the survey.

The instruments used in the resolution of the reported conflicts in the area include.

- ✓ Extended family members
- ✓ Religious institutions/ religious leaders
- ✓ Chief/Assistant chief
- ✓ Elders
- ✓ Courts

Even though men make decisions in the whole process of development, all the genders including men, women and youth implement the activities. The positive side in the project area is that the Nyumba Kumi head and village elder has been bestowed on female gender to signal that gender roles will not limit community responsiveness and implementation. As this project is guided by the Social Accountability and Integrity Committee principles, the PMC has been tasked with forming an Accountability subcommittee to provide leadership in the GMR process. The sensitisation of the community on GMR framework has been undertaken on 6th June, 2020 (Appendix XIII). Though no record of conflict of communal water resource use is recorded, the likelihood of GBV or SEA during construction and operation phase of the project have been raised and the ESMP has captured detailed precautionary measures to address the social risks.

CHAPTER FOUR

4.0 ANALYSIS OF PROPOSED PROJECT ALTERNATIVES

4.1 Project Alternatives

Since the introduction of the ESIA process and subsequent development of ESIA methodologies and legislative provisions, the analysis of alternatives has been one of the main tenets of ESIA policy and procedures. Unbiased and transparent assessment of investment alternatives from an environmental and social perspective (as well as a technical and economic standpoint) is one of the most important contributions ESIA can make in improving decision-making.

Alternatives analysis in ESIA is designed to bring environmental and social considerations into the "up-stream" stages of development planning, project identification and earlier, as well as the later stages of site selection, design and implementation. In this study a scenario is considered to mean the "description of a possible future situation and the development from the current situation to this future stage". The development of scenarios involved analyzing the current situation, discerning the relations and links to the environment, influencing factors, existing and potential strengths, opportunity and threats. In the assessment of the project alternatives, this study considered three main scenarios namely: status quo or no action scenario and the alternative under consideration.

During the course of formulating the proposed project, several project alternatives were considered to ensure that the best option of project development was adopted. This included a no project alternative which meant that the current status quo remains where debilitated infrastructure including toilets continue posing drowning and waterborne diseases. No project alternative would imply, the funds are not utilized and the community is exposed to increased vulnerability to extreme weather episodes that negatively impact water resources for the livestock and human consumption. Environmental issues were considered in terms of hydrological, habitat impacts and toxicity effects on the ecosystem especially listed species as given under section (1.10).

4.2 Project Site

The project area is heavily shrub land and has few if any wildlife. It is in the lowest end of a relatively flat terrain landscape. The pan therefore will provide a good holding ground for water. The clayey texture of the soils provides good material for embankment material. The ground is on a flat terrain, hence less gravity water loading and thus, low risk of bursting. The plot is currently utilized for water pan though silted. The construction activity will not interfere with the water flow or any ecosystem in the neighbourhood in any way. However, the proponent will compensate for loss of vegetation through landscaping and community tree planting.

4.3 Technology

Technology choice has been dictated by power saving needs, health and safety as well as the geomorphology. The technology alternatives and choices are as given:

4.3.1 Water Acquisition Technology Alternatives

There are number of water acquisition technologies available. They include: rainwater harvesting, groundwater abstraction and stream water abstraction. The site is far from the lake and reliable river. It is also one of the areas with limited ground water hence the water pan becomes the most feasible water source for the community.

4.3.2. Rain Water Harvesting

There is a number of rainwaters harvesting alternatives. These include: rooftop harvesting, runoff harvesting and floodwater harvesting. These are relatively unaffordable to most households. Further, limitation to these technologies is the availability of rainfall. Most part of the year is hot and dry. Thus, there's hardly any source of water to harvest to last all year through. Hence, the rainwater harvesting alternative is less viable.

4.3.4. River/Stream water Abstraction

The abstraction of river water requires a relatively reliable stream flow volume, good technology and financing. The project area being less endowed with rivers, and rivers being far (River Nyamonye, a tributary of Yala is 10 Km away) make the water pan attractive. The coping mechanisms in use of stagnant ponds expose the residents to high risk of water borne diseases. Water pans are expected to mitigate this.

4.3.5 Ground water Abstraction

This is one of the most reliable technologies especially in dry areas. The technology requires water abstraction through borehole drilling and digging of wells. However, the technology requires frequent replenishment of the abstracted water through infiltration of rainwater. This is not the case at the project site since the main source of replenishment is rainfall which is scarce and unreliable. More so the area has low to non-existent ground water resources. Moreover, the high cost makes it unaffordable to the community.

4.3.6. Water pan construction

Water pan construction involves putting an impervious wall across a river channel or scooping soil and building an embankment where water is inbounded on upstream. In either case, where concrete is the main material the water pan is called concrete water pan. Where soil usage is the main material it is called an earth water pan. The project has adopted an earth pan and which is relatively less expensive than concrete water pan.

4.4. Water pan Design Selection

Three types of gully - embankment water pans commonly used in Kenya are: homogeneous, zoned, and diaphragm. These design types were evaluated to select the most appropriate design compatible with the water pan site survey details. These designs are described below:

4.4.1 Homogeneous water pans

As the name implies, homogeneous water pans are built from a single material. This should contain between 20 and 30 per cent clay with the balance made up of silt, sand and some gravel. Normally, homogeneous water pans are confined to relatively small heights.

4.4.2 Zoned water pans

The most stable gully - embankment water pan that can be built is the zoned water pan. This type of design is soil type and profile specific. It has steeper slopes, thus reducing earthwork volumes and costs. The pervious shell on the upstream side prevents the buildup of water pressures if a rapid drawdown of water level occurs in the storage. It is built from different material types.

4.4.3 Diaphragm water pans

The diaphragm method is adopted when the amount of clay available at the site is limited; the bulk of the water pan is made up of pervious material such as sand, gravel or rock. A thin layer, or diaphragm, of clay is placed on the upstream slope to provide the impervious section. The preferred material for the diaphragm is a stable low-plastic clay or sand—clay, that is, material with a 12 to 40 per cent clay content.

4.5 Selection of Water pan type to be used

After careful consideration of the physical conditions, soils available on site and possible usage and based on design Homogeneous water pans design was chosen.

4.6 Scale and demand alternatives

The size of the water pan was limited to the available budget. However, no engineering design specification will be compromised. Rising demand due to increased population, increasing frequency of droughts associated with climate change, supplementary watering of horticultural crops and livestock is taken into account in the planning of the project.

4.7 Potential Environmental Impacts

The three designs are characterized with similar environmental impacts; hence the potential environmental impacts were not used as a criterion for selection of the project water pan design

4.8. Process and Input alternatives

This is dictated by the 3R principle (Reduce, recycle and reduce). In line with energy policy and environmental regulation and policies on health, safety and sustainable resource utilization, there is need to decrease greenhouse emissions and environmental pollution. Reduction of emissions from petroleum sources calls for alternatives such as solar energy in pumping the water. The pumping will use solar energy.

4.9. Sustainability

Access to portable water is both a human right captured under the sustainable development goal (6) and cascading objective that cuts across several sectors such as health, agriculture and food security. Increased access to portable water increases resilience of communities to changing climate. The use of solar energy will reduce emission of GHGs. Reduction in GHGs emissions is a disaster risk reduction strategy to mitigate global warming and climate change. The use of green energy enhances the country capacity to implement

international protocols such as on Kyoto/ UNFCC. The low maintenance costs positively impact on sustainability of the project. Though designed water pan type is less sustainable than concrete water pans, it is cheaper to construct. However, use of solar energy will reduce operational costs and greatly contribute to its sustainability.

4.10. No project scenario

Water pans are especially critical where ground water sources are limited and in mitigation of downstream flooding. Failure to implement the project will imply increase vulnerability of communities to droughts and attendant water borne disease burden. The no project scenario will imply the water resources continue to be wasted, with silted pans posing risk of drowning to animals and children in the area. Water supply to the community will continue to be irregular with the possibility that the current water pan will be fully silted in under 2 years. This will negatively impact on the heath of the community (use of untreated water and increase in waterborne diseases). The funds committed for the project implementation will not be utilized missing on the multiplier impacts in the economy. The project is thus the best alternative and is justified from social, environmental and economic point of view.

The no construction alternative would imply that the water pan site be left in its present state. This decision will imply high risk of waterborne diseases, continued resource conflict, as well as missing on associated food security projects and downstream flooding. From the above project alternative analysis, it is evident that the earth water pan is the best alternative. Hence it is the most viable alternative and justified from the county's integrated development plan and millennium development goals.

4.11 The Proposed Development Alternative

After analysis of various alternatives, NEMA is requested to issue an EIA License for the project described in this ESIA report and based on the alternatives recommended above. In issuing the license, NEMA would approve the proponent's proposed development of the Project, provided all environmental measures are complied with during the construction and operational phases.

CHAPTER FIVE

5.0. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The section presents the institutional and governance framework and how it relates to the Project implementation. This is set out in three main subsections; local, World Bank safeguards and international framework.

5.1 General overview

Environment and Social Impact Assessment (ESIA) has received international recognition as vital tool for establishing, appraising and measuring the merits and demerits of proposed and ongoing projects, plans, policies and programs the world over (Lohani 1986). These techniques form key tools and instruments for ensuring sustainability of the projects when utilized during planning and management of the project activities and operations during decision-making. It forms a major component towards enhancing conscientious environmental management and conservation (World Bank, 1993; World Bank, 1999; UNEP, 1998). It is key component in project implementation, routine monitoring, review and evaluation to ensure sustainability and commitment to sustainable development in the project cycle/life-span (IFC, 1998).

Kenya has a number of strategies, governance frameworks, laws and guidelines on climate action such as, the Climate Change Response Strategy (G.o.K, 2010); Climate Smart Strategy (G.o.K, 2017); Agricultural Sector Transformation Strategy (G.o.K, 2019) and Green Economy Strategy under the vision 2030 (G.o.K, 2007). The Green Economy Strategy and Implementation Plan (GESIP), underpins Kenya's commitment to undertake a transition to a green economy (G.o.K, 2007). The Nationally Determined Contributions (NDCs) submitted by Kenya as part of the Paris Agreement (Global Green House Gas Mitigation) largely focus on policies for sustainable agriculture development and climate change action (G.o.K, 2015). The low carbon pathways towards food and nutrition security productivity and resilience in the agricultural sector is reiterated in the national adaptation plan (G.o.K, 2018).

Kenya's National Adaptation Action Plan (NAPAs), 2015-2030 thus aims to consolidate the country's vision on adaptation. This is evidenced by macro- level adaptation actions that seek to enhance long term resilience and adaptive capacity which have linkages to various economic sectors, as well as the identification of county-level vulnerabilities. However, the existing Napas do not elaborate concrete proposals or processes for implementation gaps through integrated approaches that increase effectiveness as reflected in the policy and organizational coherence for climate change adaptation and mitigation. Specifically, the project integrates adaptation needs and ecological risk management through ESIA process.

Kenya has established and gazette various regulatory legislations and provisions that necessitate certain projects and development plans/programs to undergo an EIA (Tole, 1997). ESIA is recommended for all new projects with the potential to pose environmental impacts/risks at the onset. The Environmental Management and Coordination Act, Cap 387 of 1999 (revised 2015), direct that the proponent of a project undertake an ESIA/EA study and prepare a report thereof for presentation to the National Environmental Management Authority (NEMA). To facilitate this, regulations on ESIA and audits were established under the Kenya Gazette Supplement No. 56 of 13th June 2003 (The Environmental Impact Assessment and Audit Regulations, 2003). Besides, a number of other national policies and legal statutes, including World Bank ESS policies have been reviewed to enhance environmental sustainability in national development projects and conformity with funding requirements. Some of these policy and legal provisions are discussed in more details in the following sections.

5.2. National Policies

The sub project touches on a number of national policies during implementation as well as planning phases. This is discussed under:

5.2.1 Vision 2030

Vision 2030 is divided into three fundamental pillars: Economic, Social and Political pillars. The social pillar aims at realizing a just and cohesive society enjoying equitable social development in a clean and secure environment. In section 22, under Social Strategy, and paragraph 5.4, the strategy envisions Kenya becoming a nation that has a clean, secure and sustainable environment by 2030. Value addition in the agricultural value chain is given prominence. This is important in that most rural household livelihoods depend on Agriculture. The project implementation strategy *envisages reduction of poverty through provision of services and equity in resource allocation with an affirmative program for vulnerable groups. Small scale farmers happen to be among the most vulnerable especially with the prevailing devastating effects of climate variability within the region. Support for inputs such as water for expansion of agricultural production provides opportunities for diversification and wealth creation and resonates with goals outlined in vision 2030.*

5.2.2 Sessional Paper No. 10 of 2012 on Kenya Vision 2030

The session paper covers broad categories of development issues including the waste management, pollution to reduce hazards and adjustment to climate change crises such as droughts. The policy recommends the need for enhanced re-use/recycling of residues including wastewater and increased public awareness raising and appreciation of clean environment as well as the participation of stakeholders in the management of wastes within their localities. Among the key objectives of the Sessional Paper No. 6 of 1999 are: -

(i) Integration of environmental concerns into all development policies programs and projects.
(ii) Independent environmental impact assessment/audit (EIA/EA) report for any industrial venture or other development before implementation.
(iii) Integrating environmental concerns into all planning processes as to improve environmental governance and achieve green growth pathways

- ✓ The ESIA process integrates Environmental concerns into the implementation process and takes cognizance of the social equity and poverty reduction concerns.

5.2.3. National Policy on Water Resources Management and Development

The National Policy on Water Resources Management and Development (1999) enhances a systematic development of water facilities in all sectors for promotion of the country's socio-economic progress. It calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. Industrial development projects, therefore, should be accompanied by corresponding waste management systems to handle the wastewater and other waste emanating there from. The same policy requires that such projects should also undergo comprehensive EIAs that will provide suitable measures to be taken to ensure environmental resources and people's health in the immediate neighborhood and further downstream are not negatively impacted by the emissions. The policy provides for establishment of standards to protect water bodies receiving wastewater based on polluter pays principle.

5.2.4. The Forest policy of 2014

The policy replaces the Sessional Paper No 1 of 1968 on the conservation, management and development of forests in the country. It addresses issues of reservation, protection, management, law enforcement and utilization of forests and forest resources. The Objective of the policy is to contribute to poverty reduction and employment creation and improvement of livelihoods sustainable land use through soil, water and biodiversity conservation community and private sector involvement in the management of Forrest through farm forestry initiatives.

- ✓ The Project development objectives will contribute to this through micro Project, Sustainable land management and natural resource management initiatives at subproject and microproject levels by incorporating all environmental and social safeguard policies
- ✓ *The ESMP has mitigation measures to ensure environmental issues are addressed through an integrated Pest Management plan (IPMP appendix XV), Catchment conservation and a binding C-ESMP*

5.2.5. 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 main objective of the Policy is to enable the mainstreaming of the needs and concerns of men and women in development processes.

Commented [WU2]: I've looked at whay you have in Annex XV and it does not really pass as an PMP. Please remove it and delete all references to it. If indeed a PMP is needed, then a stand-alone PMP should be developed. This can be done during contruction of the water pan. But I don't think there will be significant use of agro-chemicals, though I could be wrong, in which case the proponent will need to prepare and implement a PMP.

- ✓ *This policy will guide the contractor to ensure both genders are given an equal opportunity during recruitment during the construction phase and operation phase of the project. The contractor will also provide adequate facilities for all genders within the project site*

5.2.6 HIV /AIDS Prevention and Control Act 2006 and Gender Mainstreaming:

It creates public awareness on causes, modes of transmission, consequences and means of prevention and control of HIV and AIDS. It protects the rights of the infected and affected and outlaws discrimination in all its forms against persons living with HIV and AIDS or those perceived or suspected to have HIV and AIDS.

- ✓ *The proponent will use the policy in promoting integration of reproductive health and HIV and AIDS services in all phases of the project. The proponent ensure that that there is integration of HIV and AIDS information and services into reproductive health services at all levels and ensure adequate capacity for provision of the integration at all levels. The project is therefore expected to create awareness on HIV/ AIDs and gender issues in all the stages of implementation*

5.2.7 Agricultural Sector Transformation and Growth Strategy 2019-2029

The importance of agriculture has been emphasized in Kenya through Vision 2030 and the Medium Term Plan III and most recently the President's Big Four priority agenda for 2017-2022, which emphasizes the importance of 100% food and nutrition security for all Kenya. To transform Kenya's agricultural sector and make it a regional powerhouse, the Government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS). The Strategy is based on the belief that food security requires a vibrant, commercial and modern agricultural sector that supports Kenya's economic development sustainably and its commitments to regional and global growth

- ✓ *Nine flagships that serve as the core of our 10-year Agricultural Sector Growth and Transformation Strategy (ASTGS) have been developed. The flagships were drawn on the status of our agriculture today, a rigorous and thorough review of data, lessons from global best practices, and our local realities. Among the key flagships is support to irrigation infrastructure Achieving our potential in agriculture will achieve food and nutrition security, improve our farmer and local community incomes, lower the cost of food, increase employment (particularly for women and youth).*
- ✓ *The proposed water pan will provide water for both domestic and livestock hence addressing some of the core objectives in the strategy*

5.2.8 Kenya National Youth Policy 2018

The policy seeks to provide an opportunity for improving the quality of life for Kenyan youth through their participation in economic and democratic processes as well as in community and civic affairs. It also advocates for creation of a supportive social, cultural, economic and political environment that will empower the youth to be partners in national development.

- ✓ *The proponent will ensure that the youth are involved in all phases of the project through participation, consultations management and during construction, operation and even decommissioning phases. The youth will also be given access to government procurement opportunities as per the public procurement authority act*

5.2.9 National Climate Change Action Plan 2018-2022

Kenya's National Climate Change Action Plan is a five-year plan that helps Kenya adapt to climate change and reduce greenhouse gas emissions. The National Climate Change Action Plan (2018-2022) identifies priority adaptation and mitigation actions for transforming to a low carbon climate resilient development pathway. The priority adaptation actions for agriculture in the plan include Coordination and mainstreaming of climate change into agricultural extension; establishment and maintenance of climate change related information for agriculture; and upscaling specific adaptation and mitigation actions.

- ✓ *Development of the water pan would enhance ground cover water percolation and lead to low carbon resilient development through planting of indigenous trees fodder production around- the catchment areas.*

5.3. Legal framework

This study was conducted within an environmental and policy framework as outlined hereunder and in particular, the Environmental Management and Coordination Act, 1999 which has explicit provision for

Environmental Impact Assessment (EIA) for projects likely to have adverse environmental impacts. The project has to comply with the provisions of the Environmental Management and Coordination Act, 1999 (Revised 2015) and its subsidiary legislation, as well as sectoral laws that protect the environment from development activities

5.3.1 Constitution of Kenya 2010

The constitution is the supreme law of the land of Kenya. The Constitution require the public to be consulted and the study has complied by consulting the public. It has also developed measures to mitigate foreseen impacts which will ensure sound management of the environment. Article 42 states "every person has the right to a clean and healthy environment, which includes the right a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69, and b) to have obligations relating to the environment fulfilled under Article 70". There a number of provisions support this investment however key among others is Part 3 article 56. The State shall put in place affirmative action programs designed to ensure that minorities and marginalized groups—(b) are provided special opportunities in economic fields; (c) are provided special opportunities for access to employment; (d) develop their cultural values, languages and practices; and (e) have reasonable access to water, health services and infrastructure.

- ✓ *The Constitution is vital in identifying the need for this development initiative, since it endeavors to improve the general wellbeing of the people both environmentally and socio-economically and it will govern the means to ensuring the method in which the project is carried out, by providing an ESIA which is provided in this report.*

5.3.2 The Environment Management and Coordination Act, 1999 (Revised 2015)

The Environmental Management and Coordination Act, 1999, is the legislation that governs ESIA studies. The Proponent carried out an ESIA as per the second schedule of this act. This schedule lists the projects required to undergo EIA studies in accordance with section 58 (1-4) of the act. The act provides a coordination mechanism for various sectoral laws dealing with elements of the environment. The mandate of NEMA is to "exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment "Part 6 of the EMCA (1999) of Kenya provides for environmental impact assessment. This is in agreement with Principle 17 of the Rio Declaration which extends the rule of prior assessment of potentially harmful activities to include those activities which have impacts solely within a state: "Environmental Impact Assessment (EIA), as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent National authority.

EMCA 1999 provides under the Second Schedule, a list of projects that must undergo screening for EIA. The proposed project falls under this schedule and as such requires that an EIA Project Report be undertaken and submitted to NEMA for review and licensing. Section 58 of the Act provides for an environmental impact assessment for all projects, programs or policies likely to have adverse environmental impacts. The projects that must undergo a mandatory EIA are given in the second schedule of the Act. Under EMCA, 1999:

A project proponent shall not implement a project likely to have negative environmental impact, or for which an EIA is required, unless an EIA has been concluded and approved in accordance with the law. Further, no licensing authority under any law in force in Kenya shall issue a trading, commercial or development permit or license for any project for which an EIA is required unless the applicant produces an EIA license issued by NEMA.

The Act also deals with pollution prevention and waste management which is relevant to this project, as it will generate different categories of waste during construction and operation. Part II of the Environment Management and Coordination Act, 1999 states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. In order to ensure this is achieved, part VI of the same Act directs that any proponent of a new project should undertake EIA/EA study and prepare an appropriate report for submission to the National Environmental Management Authority (NEMA), who in turn may issue a license as appropriate. This is one of the activities that require an ESIA and the project has conducted an ESIA study and is the subject of this report which also conforms with World Bank ESS policies and guidelines

- ✓ *In carrying out the ESIA study and preparing this report the requirements of this regulations and those of the World Bank Environmental and Social Safeguards have been integrated and followed throughout the process. The proponent did the screening and scoping then as advised by the NEMA office commissioned this ESIA study*
- ✓ *The proponent shall observe the guidelines as set out in the environmental management plan laid out in the ESIA report as well as the recommendation provided for mitigation of adverse impacts arising from the project activities*

5.3.3: The Environment (Impact Assessment and Audit) Regulations, 2003

Environmental Impact Assessment (EIA) is a critical examination of the effects of a project on the environment. The goal of an EIA is to ensure that decisions on proposed projects and activities are environmentally sustainable. An EIA is conducted in order to identify impacts of a project on the environment, predict likely changes on the environment as a result of the development, evaluate the impacts of the various alternatives on the project and propose mitigation measures for the significant negative impacts of the project on the environment. The EMCA, 1999 requires that during the EIA process a proponent shall in consultation with the Authority seek views of persons who may be affected by the project or activity through posters, newspaper, radio and hold at least three public meetings with the affected parties and communities. The Project proponent pays for the entire EIA process. 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.*

Environmental Audit (EA) is the systematic documentation, periodic and objective evaluation of activities and processes of an ongoing project. The goal of EA is to establish if proponents are complying with environmental requirements and enforcing legislation. The purpose of EA is to determine the extent to which the activities and programs conform to the approved environmental management plan. A comprehensive EA ensures a safe and healthy environment at all stages of project operations and decommissioning. Annual environmental audits will be undertaken during this sub-project operation and maintenance phase.

- ✓ *In carrying out the ESIA study and preparing this report the requirements of this regulations and those of the World Bank Environmental and Social Safeguards have been integrated and followed throughout the process. The proponent did the screening and scoping then as advised by the NEMA office commissioned this ESIA study*
- ✓ *The proponent shall observe the guidelines as set out in the environmental management plan laid out in the ESIA report as well as the recommendation provided for mitigation, minimization, and avoidance of adverse impacts arising from the project activities*

5.3.4. Environment management and coordination (waste management) regulations 2006

These are described in legal notice No. 121 of the Kenya Gazette supplement No. 69 of September 2006. These regulations apply to all categories of waste as provided in the regulations. These include:

- ✓ Industrial wastes;
- ✓ Hazardous and toxic wastes;
- ✓ Pesticides and toxic substances;
- ✓ Biomedical wastes;
- ✓ Radio-active substances

These regulations outline requirements for handling, storing, transporting, and treatment/ disposal of all wastes categories as provided therein. Wastes contaminated with petroleum products are considered hazardous. Treatment of toxic or hazardous wastes should be done using the classes on incinerators presented in the third schedule of these regulations. These regulations are relevant to handling of the various wastes during construction phase. The e-waste guidelines provide a framework for identification, collection, sorting, recycling and disposing of electrical and electronic waste (e-waste). *The project proponent and agents as a responsible citizen have obligation to include these guidelines within her operations for a cleaner and*

sustainable environment. Through the ESIA, the ESMP has provided measures for managing waste generated through the proposed project.

- ✓ Measures to be undertaken for proper waste disposal include clearance of non-reusable and recyclable waste and disposing off in designated disposal site.
- ✓ Reusing excavated soil for pan wall

5.3.5. Environment management and coordination (water Quality) Regulations 2006

These are described in legal notice No. 120 of the Kenya gazette supplement No. 68 of September 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. This includes the following:
Protection of sources of water for domestic use; Water for industrial use and effluent discharge; Water for agricultural use. These regulations outline:

- ✓ Quality standards for sources of domestic water;
- ✓ Quality monitoring for sources of domestic water;
- ✓ Standards for effluent discharge into the environment;
- ✓ Monitoring guide for discharge into the environment;
- ✓ Standards for effluent discharge into public sewers;
- ✓ Monitoring for discharge of treated effluent into the environment

Water for the project site will be sourced from the existing pan area. In monitoring, water quality standards would be the basis for future audits. The contractor will adhere to the provisions of the ESMP such as servicing of vehicles and machinery in licensed dealers and use of oil sumps in the service area. The ESMP has outlined the water quality control measures in the ESIA including proper waste disposal measures for oil spills and other wastes, proposed fencing of water pan area, and provision of livestock troughs and communal water drawing point.

- ✓ *The ESMP has outlined the water quality control measures such as provision of livestock troughs and communal water drawing point.*
- ✓ *The proponent will implement recommended guidelines on drinking water quality standards through periodic testing and chlorine dosing of portable water.*
- ✓ *Fencing of the pan area*

5.3.6. Environment management and coordination, conservation of Biological Diversity (BD) Regulations 2006

These are described in legal notice No. 160 of the Kenya gazette supplement No. 84 of December 2006. These regulations apply to conservation of biodiversity which includes conservation of threatened species, Inventory and monitoring of BD and protection of environmentally significant areas, access to genetic resources, benefits sharing as well as the offences and penalties for violation of the regulations. More important, the project is not located in an area of biological significance, and that their project will have minimal impacts on biological diversity, this being a brown field.

- ✓ *The location of this facility and its relevance to this regulation is positive. The project will greatly change the scenario in a positive direction especially in improvement of aesthetics possibly improved habitat for wildlife.* Further *the subproject is not located in area of biological significance and therefore will have minimal if any effect on biological diversity as the site is a brown field*

5.3.7 Environmental Management and Coordination (Conservation of Biodiversity, Access to Genetic Resources and Benefit Sharing) Regulations 2006

The regulations are supposed to ensure Conservation of Biodiversity in the country because, Kenya has a large diversity of ecological zones and habitats including lowland and mountain forests, wooded and open grasslands, semi-arid scrubland, dry woodlands, and inland aquatic, and coastal and marine ecosystems. In addition, a total of 467 lake and wetland habitats are estimated to cover 2.5% of the territory. In order to preserve the country's wildlife, about 8% of Kenya's land area is currently under protection. One requires a NEMA approval if areas of rich biodiversity are going to be affected by a development project. The Conservation of Biodiversity Act Sections 5-9 provides for the protection of endangered species, creation of an inventory, and monitoring of their status, protection of environmentally significant areas, provision of access permits, material transfer agreements and benefit sharing. These regulations the layout and pollution

control measures with a view avoiding areas of environmental significance and protection of endangered species.

- *This subproject is being rehabilitated therefore the biodiversity is not disrupted and no* habitat or any threatened species of flora or fauna is threatened
- The Proponent and contractor will ensure that great care is exercised in the protection of vegetation during construction.
- The sustainable land use management and Natural Resource Management component will fund the promotion and establishment tree nurseries for livelihood improvement and environmental conservation in fulfilment of Project development objective

5.3.8. Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulation, 2009.

This Act applies to all wetlands in Kenya whether occurring in private or public land. It contains provisions for the utilization of wetland resources in a sustainable manner compatible with the continued presence of wetlands and their hydrological, ecological, social and economic functions and services. The project is will only capture a fraction of runoff in the catchment. The Proponent shall comply with the provisions of the Act in protecting wetlands, preventing and controlling pollution and siltation of rivers during construction phase.

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5.3.9. The Water Act, 2016 (The National and Storage Regulations, 2019)

The Act recognizes that water-related functions are a shared responsibility between the national government and the county government. This Act provides for the regulation, management and development of water resources and water and sewerage services in line with the Constitution.

The ACT establishes the Water Resources Authority ("Authority"), the National Water Harvesting and Storage Authority, the Water Services Regulatory Board, the Water Sector Trust Fund, and the Water Tribunal.

According to the regulations, the owner or developer or other person charged with the mandate of developing, managing and or maintaining waterworks shall apply for and obtain a water use permit under the Water Resources Regulations 2019 (b) Apply for and obtain an environmental impact assessment licence under the Environmental (Impact Assessment and Audit) Regulations 2003 made under Environmental Management and Coordination Act 2015 (c) Provide a monitoring and evaluation system on safety, health and environmental conservation

- ✓ *The Proponent has undertaken the ESIA and developed this report as required by the regulation*
- ✓ *hydrological assessment of the proposed Kamola water pan has been undertaken as part of the feasibility studies*
- ✓ *written authorization for the construction work of the water pan to start as the Permit is being processed*

5.3.10. Forest Conservation and Management Act No.34 of 2016

The Act gives effect to article 69 of the constitution with regard to sustainable management of forest resources for social economic development of the country and the associated ecosystem services. The Act recognizes the critical role that forests play in soil, water conservation, wood products provision, biodiversity conservation and as a habitat for wildlife. The Act provides for clear definition in respect to the ownership of forests, i.e., State, Local Authority or individuals. The act further provides for user rights in respect of, collection of medicinal herbs, honey harvesting, harvesting of timber and fuel wood, grass harvesting and grazing, ecotourism and educational activities. The Act is important because the nucleus apiary and processing plant is on community land that is has a well-managed mini-forest consisting of eucalyptus, cypress and various forage shrubs.

- ✓ *Natural vegetation will be protected and conserved within the pan catchment area*
- ✓ *Further with the availability of water and support from KCSAP there shall be increased establishment of tree nurseries for agroforestry development which contributes the achievement of 10% forest cover targets*
- ✓ The ESMP has provided measures for the replanting of indigenous vegetation which the contractor has to implement.

5.3.11. The Public Health Act (Cap. 242)

The primary purpose of this Act is to secure and maintain public health. Some of its provisions relevant to this project include prohibition of nuisance activities such as spillage or noise or other condition deemed to be injurious or dangerous to human health. According to Part IX Section 115 no person will be allowed to cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires local Authorities to take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance on conditional liable for injurious or dangerous to human health.

- ✓ *Since, the subproject will be implemented at a time when the whole World and the country is experiencing Covid-19 pandemic. Necessary arrangements and preventive measures will be made to prevent contractor, workers, county government team and other players from being infected with the virus guided by the Public Health Act (Covid-19 Restrictions of movement of persons and related measures)*
- ✓ *Other Mitigation measures include* fencing off of the pan, provision of sanitation facilities, training/ sensitization on solid and liquid waste management

5.3.12. The county Government Act No 17 0f 2012

The Act replaces the Local Government Act (Cap. 265) and gives effect to chapter 11 of the constitution, spells County government powers, functions and responsibilities and range of services under the purview of County governments. The relevant sections of the Act which impact on the project are provisions which touch on:

- ✓ County planning
- ✓ Public communication and information access for effective citizen participation
- ✓ The Integration of minorities and marginalized groups in development planning (VMGs)
- ✓ Dispute resolution concerning planning processes in particular the CIDP, sectoral and spatial plans

In particular Section 115 of the act provides for Strategic Environmental Assessments and Environmental Impact Assessments in Project planning (EIAs) as decision making tools. Among the services devolved to county governments include waste management such as sewerage systems and solid waste handling infrastructure. County authorities thus have responsibilities to establish and maintain sanitary services for the removal and destruction of, or otherwise deal with all kinds of refuse and effluent and where such service is established, compel its use by persons to whom the service is available. To affect the Act, County governments are empowered to make by-laws in respect of all such matters as are necessary or desirable for the maintenance of health, safety and wellbeing of the inhabitants of its area as provided under the Act.

- ✓ *Undertaking this ESIA process comply with the outlined principle of citizen participation and aligns well with the CIDP, sectoral and spatial plans as the current site has been set aside for the water pan*
- ✓ *The Grievance Resolution mechanism has been ensured through awareness and sensitization meetings with the county department for public participation taking the lead*
- ✓ *The ESIA process captures Conflict resolution GRM protocols which is in line with county government Act on public participation and conflict resolution as well resonates and complements county government service provision obligations*

5.3.13. The Penal Code (Cap. 63)

Section 191 of the Penal Code states that, any person or institution that voluntarily corrupts or spoils water from public springs or reservoirs', rendering them less fit for its use is guilty of an offence. Section 192 of the same act says a person who makes or vitiates the atmosphere in any place to make it noxious to health of persons/institution in dwellings or business premises in the neighborhood or those passing along public way, commit an offence.

- ✓ *The ESS safeguards codifies and complements mitigation measures on offences such as GBV, child abuse, SEA, OSHA that are to be accepted and enforced by the contractor a*

5.3.14. Occupational Health and Safety Act 2007

This legislation provides for protection of workers during construction and operation phases. It is tailored at implementation of the EHS plan in compliance with the relevant sections of this Act. The Act is relevant both during construction and operation phases of the project due to the fact that the project will involve workers at

all stages. Various health hazards are likely to emanate from the proposed project's activities such as workplace accidents. Health issues will therefore be integrated into the project to ensure safety of workers. The relevant subsections relevant to the project are 13, 14, 17, 18, 21a and b, 22c and d, 25 and 51.

- ✓ The work site will be registered with Directorate of Occupational Safety and Health (DOSH) and the contractor will be required to *ensure all necessary records on workers are kept during construction phase by providing PPEs, registration of workers, train workers on emergency preparedness and response while ensuring all SOPs on Covid 19 containment are adhered to*
- ✓ *Occupational health and safety audits will be carried out periodically to ensure compliance with this Act particularly in the construction phase*

5.3.15. The Land Planning Act (cap 303)

This Act is the overall planning law for land for both agricultural and constructed environments. Under this Act, all developments or changes to land use must be approved by a planning authority. Section 9 of the subsidiary legislation (the development and use of land legislation 1961) stipulates that before any plans are submitted to the Minister for approval steps should be taken as may be necessary to acquaint the owners of any land affected such plans particulars of comments and objects made by land owners should also be submitted. This is meant to reduce conflicts with other interests such as residential and commercial land uses.

5.3.16. Physical Planning Act, 1999

It provides for the preparation of a physical development plan for the purpose of improving the land and providing for the proper physical development of such land, and securing suitable provision for transportation, public purposes, utilities and services, commercial, industrial, residential and recreational areas, including parks, open spaces and reserves and also the making of suitable provision for the use of land for building or any other purposes. Section 29 of the Act empowers local authorities to control all development activities so as to ensure conformity to approved planning standards. Section 30 states that any person who carry out development without permission will be required to restore the land to its original conditions. The Act also provides an environmental impact assessment for a project which is likely to have injurious impact on the environment. Such an EIA is approved by the National Environment Management Authority (NEMA).

- ✓ *Undertaking this ESIA project report was sanctioned by KCSAP is in tandem with the provisions and is in line with sectoral and spatial planning and Siaya County CIDP.*

5.3.17. The Agriculture Act (Chapter 318)

The Agriculture Act 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. They prohibit 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 or equivalent to the width of river and to a maximum of 30 meters. The proposed site is flat with a slope of less than 5% and construction work will not impact negatively on soil erosion risks. The ESMP provides for restoration of the site through planting of grass, indigenous trees as well as catchment conservation.

5.3.18. Radiation protection act chapter 243[1985] Revised 2012

The Act provides for the standards on radiation and guidelines on use, licensing and control of radiation. The Act is administered by the Chief Radiation Protection Officer assisted by a Radiation Protection Board. The Act prohibits the unauthorized manufacture, production, possession or use, sale, disposal, lease, loan or dealership, import, export of any irradiating device or radioactive material. All authorized buyers, sellers, users, of such device must be properly licensed. No person shall sell an irradiating device or radioactive material unless at the time of sale the purchaser produces to the vendor a valid license authorizing him to use that type of irradiating device or radioactive material. Further the Act provides that where there are no provisions under the Act, the guidelines established and published by the International Commission on Radiological Protection, the International Atomic Energy Agency or the World Health Organization shall prevail. *KCSAP as partner to the community and as the proponent shall observe the provisions of the Act in the procurement of construction material and equipment.*

- ✓ *The proposed project activities, inputs and processes will thus avoid sourcing of goods that emit/produce ionizing radiations and has no adverse impact on human health.*

5.3.19. The Wildlife Conservation and Management Act, Cap 376

The Act provides for the protection, conservation and management of wildlife in Kenya. The provisions of this Act should be applied in the management of the project especially where it passes through protected wildlife habitats, migratory areas or dispersal corridors. The Act establishes the Kenya Wildlife Service (KWS) and provides for the establishment of national parks and national reserves and defines how they are to be managed. As per the Act, the overall mandate of KWS is to conserve and manage wildlife in Kenya. Its key responsibilities are:

- ✓ Sole jurisdiction over National Parks; supervisory role in the management of National Reserves, Local and Private Sanctuaries;
- ✓ License, control and supervision of all wildlife conservation and management activities outside the protected areas; conservation education and training; and Wildlife Research.
- ✓ The role of KWS also includes the management and protection of important and critical water catchments areas. KWS also has an additional role of protection and restoration of the Mau forest and controls 125 game stations outside protected areas. KWS plays a role in formulation and implementation of strategies for tourism and the sustainable exploitation of natural resources

The project site has birds and snake's species of insignificant biological conservation. *Further, the sub- project will have minimum if any impact on the present wildlife. However, the contractor as provided for in the ESMP will replant all removed trees.*

5.3.20. The Land Registration Act, 2012

The Land Registration Act is place to revise, consolidate and rationalize the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes. This Act applies to Subject to section 4, this Act shall apply to:

- ✓ Registration of interests in all public land as declared by Article 62 of the Constitution
- ✓ Registration of interests in all private land as declared by Article 64 of the Constitution
- ✓ Registration and recording of community interests in land. Section 24 states that the registration of a person as the proprietor of land shall vest in that person the absolute ownership of that land together with all rights and privileges belonging or appurtenant thereto;

The registration of a person as the proprietor of a lease shall vest in that person the leasehold interest described in the lease, together with all implied and expressed rights and privileges belonging or appurtenant thereto and subject to all implied or expressed agreements, liabilities or incidents of the lease. The Act also provides for the compulsory or otherwise acquisition of land from private ownership for the benefit of the general public. For the acquisition to take place, the minister responsible must issue a gazette notice. The Act also provides for full compensation to the affected parties.

- ✓ *The sub-project is being undertaken on land owned by Siaya County (though registered under the defunct County Council of Siaya). The community has been utilizing as Water Pan the pan area hence the interest is already registered and is protected under this Act and the National Land Commission Act.*

5.3.21. Land Adjudication Act, 2010

This provides for ascertainment of interests prior to land registrations under the Registered Land Act. This Act applies to any area of Trust land where the County Council in whom the land is vested so requests; and the Minister considers it expedient that the rights and interests of persons in the land should be ascertained and registered; and where the Land Consolidation Act does not apply to the area.

- ✓ *The proponent will ensure an affidavit allowing the community funding for the project is in place.*

5.3.22. The Land Act, 2012

This is an Act of Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes. Any dispute arising out of any matter provided for under this Act may be referred to the Land and Environment Court for determination.

- ✓ *The proponent will ensure there are instruments on allocation of land for the community project to guide arbitration in case of any disputes.*

5.2.23. National Land Commission Act No. 5 of 2012 revised 2016

National Land Commission derives its mandate from the Constitution of Kenya 2010, the National Land Policy (2009) and acts of Parliament, namely the National Land Commission (NLC) Act, the Land Act and the Land Registration Act, all of 2012. The broad mandate of the National Land Commission is;

- ✓ Manage Public land on behalf of the national and county governments
- ✓ Recommend a National Land Policy to the national government
- ✓ Advise the national government on a comprehensive program for the registration of title in land throughout Kenya
- ✓ Conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities
- ✓ Initiate investigations, on its own initiative or on a complaint, into present or historical land injustices, and recommend appropriate redress
- ✓ Encourage the application of traditional dispute resolution mechanisms in land conflicts
- ✓ Assess tax on land and premiums on immovable property in any area designated by law
- ✓ Monitor and have oversight responsibilities over Land Use Planning throughout the country
- ✓ Perform any other functions prescribed by national legislation. 6(3) for the management and administration of land in accordance with the principles of land policy set out in Article 60 of the Constitution and the national land policy; In addition to the functions set out in subsection (1), the Commission shall, in accordance with Article 67(3) of the Constitution

The proposed project site land is registered under the defunct Siaya County council Siaya but currently under Siaya County government. The evidence of ownership (Title Deed) is provided in annex (IV). The land was automatically transferred to the county Government of Siaya with enactment under the County Government Act and the community interested is safeguards through participatory processes.

5.3.24. Community land Act No. 27 of 2016

The Act provides for the recognition, protection and registration of community land rights inter alia procedures for registration and adjudication of community land, communal and reserve land as well as role of county governments as trustees. The Act provides for confirmation of validity of existing customary rights of occupancy. Part Viii relates to settlement of disputes relating to community land. Part 11 provides that the tenure system could be customary, free hold or leasehold with Part 11(3) providing for equal force and effect in law with freehold or leasehold rights acquired through registration and transfer. Part 11(3) prohibits sell and transfer of community land to private purpose. *Currently the title is under County government of Siaya which recognizes the use of the land for the proposed project. The land is a public parcel set aside for water pan development. The historically land parcel has been under such utility since 1970s i.e. over 40 years and was automatically transferred to County Government of Siaya which has not raised any objections to the Project in the planning meetings and public participation fora.*

5.3.25. Labour Laws of Kenya including Employment Act 2007

This is the revised employment act in Kenya, repealing the former Employment Act Cap 226. It deals with new employment conditions of employment and the rights of workers. All workers, including those employed during the construction phase, will be employed under this Act which includes provision with respect to minimum wage, working conditions and time, and also in the resolution of disputes. *This provision will guide the contractor in engagement and payment of the workers during implementation. The contractor will be given a copy of this report (C-ESMP) for reference too.*

- ✓ The Proponent through the contractor will make sure that fairness and gender equity are followed during the recruitment of the labour force to be used during the construction phase. Preference will be given to the local community for both skilled and unskilled labour.
- ✓ The proponent will ensure the engaged contractor is qualified, register the site as place as provided under DOSH. The contractor will also provide requisite PPEs to the workers and the latter will always be required to wear these.

5.3.26. 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 wrong doing.

- ✓ The ESMP provides for the implementation of a SGBV action plan with an Accountability and Response Framework as part of the Construction-ESMP (C-ESMP) and administration of the whole project cycle

5.3.27. Public Roads and Roads of Access Act (Cap. 399)

Sections 8 and 9 of the Act provides for the dedication, conversion or alignment of public travel lines including construction of access roads adjacent lands from the nearest part of a public road. Section 10 and 11 allows for notices to be served on the adjacent land owners seeking permission to construct the respective roads.

- ✓ *Where existing roads do not exist, the Proponent shall seek permission from the appropriate authorities to create such access during the construction phase*. Section 10 and 11 allows for notices to be served on the adjacent landowners seeking permission to construct the respective roads. This Act consolidates the law relating to traffic on all public roads. The Act also prohibits encroachment on and damage to roads including land reserved for roads. The proposed facility location complies with the provision of the Act. The sub Project is n not located on road reserves.

5.3.28. Antiquities and Monuments Act, 1983 (Cap 215)

Commented [JMA3]: Cap 215 repealed. Please present the National Museums and heritage Act, 2006.

This Act aims to preserve Kenya's national heritage. Kenya is rich in its antiquities, monuments and cultural and natural sites which are spread all over the country. The National Museums is the custodian of the country's cultural heritage. Through the National Museums many of these sites are protected by law by having them gazette under the Act. The proposed site has no sites of cultural heritage.

- ✓ *This act resonates well with OP 4.11 the protection of physical cultural resource under World Bank safeguards operation policy. National Museums of Kenya (NMs) and International best policy for accidental discovery of heritage resources and burial sites will be adhered to through well-established documentation and line of communication protocols, securing the site and ceasing operations where chance finds occur (Chance find procedures Appendix XVI). This is to avoid any further damage to such chance finds.*

5.3.29. The Standards Act Cap 496

The Act is meant to promote the standardization of the specification of commodities, and to provide for the standardization of commodities and codes of practice; to establish a Kenya Bureau of Standards, to define its functions and provide for its management and control. Code of practice is interpreted in the Act as a set of rules relating to the methods to be applied or the procedure to be adopted in connection with the construction, installation, testing, sampling, operation or use of any article, apparatus, instrument, device or process.

- ✓ *The Act contains various specifications touching on electrical products. The Proponent shall ensure that commodities and codes of practice utilized in the project adhere to the provisions of this Act especially in relation to siting of sanitary facilities, solar system and structural standards in the enforcement of construction standards.*

5.4. World Bank Environmental and Social Safeguard Policies

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

5.4.1 OP/BP 4.01 (Environmental Assessment)

The World Bank considers environmental impact assessment (ESIA) as one among a range of instruments for environmental assessment. These are procedures that ensure the proposed development is sustainable and environmentally sound. Although its operational policies and requirements vary in certain respects, the World Bank follows a relatively standard procedure for the preparation and approval of an environmental assessment study, which:

- ✓ Identifies and assesses potential risks and benefits based on proposed activities, relevant site features, consideration of natural/human environment, social and trans-boundary issues
- ✓ Compares environmental pros and cons of feasible alternatives
- ✓ Recommends measures to eliminate, offset, or reduce adverse environmental impacts to acceptable levels (sitting, design, technology offsets)
- ✓ Proposes monitoring indicators to implement mitigation measures

- ✓ Describes an institutional framework for environmental management and proposes relevant capacity building needs

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for the bank and borrowers in the identification, preparation, and implementation of programs and projects. Safeguard policies have often provided a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations. The World Bank's environmental assessment policy and recommended processes are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment. Its purpose 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.

- ✓ *The guidelines have helped to assess the potential environmental risks and impacts of the sub project in its area of influence; examine sub-project alternatives; identify ways of improving the sub-project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts. The assessment has taken into account: the natural environment (air, water, and land); human health and safety) social aspects (involuntary resettlement, indigenous peoples and physical cultural resources). The project has consulted the public on the development of the project and the ESIA as required under this Policy.*

~~Environmental Assessment is one of the 10 environmental, social, and legal Safeguard Policies of the World Bank. Other safeguard policies of relevance to this study include:~~

- ~~✓ Forests (Operational Policy, OP/BP 4.36)~~
- ~~✓ Bank Safeguard Policy 4.04 Natural Habitats;~~
- ~~✓ Bank Safeguard Policy 4.10 Indigenous People; and~~
- ~~✓ Bank Safeguard Policy 4.12 Involuntary Settlement~~
- ~~✓ OP/BP 4.01 Environmental Assessment~~
- ~~✓ OP/BP 4.09 Pests Management~~
- ~~✓ OP/BP 4.11 Physical Cultural Resources~~

5.4.2. OP/BP 4.04 Policy on Natural Habitats

The policy is designed to promote environmentally sustainable development by supporting the protection, conservation, maintenance and rehabilitation of natural habitats and their functions. The policy seeks to ensure that World Bank-supported infrastructure and other development sub-projects take into account the conservation of biodiversity, as well as the numerous environmental services and products, which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported sub-project can damage natural habitats (land and water area where most of the native plant and animal species are still present).

A careful evaluation of the project context was carried out in the baseline studies to determine if the project setting has any significance that may disrupted due to the implementation of the sub project. This safeguard policy requires a precautionary approach to natural resources management and requires the conservation of critical environments during project development. In order to ensure conservation and project sustainability, this policy requires that:

- ✓ Project alternatives are sought when working in fragile environments
- ✓ Key stakeholders e.g. WRA were consulted during the project design, implementation, monitoring and evaluation of mitigation.

The proposed use of water from the water pan will be for micro irrigation and livestock watering on individual farmland. The proponent through this ESIA and ESMP has taken advance measures for protecting, preserving and conserving the environment in the project setting from predicted and emergent adverse impacts. The project will not be implemented in a natural habitat or an area of ecological significance

5.4.3. OP/BP 4.12 Policy on Involuntary Resettlement

This policy includes safeguards to address and mitigate these 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, *Since:*
The sub project site is public land reserved for public primarily water storage for community use (salted water pan)
The sub project has been in existence at the site since early 1970s. The plot (1.25 ha) set aside for the sub project is not inhabited and has been under the proposed subproject (it's rehabilitation and improvement of the silted pan)). Hence the sub project will not lead to the displacement of any people during construction hence Resettlement Action Plan will not be required.

5.4.4. Pest Management (Operational Policy, OP/BP 4.09)

The policy is meant to minimize and manage the environmental and health risks associated with pesticides use and promote and support safe, effective, and environmentally sound pest management. Though the policy as no procurement of pesticides or pesticide application equipment is envisaged for the subproject per see, the envisaged horticultural and agricultural improvement activities tied to the wider project implementation objectives may involve pesticide use and subsequent increase in health and environmental risk.

- ✓ *The use of pesticides and agrochemicals will be on very small-scale level and an integrated pest management plan (Appendix XV) will guide the farmers in horticultural and agricultural productivity improvement activities.*
- ✓ *Among other mitigation measures no pesticides under* WHO class 1A and 1B of pesticides will be procured as to comply *with World* Bank safeguard policies on pesticides. The proposed insecticides to be used for horticultural and general agricultural improvement initiatives will thus fall under World Health Organization (WHO) class 11 (moderately hazardous) and WHO Class 111(slightly hazardous).

The recommended IPM strategies (See Appendix XV on IPMP) include climate management techniques such as use of green houses~~, screens~~ and precision farming; Crop cycle management such as de-leafing; Biological methods such as use of biopesticides, Use of compatible chemicals where biological and cultural methods have failed, Assessment of pesticide effect on beneficial organisms, Cultural methods such as pheromone traps, frequent and systematic scouting for pests and diseases, Plant nutrition programme that incorporate organic resources and foliar sprays, training on safe and effective use of pesticides for farmers, extension staff and agrochemical stockists.

5.4.5. Forests (Operational Policy, OP/BP 4.36)

The policy on forest safeguards seeks to realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests.

This policy is not triggered because the project doesn't involve construction through any forest.

- ✓ *Baseline survey of the sub project area showed the area does not have a forest. In the ESMP the proponent has agreed to measures to enrich the environment with more trees in the site should any removal has occurred. The sub project will lead to the establishment of tree nurseries and enhance tree growing in the area. It should be noted that the project is not being implemented in a forest reserve.*

5.4.6 OP/BP 4.11 (Physical Cultural Resources)

The objective of this policy is to avoid or mitigate adverse impacts on physical cultural resources from development sub-Project, Identify the likely physical cultural resources issues, if any, to be taken into account by the EA or If the sub-project is likely to have adverse impacts on physical cultural resources, identify appropriate measures for avoiding or mitigating these impacts as part of the EA process. These measures may range from full site protection to selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost.

- ✓ *The proponent during the environmental and social screening exercise investigated from the community of the possibility of a history of any physical or cultural significance of the proposed project site. It was found out from the community that the land for the sub project site has not and is not known to have any physical or cultural object/resource that the proposed development may interfere with. This ESIA report has established that (OP/BP 4.11 -Physical Cultural Resources) will not be triggered through the implementation of the proposed sub project. This act resonates well with OP 4.11 on the protection of physical cultural resource under World Bank safeguards operation policy. International best policy for accidental discovery of heritage resources and burial sites will be adhered to through well-established documentation and line of communication protocols, securing the site and ceasing*

Commented [WU4]: This should guide you on whether you need a PMP. See my comment on this above. If there will be heavy use of agrochemicals, the the proponent should prepare a PMP. If not, then training of simple cultural methods of pest/disease control should suffice.

Commented [WU5R4]:

Commented [WU6]:

operations where chance finds occur as to avoid any further damage in case of such chance finds (see Appendix XVI on Chance find procedures)

~~Activities triggering World Bank Safeguards are summarized in Table (6) which gives the extent to which the World Bank safeguards apply to the implementation of the proposed project implementation. The triggered safeguards are given nuanced review and investigation to ensure compliance with the World Bank requirements.~~

5.5. Relevant International Conventions and Treaties

Kenya has ratified various international conventions on environment that are applicable to this study. 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;

- ✓ ILO Conventions ratified by Government of Kenya
- ✓ Safety and Health in Construction Recommendation, 1988
- ✓ Convention on Wetlands or the Ramsar Convention
- ✓ Convention on Biodiversity
- ✓ The Convention on International Trade in Endangered Species (CITES)
- ✓ Convention on the Conservation of Migratory Species
- ✓ United Nations Framework Convention on Climate Change
- ✓ Important Bird Areas

5.5.1. 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.

5.5.2. Ramsar 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.

5.5.3. 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.

5.6. Institutional framework

The project beneficiary is the Lela community of Kamola Village. KCSAP, Siaya has the overall responsibility of ensuring successful project implementation. The actual construction of the project will be undertaken by a contractor identified through a competitive bidding process. Monitoring the environmental impacts of the project and compliance to the Environmental Management Plan will be the responsibility of the National Environment Management Authority (NEMA) through the County Environment Officer, and the Sub county Environment Committee. However, the CPCU, ESIA expert, Health and safety officer and the CESCO will undertake routine monitoring to ensure compliance and implementation of the ESMP.

CHAPTER SIX

6.0. PUBLIC PARTICIPARTION AND STAKEHOLDER CONSULTATION

6.1 Overview

The Environment Management and Co-ordination Act 1999 states that every person in Kenya is entitled to a clean and healthy environment. Section 3 (5) (a) of EMCA 1999 as well as the County Government Act, 2012 gives the principle of public participation in development of policies, plans and procedures for the management of the environment and service delivery respectively. Section 17 (1) of the Environmental (Impact and Audit) Regulations 2003 states that, an ESIA shall "seek the views of persons who may be affected by the project". Of relevance to environmental audits is Section 35 (2) (j) of the Environmental (Impact and Audit) Regulations 2003, which states that an environmental auditor shall "seek and examine views on health and safety issues from the project employees, the local and other potentially affected communities." This is in addition to World Bank ESS guidelines and policies. Plate (6-14) provides evidence of the ESIA process compliance with the provision.

Plate 7: A focus Group Discussion at the site

Note some of the environmental issues to the- left of the photo

UNECE convention on Access to Information, Public Participation in Decision making and Access to Justice in International Environmental Matters, 1998 (also known as the Aarhus Convention) is the most comprehensive legal instrument relating to public involvement. It indicates that public participation should be effective, adequate, and formal and provide for information, notification, dialogue, consideration and response Participation is also a key pillar in the County Government Act as well as the World Bank ESS policy guidelines/OP.

6.2 Objectives of the public consultation

The objectives of public consultations for this Environmental Social Impact Assessment was to:

- ✓ 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 HSE management practices into the Environmental and Social Management Plan (ESMP) as recommended by neighbors/community

Plate 8: Group phato after consultation at the Project site
Note that this was pre Covid 19 containment measures.

6.3. Methodology used in the Community Public Participation

The environmental and social assessment public participation exercise was conducted in January 2020 by the expert in three ways through (i) Focus group and Key informant interviews and discussion, (ii) Field surveys and observational checklists and (iii) Public meetings. In general, the following steps were followed in carrying out the entire CPP process: -

- ✓ Identification of institutions and individuals interested in the process and compiling a database of the interested and affected parties (KII schedule in Appendix XI and Community barazas in Appendix (VIII)
- ✓ Administration of questionnaires to different target groups and local community members in the administrative area for the proposed project site (Appendix X)
- ✓ Public / Technical Meetings at various levels and with different target groups

6.3.1 Stakeholders Public Meetings

Consultative experts' meetings were continuously held during the field exercise to consolidate the issues affecting the project as well as capturing issues raised by the project affected persons. One comprehensive public meeting as well as and technical meetings were held on various dates in January ,2020, with the local residents, chiefs, Village elders, and other local administrative leaders in attendance in the project area. (See Appendix viiI). The issues arising in the meeting are captured in Appendix (XII).

6.3.2. Positive Issues arising from public participation

- ✓ Increased employment opportunities
- ✓ Improved access to clean water
- ✓ Conservation of the catchment through tree panting
- ✓ Improved adaptive capacity to frequent droughts in the area
- ✓ Improved food security and nutrition security especially vegetable produce
- ✓ Reduced time to water point and burden on women and children notably the girl child

6.3.3. Negative Issues arising from public participation

In general there was no community objection to project implementation during the consultative process. Among the stakeholders during the public participation exercise were: the local community and relevant sector agencies from County Government of Siaya and Lead agencies such as Forest department, County NEMA office. However, hydrological risks such as water catchment ~~areas~~ degradation and runoffs were evident over

the project implementation. The design will take into account the hydrological risks by adhering to standard laws ~~s Act~~ and national construction Authority regulations and laws

6.3.4. General issues from Public participation

Various issues, most which fall under the social category were raised particularly during site meetings and FGDs (See appendix XII and IX). The issues are highlighted under and their resolution is captured in Table (7).

- ✓ Siting of entry points for the cattle troughs
- ✓ Number of toilets and bathrooms to take care of gendered needs
- ✓ The waterlogging of toilets vis a vis the high-water table during wet season
- ✓ Loss of access to the current water in the pond during construction by the community
- ✓ Funding of income generating activities to motivate the PMC and the youth
- ✓ Conflict between county administration and PMC on implementation oversight

Plate 9: Community consultative meeting

Note the participation of all gender including the youth, which is critical in mainstreaming Issues on VMGs in the planning process

6.4 Analysis of public consultation and participation

The public meetings captured the concerns of the people especially those directly affected by the project. The issues raised during the public meeting enabled the identification of the specific issues from the stakeholders' response which provided the basis upon which the aspects of the ESIA were undertaken. The views of these stakeholders were considered and their names and their contacts were taken for future references as required by NEMA. (See Appendix vii for the list of participants in the Public Participation and Consultation. The local

communities and major stakeholders independently gave their views, opinions, and suggestions in their best interest, bringing out the factors that affected the circumstances, influences, and conditions under which their organizations exist.

From the field work and the public meetings, it was apparent that the majority of the stakeholders were aware of the project and unanimously supported its implementation. The consultant and proponent also responded to the queries that the public sought to know about the project. All the environmental issues raised can be adequately mitigated exhaustively as explained in chapter 4 of this report. Other issues surrounding the project were amicably addressed during the public meetings since representatives, of the proponent were in attendance and responded to the issues which were unclear to the public. The comments are captured in appended sample questionnaires (Appendix X and KII in appendix XI). The community showed unanimous approval for the project. Employment creation, adaptation to and mitigation of extreme climate change episodes, poverty alleviation and environmental conservation were the main reason for the support. From the field work and the public meetings, it was apparent that the majority of the stakeholders were aware of the project. The consultant and proponent also responded to the queries that the public sought to know about the project which is summarized in Table (6).

Table 6: Summary of major issues during public participation

Venue	No. of participants	Major issue/concern	Response
Kamola W/P site	35 people during FGDs and 66 during general baraza. 20 persons during ESMP feedback	Siting of entry points for the cattle troughs No. of toilets and bathrooms in relation to gender The waterlogging of toilets vis a vis the high-water table during wet season Drying lines for clothes Conflict between PMC and county administration on oversight Funding of Conservation and income generating activities for the PMC and Youth in the area Loss of access to water by community during construction phase Risk of rape at the site during operation	The WP to be sited downstream by revising BQ Two lockable toilets for each gender to be included in the BQ Use of biodigester technology Adequate drying lines to be provided for in the BQ Training of PMC and sensitization on GMR mechanism for accountability The community to come up with proposals for possible funding The contractor to schedule construction in such away it doesn't completely deny access to the community at any one time

CHAPTER SEVEN

7.0 POTENTIAL ENVIRONMENTAL & SOCIAL ~~PROJECT~~ IMPACTS AND MITIGATION MEASURES

7.1. Introduction

An effort has been made to account for impacts during the initial site preparation, construction and the operation stages of the project. This Section discusses the various potential environmental and social impacts (both positive and negative) associated with the proposed project. Upon critical scrutiny of the issues and general levels of impacts the following environmental and social impacts were identified as critical for detailed assessment and monitoring

7.1.1: Types of Impacts

The types of impacts considered in this project report include:

- ✓ Primary impacts: - a primary impact is direct and occurs at the same time and place of action
- ✓ Secondary impacts: - a secondary impact occurs later in time, or at a different place from the initial action
- ✓ Cumulative impacts: - cumulative impacts result from incremental impact of a proposed action on a common resource when added to the past, present and foreseeable future
- ✓ Project legal and regulatory compliance: this refers to demonstrated compliance with national and local environmental regulations and standards
- ✓ Social impacts including possible community and leadership conflicts

7.2. Construction phase impacts

7.2.1. Positive impacts

7.2.1.1 Employment creation

Employment creation is expected from construction work. Both skilled and un-skilled labour on temporal terms will be hired during the project construction and maintenance during operation phase as well through small scale irrigated farming

7.2.1.2 Increased market and economy

The construction work will require supply of hardware such as steel, timber, cement etc. from the local suppliers with gains accruing to the economy through multiplier effects. This will also contribute to the growth of informal sector. The reduction in losses. The establishment of tree nurseries will create new revenue streams for farmers.

7.2.1.3 Biodiversity conservation and enhancement

Landscaping and planting of trees and flowers in the pan compound environments will enhance the aesthetics and community tree planting will enhance biodiversity of the area. The group nursery will provide seedlings to the community and environmental conservation

7.2.2. Negative Impacts

7.2.2.1 Air pollution and Aerial Emissions

The potential sources of air pollution include traffic, emission from excavator and material supply vehicles. This is a short-term negative impact and will last within the actual excavation period and ferrying of materials. This impact is considered low risk. Increased use of fossil fuels during construction phase of the project is anticipated and the emissions may contain potential pollutants like NOx, Sox, Cox2/CO and other hydrocarbons, depending on the type of fuel used by the vehicles. This may also have an effect on level of greenhouse gas emissions.

Proposed mitigation

- ✓ Ensure that maintenance on all machinery is done regularly to avoid the emission of noxious gases.
- ✓ Drivers and machine operator to avoid unnecessary running of motor vehicle engines and machinery when not in use
- ✓ Harnessing of solar energy in pumping water to the overhead tank to mitigate greenhouse gas emission

7.2.2.2: Solid Waste Generation

The project will entail a small scale of masonry work. The volume of solid waste generated from the construction of water troughs, latrines and any other masonry structure and packaging materials such as cement will be small with low impact.

Proposed mitigation measures

The contractor should ensure that construction wastes generated and not reusable or recyclable is cleared from the project site and disposed of accordingly in line with appropriate law by the regulatory agency at the region which is NEMA and County Government of Siaya

- ✓ Contractor to practice waste separation to enable easy recycling of re-usable waste materials
- ✓ Contractor to provide temporal waste disposal receptacle in site.
- ✓ Contractor to liaise with licensed waste collector to routinely collect and dispose the waste
- ✓ Train workers and local communities on solid waste management

7.2.2.3: Surface and ground water pollution/ contamination

Earth movement, disposal of vegetation and other cleared materials and the inadequate disposal of liquid and solid waste, including the human waste from the workers, are likely to cause physical and chemical alteration of surface and ground water quality. Civil works, excavations, or an inadequate planning of cuts and fills, may affect the water table significantly. The digging of channels and diversion of water may also affect the turbidity and water quality, as well as the level and course of the river. Changes in surface hydrology are likely to alter the flow of water through the landscape

Mitigation measures

- ✓ The contractor to construct a standard temporary pit latrine for the workers
- ✓ Contractor to identify an appropriate site pit for disposal of vegetation and biodegradable plant material
- ✓ A temporary incinerator to be constructed to burn non bio degradable solid wastes such as plastics
- ✓ Civil works, excavations, cuts and fills to be compacted so that there is minimal soil loss

7.2.2.4: Geomorphology and soils.

Surface alterations of the project works could destabilize the soil and lead to soil erosion. Land clearing in the project area and excavation may generate large amounts of fill and rubble,

Mitigation measures

- ✓ Large amount of fills will be transferred to appropriate disposal sites.
- ✓ Compaction should be limited to the construction area.

7.2.2.5: Dust generation

Excavation and the movement of vehicles carrying material such as fuel and other required construction materials and equipment during construction will result to generation of dust in the air. This will take a short duration and mitigation measures are easily implemented.

Proposed mitigation measures are

- ✓ Provision of dusk masks to workers by the contractor
- ✓ Contractor to instruct drivers to avoid high speed near settlements in the project area
- ✓ Contractor to ensure water and mist sprays are undertaken during dry periods
- ✓ Contractor to ensure trucks removing waste and delivering materials such as cement are covered

7.2.2.6: Oil spills/Fuels and Lubricants

Oils and grease spillage on the ground may cause contamination to the soil and groundwater.

Proposed mitigation and management measures are:

- ✓ Proper maintenance of vehicles and other equipment (using petroleum products) to avoid fuels and lubricants spills at the project site.

- ✓ The contractor should properly handle, storage, and disposal off oils and greases and their wastes during construction by ensuring that servicing is strictly done at designated servicing yard or external petroleum stations

7.2.2.8 Solid waste generation and disposal

Most of the waste will be generated during the construction waste. This includes papers used in packaging cement and soil this can pose the risk of the site being a breeding for pests, pollution of the physical environment and attraction for scavengers. Temporal storage on site for solid waste such as paper can be done with eventual disposal in compliance with waste regulations. Recycling and reuse strategies can also be achieved.

Proposed mitigation measures

- ✓ Contractor to dump unused excavated materials and debris in designated places
- ✓ Contractor to re- use excavated soil for the pan wall/embankment

7.2.3.1 Hydrological impacts

Storm water discharges may cause siltation or sedimentation, or induce other changes in receiving waters such as temperature, salinity or pH. These effects will vary with the amount of storm water discharged and the volume and condition of the receiving water. Since storm water discharge constitutes a major portion of the total volume of the receiving water, adverse public health effects are likely in absence of water testing and treatment interventions. Construction activities may also alter drainage patterns on a site where construction occurs.

Mitigation measures

- ✓ The proponent must ensure that the spillway is constructed as per the engineering design specifications to ensure proper flow and reduce siltation or sedimentation.
- ✓ Water collection troughs to be constructed outside the pan and appropriate treatment/filtration works be established outside so that incase of water contamination then alternatives such as water purification tablets can be availed to the users

7.2.3.2. Habitat impacts

Excavation, site development, grading, and other surface-disturbing construction activities may adversely affect listed species or their habitat. Stormwater may drain into or inundate listed species' habitat.

- ✓ Management of water sources;
- ✓ Management of machinery and equipment;
- ✓ Transport of materials;
- ✓ Protection of the vegetation cover for its later use
- ✓ Aesthetics and landscape alterations, infrastructure etc.
- ✓ Effects associated with construction activities and related handling and disposal of wastes generated
- ✓ Introduction of nuisance such as pests and related breeding sites

7.2.3.3 Landscape disturbance, erosion and Vegetation loss

Building material such as hardcore, ballast, cement, rough stones and sand will be required and obtained from quarries, hardware shops and natural sites such as river banks. This may result in landscape changes, displacement of habitats and reduction in visual quality of the surroundings. The site is an existing pan that is being rehabilitated with minimum clearance of vegetation expected.

Proposed mitigation

- ✓ Where possible the contractor to exercise selective removal of existing acacia and bamboo species
- ✓ The Project component on NRM and SLM to support community establishment and planting of indigenous trees in the catchment
- ✓ The contractor to plant grass and indigenous tress around the pan area as per the ESMP recommendations
- ✓ excavations of the site will be confined only within the sections upon which construction is taking place
- ✓ Excavated earth will be held away from drainage channels
- ✓ The PCU will develop catchment conservation plans to address soil erosion concerns in the catchment

7.2.3.4 Risk of Accidents

During Construction phase, increased traffic flow into and through the site will occur. This increases the risk of accidents unless the traffic is properly controlled. Erection of proper signage and appropriate warning at least 100m from the hazard will mitigate against the chances of accidents. Hauling of equipment (plant and machinery) and other materials and supply to the project site may pose a potential risk of accidents to animals and even people, especially children.

Proposed mitigation measures

- ✓ Drivers to be instructed not to speed especially near settlements when supplying materials to the site to prevent accidents especially to animals and children
- ✓ Provision of PPEs to all workers
- ✓ Installation of warning signage at the construction site and identified
- ✓ Contractor to register the site with DOSH and insure workers

7.2.3.5 Accidents from working at heights

Construction of water tank towers pose some risks to the workers

Proposed mitigation

- ✓ Testing structures for integrity prior to undertaking work
- ✓ Contractor to Implement a fall protection program that includes training in climbing techniques and use of fall protection measures
- ✓ Use of helmets and other protective devices

7.2.4: Anticipated Social Impacts

The factors considered in this section includes implication of the sub project implementation

7.2.4.1 Labour Influx Effects

During construction the project will attract jobseekers and hawkers with possibility of thieves intruding into the area. 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;

- ✓ Strain on various resources especially water resources
- ✓ Grievances from local community members over job opportunities
- ✓ Sexual Exploitation and Abuse
- ✓ Unwanted Pregnancies

To mitigate against possible social ills associated with labour influx during construction phase and conflicts thereof, the contractor will adhere to the following mitigation plan;

Mitigation measures to Labour Influxes

- ✓ 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
- ✓ 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 children Protection Strategy, this strategy will ensure that no child under the legal age of 18 years in employed to the Project.
- ✓ The contactor should institute a security plan e.g. through a register for all visitors and workers.
- ✓ The contractor will Adopt and adapt Nyumba Kumi strategies

7.2.4.2 Spread **of COVID-19 amongst community members during construction**

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.

Covid Mitigation Measures

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;

Mitigation measures

- ✓ 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 is gathered, maintain social distancing of at least 2 meters
- ✓ All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and other vital signs;
- ✓ The project shall put in place means to support rapid testing of suspected workers for covid-19;
- ✓ Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used;
- ✓ Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of work stations, door knobs, hand rails

7.2.4.3: Gender Based violence and Sexual Harassment

While such cases are difficult to assess, there is likelihood of rape cases at the watering points and from work related operations. This impact is triggered during Project Construction Phase when the Contractor fails to comply with the following provisions;

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

Mitigation measures

This mitigation is triggered by gender inclusivity requirements in hiring of workers and entire Project cycle

Mitigation measures on Human Rights and Gender requirements which oblige the contractor to:

- ✓ 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 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

- ✓ 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.

7.2.4.5 Child Abuse

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

Mitigation Measures to 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...
- ✓ 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 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

7.2.4.6: 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

- ✓ 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). The SEA action plan will include how the project will ensure necessary steps are in place for:
- ✓ **Prevention of SEA**: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;
- ✓ **Response to SEA**: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management;
- ✓ Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights;
- ✓ **Management and Coordination**: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA,

including whistle-blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

7.2.4.7 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 expert in the project proponents' 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 2 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. Use traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements and mail) when stakeholders do not have access to online channels or do not use them frequently. Ensure to provide and allow participants to provide feedback and suggestions.
v. 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.
vi. In situations where online interaction is challenging, disseminate information through digital platform (where available) like Facebook and WhatsApp & Chart groups.
vii. Ensure online registration of participants, distribution

7.3. Operational phase impacts

7.3.1. Positive impacts

7. 3.1.1 Resilience building in the community

Increased access to water will mitigate against droughts and open opportunities for irrigation ensuring food security and nutritional security as well as income stabilization among farmers

7.3.1.2 Improved food security

Availability of water will facilitate micro irrigation projects and production of high value crops. This will increase access to food and improve nutrition beside income generation and employment among VMGs such as women and the youth.

7.3.1.3 Livelihood diversification

The proposed project will enhance livelihood diversification through sustainable land management and natural resource management interventions, including small scale irrigation projects and farm level conservation works. Diversification will contribute towards employment creation, income generation and food security in the project area.

7.3.1.4 Improved public hygiene

The proposed construction of sanitary facilities (bio-digester technology) in the project and fencing of the water pan will mean less contamination and pollution of the water and the environment. All this will result in improved sanitation and risk of water borne diseases.

7.3.1.5 Reduction in water borne diseases

The water pumped to the elevated water tank would be treated before human use. Availability of potable water for drinking and other domestic uses will result to improved personal and public hygiene. Improvement in public hygiene will mean reduced disease incidences and disease burden. Continuous community sensitizations and training are expected to take place during operation stage by water department will enhance the curbing of waterborne diseases.

7.3.1.6 Flood Control and other ecological functions

The project area receives very low rain and. The proposed water pan will retain surface water flows increasing water storage for later use. The pan will also contribute to the recharge the of the ground water levels in the process reducing Surface flow and risk of flooding downstream.

7.3.2. Negative impacts

7.3.2.1 Increased pressure on infrastructure

The proposed project will lead to increased pressure on water source due to increased number of people who will be using these facilities which will directly translate into increase in volume of the relevant parameter such as water collection points.

Mitigation measures

- ✓ Protect the pan by fencing off and put appropriate conservations measures around by planting grass along the embankments and trees species that do not extract a lot of water from the ground the proponent will undertake this measures in collaboration with forestry department in the county.
- ✓ Construct water collection points at least 5meters away from the protected pan
- ✓ Observe Covid-19 guidelines by maintaining social distance and avoid congestion or public gathering around the water pan

7.3.2.2 Toxicity and contamination from Pesticides

The Project objective is to contribute to resilience building through increased agricultural productivity. In the sub Project area, horticultural and micro irrigation activities are envisaged. However, this will be on minor scale. This will increase use of agro chemicals (though on small scale).

Proposed Mitigation Measures

- ✓ Training of farmers on effective and safe use of pesticides
- ✓ Avoid use of chemicals and especially restricted chemicals
- ✓ Use of PPE by sprayers
- ✓ Implementation of the recommended Integrated Pest Management (IPM) such as crop rotation, use of traps, Micro irrigation, green houses and screens, foliar feed and organic manure
- ✓ Only resort to low risk pesticides when cultural and biological control measures fail

7.3.2.3 Pollution of water sources

This may occur during **construction phase** as well during **operation phase** largely due to farming activities and or/ lack of sanitary facilities in the catchment

Proposed Mitigation

The contractor should avoid unnecessary wastage of water during construction

- ✓ the contractor should provide oil sumps at the construction yard and/or service and fuel at registered oil dealers yards necessary measures to prevent oil and grease spills and soil erosion which may pollute the water
- ✓ Install bio-digester for latrine facilities during operation phase
- ✓ Regular testing and chlorination of water at the community water point during operation phase
- ✓ Community sensitization and awareness on sanitation

7.3.2.4. Downstream flooding

Though this is low risk event in the context of the project implementation, contingency plan is necessary in the event unusually heavy rainfall events in the future

Proposed Mitigation

- ✓ Adhere to structural standards for water storage projects
- ✓ Encourage beneficiaries to implement soil and water conservation measures through sensitization
- ✓ Undertake re-vegetation/ grassing around the pan and in the catchment

7.4. Decommissioning phase impacts

The pan may be decommissioned due to aging of the structures such as weakening of embankments, siltation of the spillway and the pan itself. It may end up being more costly to desilt the pan ~~and~~ than ~~rather~~ to construct a new pan. The maintenance cost of rehabilitating the ban may exceed the benefit and if a cost benefit analysis is done by calculating the net present value and its internal rate of return, it may be negative. Therefore~~–~~ costs incurred to sustain the pan may be too high. These factors, among others, may necessitate decommissioning of the pan. Below are possible positive and negative impacts associated with decommissioning of the pan.

7.4.1. Possible Positive impacts

7.4.1.1 Structural safety:

As water pan structures ages, they weaken, water pan may become unsafe to operate. Water pan history of safety incidents and unsuccessful remedial repairs determine water-pan safety risk

7.4.1.2 Reservoir siltation:

Siltation may reduce the water pan's ability to store and supply water. Financial implications may show that it will be costly to dredge hence decommissioning

7.4.1.3 Restoration of habitat diversity

The water pan is necessary for habitat, natural physical processes that sustain river structure, fish and other river-dependent animals as priorities in water resource allocation The intention is to fully restore the natural flow of the surface runoff if the situation warrants the action

7.4.2. Possible Negative impacts

Decommissioning is expected every 10 years for desiltation or if the capacity is to be upgraded in future. Possible decommissioning impacts are primarily related to disposal and handling of the inert and non-biodegradable and plastic wastes from demolition.

7.4.2.1 Solid waste Generation

The demolition exercise will entail removal of structures that will lead to accumulation of solid wastes that will emanate from the following activities:

- ✓ Demolition and removal of all the concrete works
- ✓ Demolition and removal of all the sanitary utilities
- ✓ Demolition and removal of the wooden and roofing materials
- ✓ The scrap metal and plastic water tanks

Proposed mitigation and management measures

To control the generation of noise and ensuring compliance with relevant noise standard include:

- ✓ Avoid idling of machinery or engine when not in use.
- ✓ Restrict activities that create noise to daytime only.

- ✓ Provision of Personal Protective Equipment and clothing (PPE/C) to those actively engaged in the works at the site

7.4.2.1 Noise and Vibration Generation

Noise and vibration produced during decommissioning may lead to impairing verbal communication, temporary hearing problems/temporary threshold shift (TTS), noise annoyance or even interference of the normal behavior of domestic.

Proposed mitigation

To control the generation of noise and ensuring compliance with relevant noise standard include:

- ✓ Avoid idling of machinery and engines when not in use
- ✓ Provision of PPEs and clothing including ear muffs to workers
- ✓ Construction activities to be undertaken during day, preferably between 8.00am and 5pm

7.4.2.1. Motor vehicle emissions

The potential sources of air pollution include traffic emission from excavator and material transport vehicles. During the decommissioning phase

Proposed mitigation measures are

- ✓ Ensure that maintenance on all machinery is done regularly to avoid the emission of noxious gases.
- ✓ Drivers and machine operator to avoid unnecessary running of motor vehicle engines and machinery when not in use

7.4.2.2. Oil spills/Fuels and Lubricants

Oils and grease spillage on the ground may cause contamination to the soil and groundwater.

Proposed mitigation and management measures are:

- ✓ Proper maintenance of vehicles and other equipment (using petroleum products) to avoid fuels and lubricants spills at the project site.
- ✓ The contractor should properly handle, storage, and disposal off oils and greases and their wastes during construction by ensuring that servicing is strictly done at designated servicing yard or external petroleum stations

Table 7: Summary of anticipated Environmental and Social Impacts and mitigation measures

Possible Negative Impacts	Mitigation Measures
Construction Phase	
Solid Waste	✓ Provide solid waste collection facilities and encourage waste segregation through sensitizing workers and community on waste management practices ✓ Contact the county Government for site to disposal of construction waste material ✓ Engage licensed waste handler to regularly collect and dispose the wastes ✓ Ensure recycling of recyclable wastes such as paper, metals, and plastics.
Public and Occupational health and safety	✓ Provide appropriate protective clothing (overalls, head covers/caps, gloves, nose muffs) and training of workers on use of these PPEs. ✓ Provide suitable equipment during construction to avoid muscular strains ✓ Ensure water is treated and safe for workers and community ✓ Fence off pan area to reduce risk if accidental drowning of children and livestock ✓ Surveillance, monitoring of water quality and regular desiltation ✓ Use Biodigester technology for the toilets
Surface runoff and downstream flooding	✓ Stone pitch the inlet ways ✓ Ensure that no surface drains are connected into public sewers ✓ Install silt pans ✓ Sensitization and afforestation of the landscape/catchment ✓ Adhere to structural standards in water storage
Drainage system	✓ Contractor to install proper water spill systems
Air, Dust and noise pollution	✓ Control speed and operation of construction vehicle ✓ Sprinkling to minimize dust emission during construction ✓ Restrict construction activities to day time ✓ Ensure regular servicing and maintenance of vehicles and machinery
Gender based violence and sexual harassment	✓ Community and construction workers awareness on GBV ✓ Separate toilets for each gender ✓ Scheduling operations to daytime and communal policing ✓ Establishment of appropriate grievance redress mechanisms
COVID-19 Pandemic – Spread of Corona Disease at Work site among construction workers	✓ Ensuring that all COVID 19 prevention measures are enforced e.g. keeping social distance, wearing masks rightly ~~✓ The prevention measures must be spread among workers at work site, community members and during consultations~~ ✓ open air meetings and handwashing

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COVID -19 Pandemic- Spread of Corona Disease among community members during consultations	xxxxx
HIV/AIDS and STIs risks	✓ Community sensitization on HIV/AIDs ✓ Contractor to sensitive workers and provide condoms
Labour influx and conflicts	✓ Contractor to develop labour management plan with community leadership ✓ Contractor to keep proper records of all workers
Child Abuse	Contractor to implement policy on zero tolerance for employment of children under 18 at the site and by its employees
Landscape disturbance, soil erosion and vegetation loss	✓ CPU to Initiate sustainable Land Management (SLM) and Natural Resource Management initiatives through the PMU ✓ Contractor to replant pan area with grass and indigenous trees ✓ Put in place a pan management committee ✓ Undertake capacity building initiatives ✓ Management committee to set up a community tree nursery
Pollution of water sources	✓ contractor should provide oil sumps at the construction yard and/or service and fuel at registered oil dealers yards necessary measures to prevent oil and grease spills and soil erosion which may pollute the water
Operation Phase	
Increased pressure on infrastructure	✓ Protect the pan by fencing off and put appropriate conservations measures around by planting grass along the embankments and trees species that do not extract a lot of water from the ground the proponent will undertake this measures in collaboration with forestry department in the county. ✓ Construct water collection points atleast 5meters away from the protected pan ✓ Observe Covid 19 guidelines by maintaining social distance and avoid congestion or public gathering around the water pan
Toxicity and contamination from Pesticides	✓ CPU to launch training on safe and effective use of pesticides ✓ PMU to advocate Integrated Pest Management in horticultural and agricultural production ✓ Train farmers on safe and effective use of pesticides including disposal of used pesticides and containers
Pollution of water sources	✓ Install bio-digester for latrine facilities during operation phase ✓ Regular testing and chlorination of water at the community water point during operation phase ✓ Community sensitization and awareness creation on sanitation
Downstream flooding	✓ Adhere to structural standards for water storage projects ✓ Encourage beneficiaries to implement soil and water conservation measures through sensitization ✓ Undertake re-vegetation/ grassing around the pan and in the catchment
Decommissioning Phase	
Solid waste Generation	✓ Avoid idling of machinery or engine when not in use. ✓ Restrict activities that create noise to daytime only.

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	✓ Provision of Personal Protective Equipment and clothing (PPE/C) to those actively engaged in the works at the site
Noise and Vibration Generation	✓ Avoid idling of machinery and engines when not in use ✓ Provision of PPEs and clothing including ear muffs to workers ✓ Construction activities to be undertaken during day, preferably between 8.00am and 5pm
Motor vehicle emissions	✓ Ensure that maintenance on all machinery is done regularly to avoid the emission of noxious gases. Drivers and machine operator to avoid unnecessary running of motor vehicle engines and machinery when not in use
Oil spills/Fuels and Lubricants	Proper maintenance of vehicles and other equipment (using petroleum products) to avoid fuels and lubricants spills at the project site. The contractor should properly handle, storage, and disposal off oils and greases and their wastes during construction by ensuring that servicing is strictly done at designated servicing yard or external petroleum stations

CHAPTER EIGHT

8.0. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Environmental and Social Management Plan (ESMP) provides a logical framework within which the negative environmental and social impacts identified during the ESIA study can be mitigated and any beneficial environment effects can be enhanced. Monitoring and management practices as well as monetary compensation are considered and cost estimates included as applicable. Responsibilities and time frames for the implementation of the various aspects of the ESMP will be identified. The ESMP will be provided to prospective bidders for the construction contracts to ensure that environmental mitigation costs are factored into their costings. The Contractor(s) will also be required to prepare a separate and specific ESMP for their works in order to control construction impacts and ensure compliance with applicable environmental and health and safety legislation and standards. KCSAP especially the County Project Coordination Unit and County Environment and Social Officers (CESOs) will ultimately be responsible for ensuring that the EMSP is implemented on site via reviewing the Contractor's ESMP and ensuring its implementation on site via audits.

The ESMP has been developed to assist in prioritization of key findings of the ESIA mitigation measures. The EMSP is based on ISO 14001 principles comprising the following: The environmental issues of concern, recommended mitigation measures, responsibilities, timeframes and costs (Table 4). The Environmental and Social Management Plan also includes environmental monitoring measures with the following objectives:

- ✓ To verify the execution of the measures proposed in the ESIA and to evaluate the effectiveness of these measures.
- ✓ To verify if the impacts anticipated in the ESIA have occurred and to detect environmental problems that could not have been identified previously, in order to adopt solutions adequate for the conservation of the environment.
- ✓ To provide reliable information to be used for the verification of environmental impacts with the purpose of improving the techniques of prediction of environmental impacts and the quality and opportunity of application of corrective measures. The monitoring program will cover, among others, the following aspects.

Table 8: Summary of Environmental and Social Management Monitoring plan for Construction and Operation phases of Kamola water pan

Environmental and social Issue	Specific Mitigation plan	Cost (Ksh)	Responsibility	T/Frame	Indicators	Sources of data
Clearance of vegetation, soil erosion and loss of biodiversity	Replant the pan area with grass and indigenous tree species to replace the lost plants Construct gabions to arrest gully erosions	0.3M 1.5M	Design Engineer and contractor Contractor, CPU	2 months 2months	No. of seedlings replanted and surviving No. of gabions constructed	Requisition invoices Site observation Interviews Site observations
Waste management	Installation of waste management facilities that prevent contamination to water sources Incorporate suitable facilities for collection and safe disposal of solid wastes Provide for possibilities of waste recycling	0.1M	Design engineer and contractor, environmental consultant	1 month		Requisition invoices Site observation
Waste Disposal procedures	Organize with local authorities for suitable waste disposal arrangements	0.05M	Supervisors with assistance of external experts where necessary	6month	Number and type of waste handling equipment/ stations	Licenses/ MOU Observation Interviews
Health Operation and safety Of the Pan Area	Install side drains Encourage workers participation in Environmental conservation aspects Fencing of the pan area The pan area will be secured through construction of a chain link fence and locked at all times	0.25M	Supervisors with assistance of external experts where necessary	Continuous	Registered Number of workers on site No. of Work injury incidence	DOSH licenses Audit report
Risks of Increased HIV and Aids transmission in the area	Institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract Training of facilitators within the workers, information posters in more frequented areas in the campsite and public areas	0.1M	All Workers responsibility Contractor	continuous	Number of Trainings Held Attendance list of participants during the training sessions	Minutes and records of training Invitation register Proceedings of the training Interviews with trainees

Environmental and social Issue	Specific Mitigation plan	Cost (Ksh)	Responsibility	T/Frame	Indicators	Sources of data
GBV at community level	Effective and on-going community engagement and consultation, particularly with women and girls Undertake sensitization around gender-equitable approaches to compensation and employment Put in place referral mechanisms to address GBV at the community level and report to the relevant authorities Separate toilets for different gender	0.2M	-Supervisors with assistance of external experts where necessary GBV Exert Local CBO/NGO	continuous	Number of Trainings Held Availability of Training reports Attendance list of participants during the training sessions	Minutes and records of training Invitation register Proceedings of the training Interviews with trainees
Spread of COVID-19 amongst workers	Develop a SOPs for managing the spread of Covid-19 during project execution Use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including Avoid concentrating of more than 15 persons or workers at one location. Observe social distancing at least 2 meters 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 social facilities and other communal area	0.3M	All Project components Supervising Eng. & Contractor(s) County Health Department Pan management committee in collaboration with the contractor	continuous	Availability of SOP(s), Training material, PPE, sanitising facilities etc;	Requisition invoices Site observation Interviews Records Reported cases

Environmental and social Issue	Specific Mitigation plan	Cost (Ksh)	Responsibility	T/Frame	Indicators	Sources of data
COVID -19 Spread among community members during consultations	• Electronic means of consulting stakeholders and, holding meetings, whenever possible, 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 there are two or more people gathered, maintain social distancing at least 2 meters • The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet; • Use traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements and mail) when stakeholders do not have access to online channels or do not use them frequently. Ensure to provide and allow participants to provide feedback and suggestions; • Hold meetings in small groups, mainly in form of FGDs if	0.1	The proponent, County Project Coordination Unit at the ward level. CESSCO Communications Expert/ Stakeholder Engagement Expert	Continuous	~~Number of hand washing facilities at the meeting site~~ ~~Number of sanitizers used during consultation meetings~~ Availability of SOP(s), Training material, PPE, sanitising facilities etc	Records and minutes of the consultation meetings

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Environmental and social Issue	Specific Mitigation plan	Cost (Ksh)	Responsibility	T/Frame	Indicators	Sources of data
	permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration. • In situations where online interaction is challenging, disseminate information through digital platform (where available) like Facebook and WhatsApp & Chat groups. • Ensure online registration of participants, distribution of consultation materials and share feedback electronically with participants~~Avoid concentrating of more than 15 persons or workers at one location. Where more than one person is gathered, maintain social distancing at least 2 meters~~ ~~Install handwashing facilities with adequate running water and soap, or sanitizing facilities consultation venues and meetings and ensure they are used;~~ ~~Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of pens and writing pads~~					

Environmental and social Issue	Specific Mitigation plan	Cost (Ksh)	Responsibility	T/Frame	Indicators	Sources of data
Environmental degradation from use of pesticides	Formulate an IPM guideline Train farmers on safe use of pesticides Procure PPE demo kits and hold demonstrations at farm level	0.3 M	PMU, CPU, Farmers	Continuous	Number of Trainings Held Attendance list of participants during the training sessions Committees on IPM formed	Minutes and records of training Invitation register Proceedings of the training Interviews with trainees
Increased pressure on infrastructure	Construct water collection points atleast 5meters away from the protected pan	0	Contractor, PMU	1st one month during construction	Number of sensitization meetings collection points	Report
Conflict over access of water for irrigation in individual plots	Pan Management Committee to formulate and register rules on use, control through participatory process with social services department	0.02M	PMU Pan Management Committee	As need arises	Number of conflict mitigation meetings Number and category of parsons	Meetings and records of the meetings
Downstream flooding	Adhere to structural standards for water storage projects Encourage beneficiaries to implement soil and water conservation measures through sensitization Undertake re-vegetation/ grassing around the pan and in the catchment	0.3M	Contractor PMU Pan Management commmitee	Contionous	Number of trees planted around the cathchment Acreage of grass planted around the pan Length and number of conservation measures in place	Report on the performance of the pan and flood mitigation measures

8.1 EMMP for the Decommissioning phase

Decommissioning refers to the formal process of removing something from the operational status. This being the final phase in the project cycle, decommissioning may present possible opportunities associated with the return of the land for alternative use. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operation ceased

The EMMP will direct the initial stages of decommissioning phase. The table below shows the EMMP of the decommissioning phase for the proposed water pan project.

Table 9: EMP for decommissioning phase of proposed project

Expected Negative Impacts	Recommended Mitigation Measures	Performance Monitoring Indicator	Means of Verification	Responsibility Monitoring Implementation	Time Frame	Cost
Demolition Waste	-Use an integrated solid waste management system i.e Through a hierarchy of options: Source reduction; Recycling Resuse; Sanitary land filling -Provide facilities for proper handling and storage of demolition materials to reduce the amount of waste caused by damage -Use materials that have minimal packaging to avoid the generation of excessive packaging waste. Ensure adequate collection and storage of waste on the site and safe transportation to the disposal sites and disposal methods at licensed disposal sites	Registered waste collector engaged	Inspection and observation	Contractor	One-off	1,000,000

Commented [WU9]: You have more negative impacts in section 7.4 than these ones. Please include all impacts and their mitigation measures here

CHAPTER NINE

9.0 CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

This study has ascertained that the construction of the proposed Kamola community water pan will have both negative and positive impacts on the physical and the surrounding human environment. Positive impacts include increased availability of water for humans and livelihoods, casual employment during construction and operation phases, improved sanitation in the area and reliable source of water as the positive impacts. Negative impacts include increased incidences of water-borne diseases, noise and dust pollution during construction, removal of vegetation to create space for the water pan, risks of occupational hazards and risk of soil erosion in all phases. The project design has integrated measures to mitigate some of the adverse impacts with a view to ensuring compliance with applicable laws and procedures. Additional and more detailed measures are provided in the ESMP and will help in mitigating the impacts. Overall, the ESIA study concludes that excavation and construction of a water pan will not generate significant negative and irreversible impacts that can compromise the ecological, social and environmental wellbeing of the area as well as health and safety of the residents. It is thus recommended that on submission of this report to NEMA a conditional approval for the proposed sub Project activities is granted through issuing an EIA license.

9.2 Recommendations

It is recommended that the proposed project proponent be allowed to go ahead provided the outlined mitigation measures are implemented to as outlined in the ESMP. *The ESMP should be translated into Contractor-Specific Environmental and Social Management Plan (CESMP) and shared with the contractor who wins the subproject bid. The CESMP is binding on the contractor. Accordingly, the contractor is required to engage a qualified Environmental and Social Safeguards specialist as well as Safety and Health consultant to oversee implementation of the satisfactory implementation of the ESMP*. On approval, it is recommended that the proponent should implement the proposed project based on the proposed plans and if alterations are necessary, advice should be sought from the CESSCO and subsequently environmental expert.

- ✓ The proponent should share the ESMP with the Contractor and other responsible stakeholders and that the ESMP form part and parcel of the Contractor's contract to ensure that their obligations as outlined in the ESMP are executed
- ✓ The proponent will be required to undertake annual environmental and social audit pursuant to the provisions of the Act and World Bank ESS guidelines

In case of future closure of the water pan key stakeholders and the community should be involved in the planning and execution of the closure of the water reservoir to ensure that direct and indirect users are well prepared and able to adjust to the decommissioning, all environmental and socio-economic impacts arising are addressed, alternative sources of water for the community are created and the land is reclaimed and restored to achieve its initial ecological and ecosystem functions.

9.2.1 Compliance with the Water Quality Regulations

The proponent has complied with the standards set out in the Fourth Schedule of Water Act 2016 by applying for the WRA water permit. The contractor will commence construction upon written authorization to go ahead with the construction works of the water pan as the process for processing the permit proceeds.

The proponent must ensure compliance with NEMA Environmental Management and Co-Ordination (Water Quality) Regulations, 2006; the Water Act (No. 43 of 2016), the National Water Harvesting and Storage Regulations, 2019 and other related regulations. Regular testing of the water should be carried out (every 3 months or as may be agreed upon by the relevant authority) for the relevant parameters and migratory action thereof.

9.2.3 Emergency Response Plan (ERP)

During the project construction, commissioning, operation and decommissioning, sustainable environmental management practices and adherence to stipulated structural designs and regulations will be observed. The proponent is committed to working closely with NEMA, environmental experts and relevant government agencies in adherence and implementation of the ESMP. In particular the proponent will institute regular monitoring of the water pan particularly the pan walls, during the long rain season and in case of above-normal rains. This is with the purpose of preventing the walls from breaking or taking necessary emergency response measures as per the assessed situation. The proponent should train the project management committee on

detecting and responding to any risk situation and be part of the ERP team together with the local administration. All relevant departments should be alerted early enough for proper measures to be taken. The proponent should establish proper channel of information and risk communication

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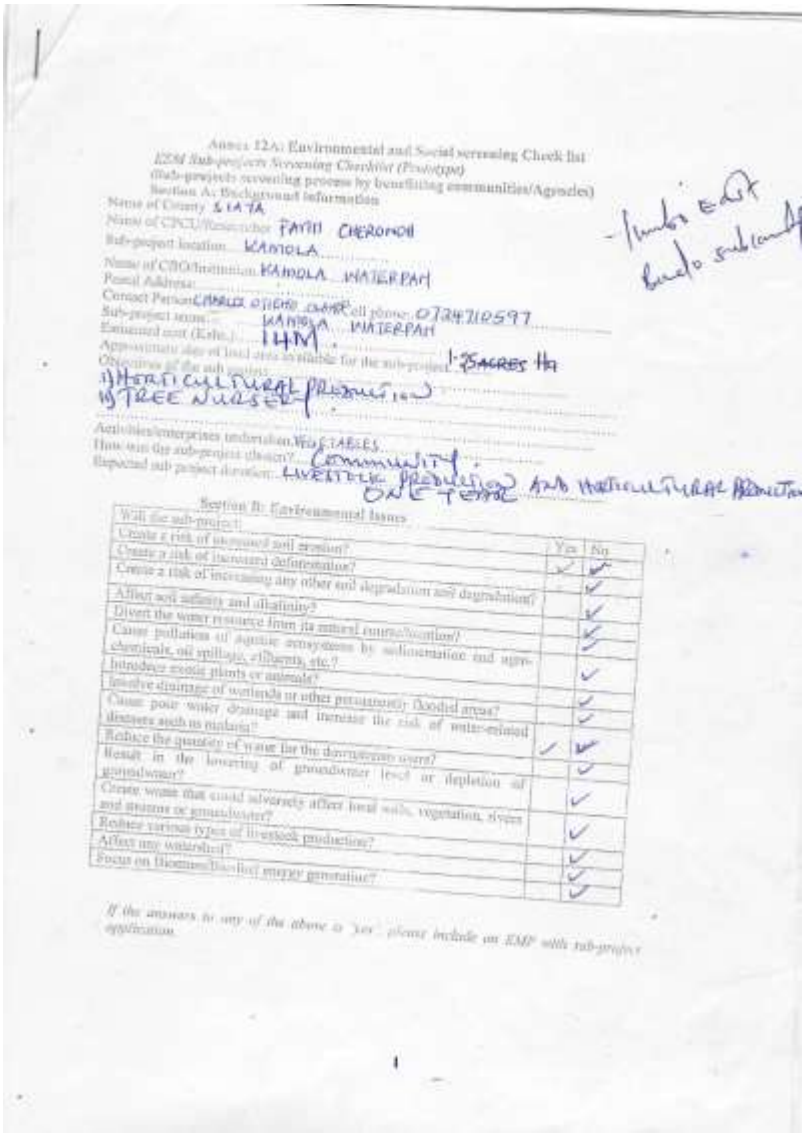
Appendix (1): ESMF checklist



Annex 12A: Environmental and Social screening Check list
KDSP Sub-projects Screening Checklist (Prototype)
(Sub-projects screening process by benefiting communities/Agencies)
Section A: Background information

Name of County: SIAYA
Name of CPCU/Researcher: FAITH CHERONOH
Sub-project location: KAMOLA
Name of CBO/Institution: KAMOLA WATERPAH
Postal Address:
Contact Person: CAROLE OTIENO OMAR cell phone: 0724712597
Sub-project name: KAMOLA WATERPAH
Estimated cost (Kshs.): 14M
Approximate size of land area to be/is available for the sub-project: 1.25 ACRES Ha
Objectives of the sub-project:
1) HORTICULTURAL PRODUCTION
2) TREE NURSERY
Activities/enterprises undertaken: VEGETABLES
How was the sub-project chosen? COMMUNITY
Expected sub project duration: LIVESTOCK PRODUCTION AND HORTICULTURAL PRODUCTION ONE YEAR

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 and degradation?		✓
Affect soil salinity and alkalinity?		✓
Divert the water resource from its natural course/location?		✓
Cause pollution of aquatic areas/dams 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 land soils, vegetation, rivers and streams or groundwater?		✓
Reduce various types of livestock production?		✓
Affect any watershed?		✓
Focus on Biomass/fuelwood 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?		✓
[illegible]		✓
Reduce housing for the local communities?		✓
[illegible] due to [illegible] of the project?		✓
Increase exposure of the community to HIV/AIDS?		✓
[illegible] conflicts?		✓
[illegible]		✓
[illegible]		✓
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, woodlands, 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 discharges?		✓
Export produce? Involve annual inspections of the produce and agrochemical inspections?		✓
Require scheduled chemical applications?		✓
Require chemical application areas to [illegible] away from the [illegible]?		✓
Require chemical application to be done by vulnerable groups (pregnant mothers, chemically allergic persons, elderly, etc.)?		✓
Are irrigation systems to be implemented?		✓

2

If the answer to any of the above is 'yes', please include an EMP with relevant application

Section E: Pesticides and Agricultural Chemicals

This questionnaire will be used with the farmer groups for purpose of implementing the IPMP

1) Pest Control practices

a) Do you use any pesticide to control pests (insects, diseases, weeds) of crops you grow?

Yes___ No___ If yes, name them	Name of pesticide	Types of pests (insects, weeds) controlled	Number of times applied/ season	When did you apply (growth stage or month) Quantity purchased
				N/R

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 [illegible]

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

(iii) [illegible] level of damage (scouting)

(iv) Told by extension to apply (specify who) ______ N/R ______

(v) Other (specify) ___ N/R

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

If yes,

(i) Do you own it Yes No___ N/R

(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) …………… N/R

(iii) ……………………

(iv) ……………………

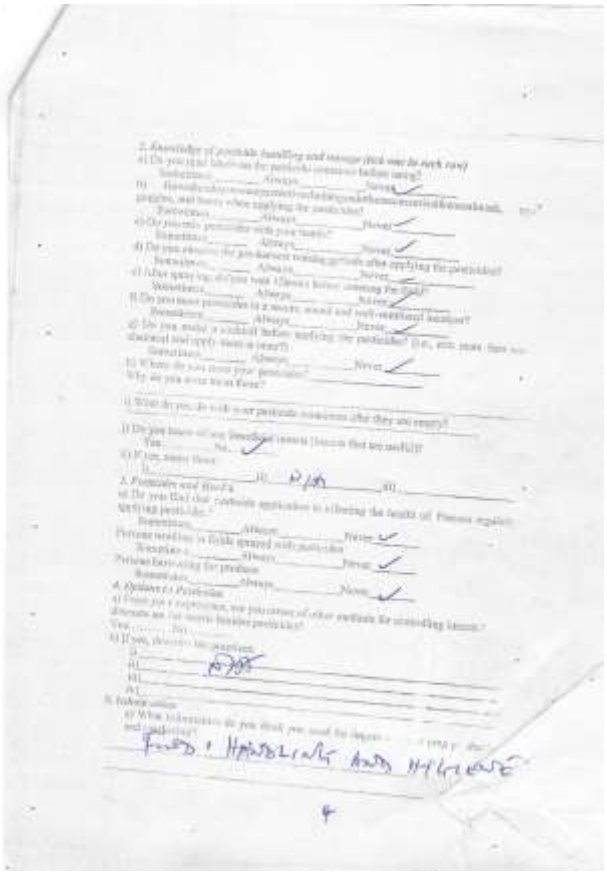
(v) ……………………

g) [illegible]

Yes___ No___

Why? ______ N/R ______

h) If YES, what kind? ______



6. Training

a) Have you ever received any training on any of the following topics related to crop production?

Integrated Pest Management Yes.............. No..............

No. of times (per year..............

b) Pesticide Usage Yes.............. No ✓..............

No. of times (per year..............

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

No. of times (per year..............

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

No. of times (per year..............

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

No. of times (per year..............

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

No. of times (per year..............

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

NIL

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?		✓
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 development?		✓
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?		✓
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?		✓
[illegible]		✓

5

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

Section II: Proposed action

(i) Summarize the above	(ii) Guidelines
☐ 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?

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

☑ [illegible] advice is required from CDE and CPCUs regarding sub-project specific [illegible] and also in the following area(s)

☐ All sub-project applications/proposals MUST include a completed ESMP checklist. The KCSAP-CPCU and CDE will review the sub-project applications/proposals and the CDEs will approve.

☐ The proposals will then be submitted to [illegible] for clearance for implementation by communities in the proposed sub-projects.

Expert Advice

☐ The National Government through the Department of Monuments and Sites of the National Museums of Kenya can assist in identifying and mapping of monuments and archaeological sites; and

☐ Sub-project specific ESIAs, if recommended, must be carried out by experts registered with NEMA and be followed by monitoring and review. During the process of conducting an EIA the proponent shall seek views of persons who may be affected by the sub-project. The WB policy set out in OP 4.01 requires consultation of sub-project affected groups and disclosure of EIA's conclusions. In seeking views of the public after the approval of the sub-project, the proponent shall avail the draft ESIA report at a public place accessible to project-affected groups and local NGOs/CSOs.

Completed by:

Name: CHARLES OTIENO OLINDO

Position/Committee: CHAIRMAN

Date: 18/02/2020

Field Appraisal Officer (CDE): WILLIAM OTIENO

Signature:

Date: 18/02/2020

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

6

Appendix. II: Assessment Checklist and findings

	Permits	Standards	Length of impact			Effect on Environment			Mitigation Required
Assessment factors			T	P	None	MA	SA	Beneficial	
Regulatory Factors									
1.Air Pollution Control (including CFCs			x	-		X	-	x	Maintenance of machinery
Drinking Water Management			x	-		X	-		Chlorination
Water Pollution			x			X			Fencing
Hazardous Waste Management			x	-		-			
Solid Waste Management			x	-		X	-		
PCB Management			x	-		X	-		
Radioactive Materials Management			-			-			
Environmental factors									
Natural Factors 1. Fish and Wildlife 2. Vegetation 3. Endangered Species 4. Water and Hydrology 5. Air and Noise 6. Physiography 7. Soils and Erosion			 - x - x x x x			 x - x x x - -			Habitat restoration

8. Historical, Archaeological, Paleontological Resources 9. Prime Farmlands 10. Wetlands 11. Floodplains 12. Wild and Scenic Rivers 15. National Wilderness			- - - - - - - -			- - - - - - -			
B. Human Factors 1. Demography 2. Housing 3. Utilities 4. Fire hazards 5. Social Services 6. Recreation and Aesthetics 7. Land Use 8.Traffic and Transportation 9. Quality of Life			 - - - X X X x x -			 - - - X X x x		 x	
C.Socio-economic Factors 1.Residential Dwellings 2. Local Employment 3. Public Health and Well-Being 4. Relocation of Public Utilities 5.Traffic and Congestion 6. Safety 7. Effect on Population Trends			 - - - x -			 x 		 X X 	

8 Adverse Community Reaction to the Project 9. GBV 10.SH 11. Child Labour			- X X X			-			

MA =Moderately adverse; SA = Significantly adverse; T= Temporal; P= Permanent; (-) = absence of the issue (benefit), (x) = presence of the issue

Appendix iii: Leads' Practicing Licences

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/ERPL/11751

Application Reference No: NEMA/EIA/EL/15517

M/S **DR. VOLENZO TOM ELIJAH**
(individual or firm) of address

P.O. Box 41-30105, SOY

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **7332**

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

Issued Date: **2/13/2020** Expiry Date: **12/31/2020**

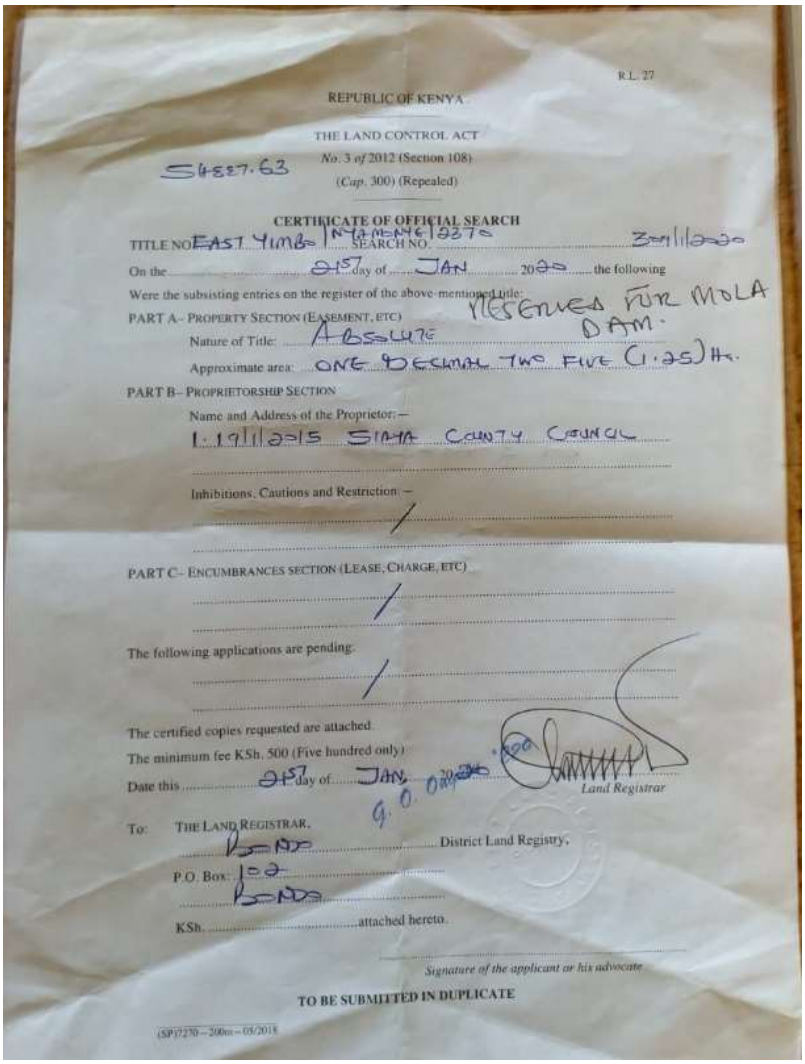
Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2008 Certified

Appendix IV (Evidence of Land ownership- certificate of Search)



R.L. 27

REPUBLIC OF KENYA

THE LAND CONTROL ACT
No. 3 of 2012 (Section 108)
(Cap. 300) (Repealed)

54827.63

CERTIFICATE OF OFFICIAL SEARCH

TITLE NO. EAST YIMBO / NYAMENG/937 SEARCH NO. 3/11/2020

On the 21st day of JAN 2020 the following

Were the subsisting entries on the register of the above-mentioned title:

PART A– PROPERTY SECTION (EASEMENT, ETC) RESERVED FOR MOLA DAM.

Nature of Title: ABSOLUTE

Approximate area: ONE DECIMAL TWO FIVE (1.25) Hr.

PART B– PROPRIETORSHIP SECTION

Name and Address of the Proprietor:–

1. 19/1/2015 SIAYA COUNTY COUNCIL

Inhibitions, Cautions and Restriction: –

/

PART C– ENCUMBRANCES SECTION (LEASE, CHARGE, ETC)

/

The following applications are pending:

/

The certified copies requested are attached

The minimum fee KSh. 500 (Five hundred only)

Date this 21st day of JAN. 2020

G.O.

Land Registrar

To: THE LAND REGISTRAR,

BONDO District Land Registry,

P.O. Box: 102

BONDO

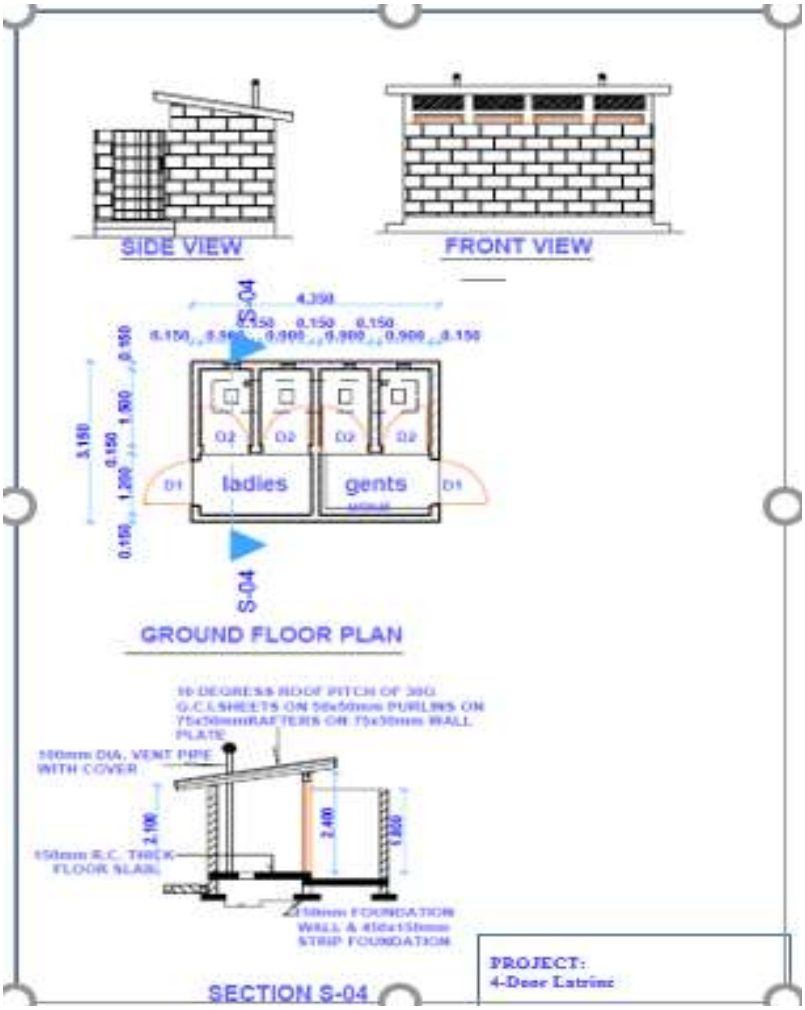
KSh. attached hereto.

Signature of the applicant or his advocate

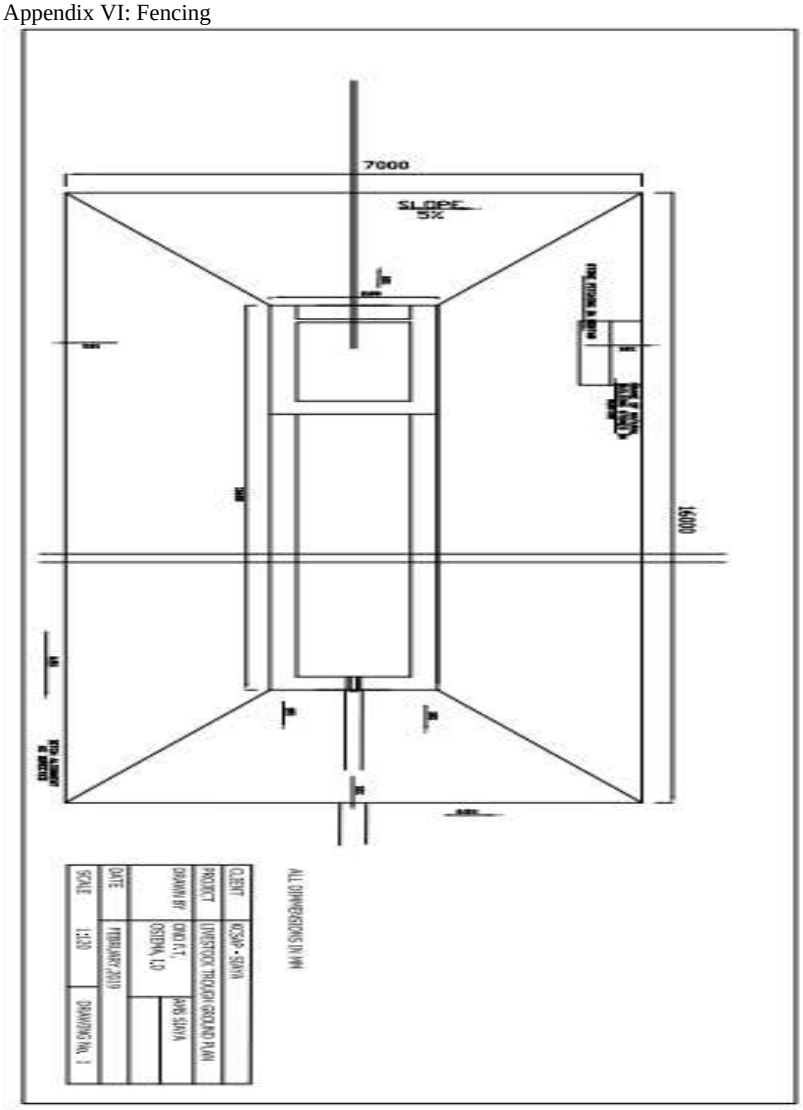
TO BE SUBMITTED IN DUPLICATE

(SP)7270—200m—05/2018

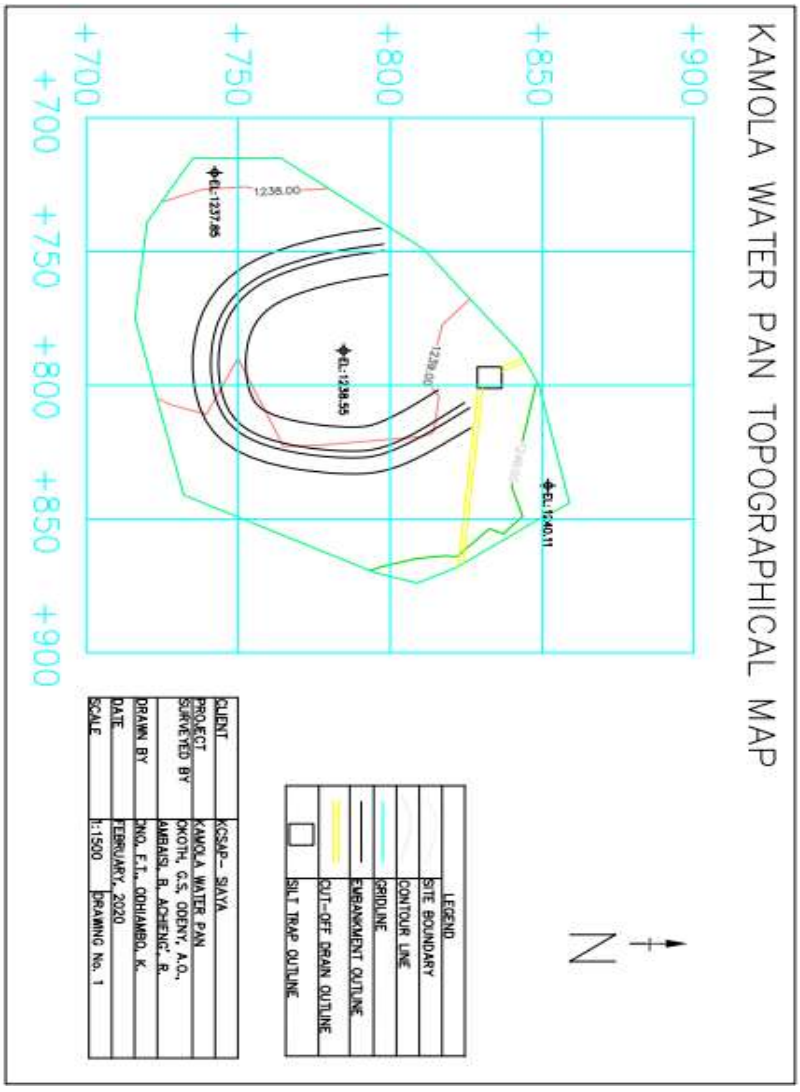
Appendix V: structural Lay-out: Toilets



Appendix VI: Fencing



Appendix VII: Topographical Map



Appendix VIII: Community Barazas

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR KATMULA WATER PAN DATE 06/03/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT MOBILE	CONTACT EMAIL	SIGN
1.	REBECCA OPONDO	CGS	HoPP	0722[illegible]	rebecca.opondo@yahoo.co	
2.	Benard Ojele	CGS-Governor	P.A.O	0799 640364	[illegible]	
3.	GEORGE [illegible]	CGS	SAO	[illegible]	[illegible]	
4.	PATRICK O. ORGAMBO	INTERIOR	SAR Alego	0724969412	[illegible]	
5.	MARY MUTINDI OMAM	V/Elder		0723483347	MARY OMAM	
6.	YUSUF OTIENO OWITI	WRA MANAGER Tingo East Ward	[illegible]	07[illegible]	[illegible]	
7.	GABRIEL OBINO OTIENO	Kan Gongo PB	PP	0713651281	[illegible]	
8.	ERIC [illegible]	[illegible]	CGS	0727716098	[illegible]	
9.	CHARLES OTIENO	KCSAP	[illegible]	07[illegible]	[illegible]	
10.	JACOB H. CHIENG	M.OH	CHPO	0713191677	[illegible]	

P.O. Box 3 - 40600, SIAYA

Mob: +254 722 943269

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR KATWULA WATER PAN DATE: 06/03/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT MOBILE	CONTACT EMAIL	SIGN
1.	REBECCA OPONDO	CGS	Ho PP	0722440667	rebecca.opondo@yahoo...	[signature]
2.	Benard Ojeta	CGS-Governance	P.A.O	0799640364	benardojeta@yahoo.com	[signature]
3.	GEORGE AKEZA	CGS	SAO	[illegible]	georgeakeza@gmail.com	[signature]
4.	PATRICK O. ORENGO	INTERIOR	SAR Alego	0724969412	[illegible]	[signature]
5.	MARY MUTINDI OMAM	V/Elder		0723448337	MARY OTIENO	[signature]
6.	YUSUF OTIENO OWITI	Water Manager Tingo East Water	Tingo East Water	0711795069	[illegible]@gmail.com	[signature]
7.	GABRIEL OBINO OTIENO	Ben Otieno PA	PP	0713691281	[illegible]	[signature]
8.	ERIC [illegible]	Community Office	CGS	0727916098	[illegible]@gmail.com	[signature]
9.	CHARLES OTHIENO	KCSAP	EPO	0725577982	[illegible]	[signature]
10.	JACOB H. CHIENG	M.OH	CHPO	0715196778	jacobchieng@yahoo.com	[signature]

P.O. Box 3 - 40600, SIAYA Mob: +254 722 943269

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR THE KOMOLA WATER PAN. DATE: 06/03/2020.

NO	NAME	ORGANIZATION	DESIG	CONTACT MOBILE	CONTACT EMAIL	SIGN
1.	BENSON ACHAYO	LELA MOYIE SELF HELP GRP	Secretary	0720541949	bensonachayo@yahoo.com	[illegible]
2.	Charles Olendo	"	Chair person	0724710577	Charles Olendo@yahoo	[illegible]
3.	Moica Ogalo	"	Member	0794491310	[illegible]@gmail.com	[illegible]
4.	Jackson Abuonji	"	Ast. Chair	0725420105	[illegible]	[illegible]
5.	Ojala Caleb	"	Member	0737734530	ojala caleb.com	[illegible]
6.	PHOEBE SHIDLA	"	Trec	0797514614		[illegible]
7.	LUAN OKOTH	"	Member	0727828536		[illegible]
8.	JACKLINE OGALO	"	member	0708104866		[illegible]
9.	DENNIS ACHAYO	"	Member	0705389157	—	[illegible]
10.	ZACHARY OTIENO	"		0713636234	-	Zachary

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Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR KAMOLA WATER PAN. DATE 06/03/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT MOBILE	CONTACT EMAIL	SIGN
1.	BEATRICE ONYANGO	KULA CECP HELP GROUP	Member	0715706558		
2.	Jared Oketch	"	"	0710121658		
3.	Margrate Adera	"	"	—		
4.	Sharon Achieng	"	"	0759871556		
5.	Almedal Omondi	"	"			
6.	Mary Ochieng	"	"	0708990333		MO
7.	KADIEMO	"	M	0724908286	0724908286	
8.	Maurice Okallo	"	"	0708696621		
9.	JUMA J. ZADOCK	"	"	0710612174		
10.	Dan Mols	"	"	0785890216		

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REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR KAMOLA WATER PAN DATE: 06/03/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT MOBILE	CONTACT EMAIL	SIGN
1.	ALICE ADHIAMBO	KELA SELF HELP GROUP	Member	0724928950		
2.	OTIENO MICHAEL	"	"	0709274045		
3.	JOHN OCIENG ODANDO	"	"	0765194416[illegible]		
4.	ISAHEL ONYANGO	"	"	"		
5.	JAMES OGOMA	"	"	0710209592		
6.	RAPHAEL OGUTU OKETH	"	"	"		
7.	PHILISTER ACHIENG	"	"	0701[illegible]361		
8.	SUSAN AKINYI ODERA	"	"	0714554927		
9.	CAROLINE ACHIENG OUMA	"	"	0791[illegible]2462		
10.	NEREAH OKETCH	"	"	0710315060		

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR KAMOLA WATER PAN. DATE: 06/03/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT: MOBILE	CONTACT: EMAIL	SIGN
1.	Lucas Agutu	[illegible] SELF HELP GROUP	Member			
2.	KENNEDY [illegible]					
3.	CHRISTINE ACHIENG	"	"			
4.	JENIPHER OGUTU	"	"	[illegible]		
5.	[illegible]		"	[illegible]		
6.	NOAH [illegible]			[illegible]		
7.	GABRIEL E. ANUDO	"	member	[illegible]		
8.	CHARLES OLAMBO AWILO	"	"			
9.	JANE AKITH OLOO	"	"	[illegible]		
10.	MARGRET OLOO OWECHE	"	"			

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Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: PUBLIC PARTICIPATION BY THE DEPARTMENT OF GOVERNANCE FOR KAMOLA WATER PAN. DATE: 06/03/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT		SIGN
				MOBILE	EMAIL	
1.	DIANA E. AWUOR	CGS	ENVIRONMENT OFFICER	0706114573	[illegible]	
2.	ROSE KWANJA	KCSAP	CFA	0721413300	[illegible]	
3.	Kelly O. Wafula	Agric	CAO	0725722133	[illegible]	
4.	MILTON OWUOR	CCS	PHO	0724114637	[illegible]	
5.	Atiang O Willie	KCSAP	CPC	0722078269	[illegible]	
6.	LILDA ACHIENG	CTD	FO	0724611165	[illegible]	
7.						
8.						
9.						
10.						

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Appendix IX : public participation (FGDs)

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

Republic of Kenya

Kenya Climate Smart Agriculture Project

REGISTRATION FORM

ACTIVITY: Public Participation - Kamola W/pan DATE:

NO	NAME	Gender (Male/Female)	ORGANIZATION	DESIG	Contact Mobile number	SIGN
1.	Josphine Atong	M	Kamola	memba	0713444905	J Atingi
2.	Nereah A. Okeeh	Female	Kamola	Member	0710513060	Okeeh
3.	Philister A. Achayo	M	Kamola	member	0721670361	Achayo
4.	SYPROSE A OWINO	F	Kamola	member	0716066083	[illegible]
5.	MARY A. Odero	F	Kamola	member	0701344482	[illegible]
6.	Pauline A. Ogallo	F	Kamola	member	0732920930	[illegible]
7.	SHARON Ongongo	F	Kamola	member	0795782159	[illegible]
8.	GEORGE Olando Amolo	F	Kamolo	member		
9.	MARY MUTINDI OHAM	M	Kamola	Member	0723483317	[illegible]
10.	John Otieno Odando	F	Kamolo	Member	0702704162	[illegible]

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Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

Republic of Kenya

Kenya Climate Smart Agriculture Project

REGISTRATION FORM

ACTIVITY: Public Participation - Kamola Water Pan DATE.........

NO	NAME	Gender (Male/Female)	ORGANIZATION	DESIG	Contact Mobile number	SIGN
1.	Volenzo Tom	M	MMUST	ETA Expert	0724222154	
2.	Aggrey O. Odeny	M	DOALSF (AMS)	CSA	0713443494	
3.	Charles Okado	M	Kamola Water pan	Chair person	0724710517	
4.	Willis Otieno Ochieng	M	Kamola Water Pan	Ass secretary	0727-719166	
5.	Daniel O. Mola	M	Kamola	member	0746840214	
6.	Jackson O. Atwenji	M	Kamola	Ast. chair	0727462475	
7.	Phebe A. Ogola	F	Kamola	Treasurer	0797614514	
8.	Beril Atieno	F	Kamola	member	0700361779	
9.	Margret Owoche	F	Kamola	M		
10.	Alice Ogalo Ombo	M	Kamola	M	0704449157	

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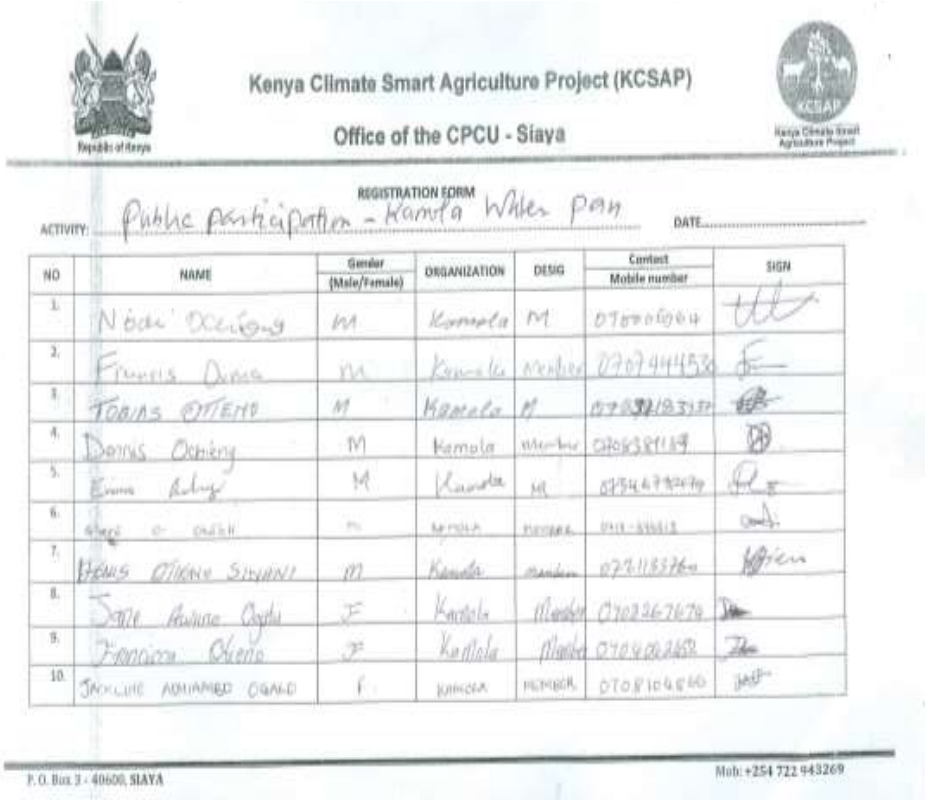

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

Kenya Climate Smart Agriculture Project

REGISTRATION FORM

ACTIVITY: Public participation - Kamola Water pan DATE.....

NO	NAME	Gender (Male/Female)	ORGANIZATION	DESIG	Contact Mobile number	SIGN
1.	Nixon Ochieng	M	Kamola	M	0780060004	
2.	Francis Dena	M	Kamola	Member	0707444530	
3.	TOBIAS OTIENO	M	Kamola	M	0708321937	
4.	Dennis Ochieng	M	Kamola	Member	0706381189	
5.	Emma Aoko	M	Kamola	M	0734679[illegible]	
6.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
7.	THOMAS OTIENO SIWANI	M	Kamola	member	0711837[illegible]	
8.	Sarah Awuor Ogola	F	Kamola	Member	0702367678	
9.	Francica Otieno	F	Kamola	Member	0704082652	
10.	JACKLINE ADHIAMBO OGALO	F	KAMOLA	MEMBER	0708104860	

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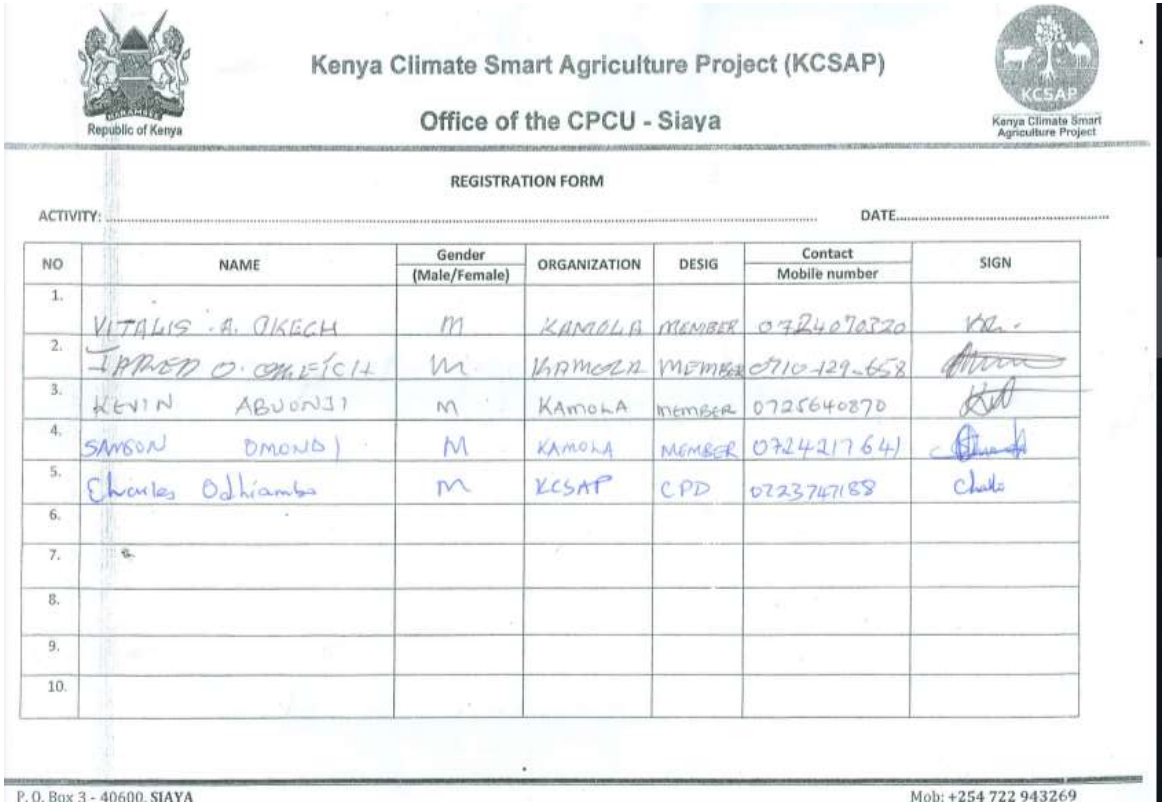

Republic of Kenya

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

Kenya Climate Smart Agriculture Project

REGISTRATION FORM

ACTIVITY: ..... DATE.....

NO	NAME	Gender (Male/Female)	ORGANIZATION	DESIG	Contact Mobile number	SIGN
1.	VITALIS A. OKECH	M	KAMOLA	MEMBER	0724076320	
2.	IPPMED O. OMOLO	M	KAMOLA	MEMBER	0710-129-658	
3.	KEVIN ABUONJI	M	KAMOLA	MEMBER	0725640870	
4.	SAMSON OMONDI	M	KAMOLA	MEMBER	0724217641	
5.	Charles Odhiambo	M	KCSAP	CPD	0723747188	
6.						
7.						
8.						
9.						
10.						

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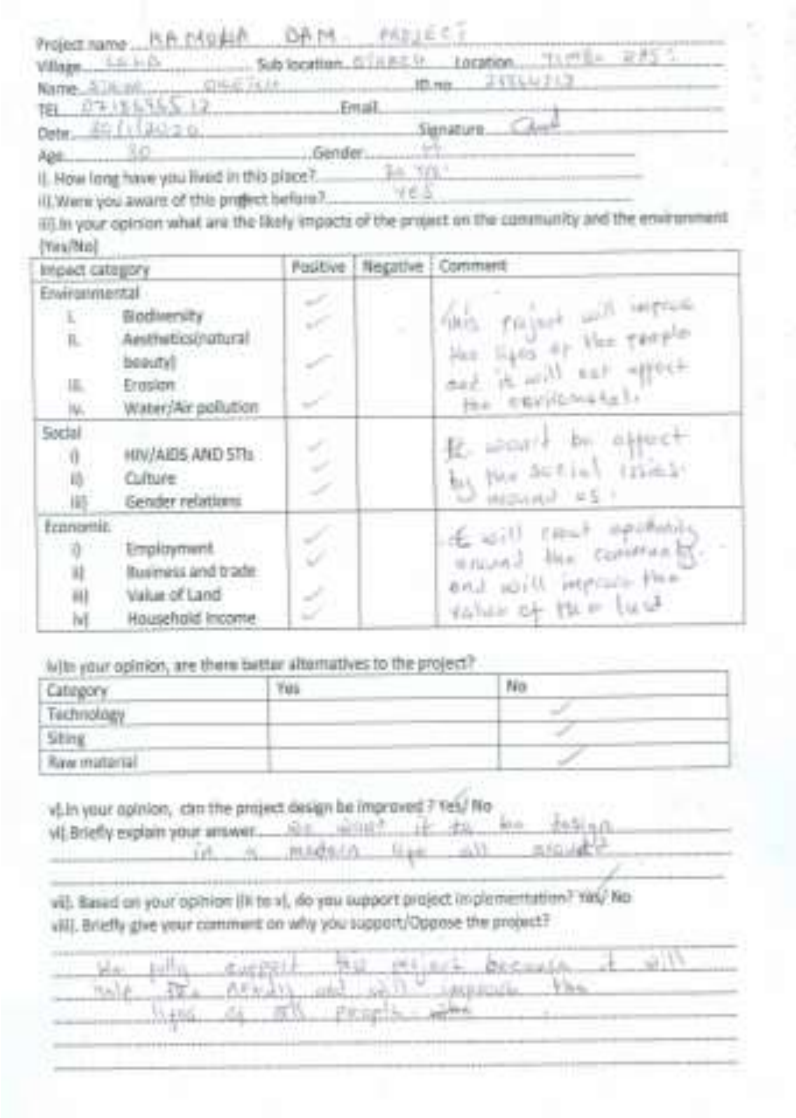
Appendix X : Questionnaire Instruments and sample responses



Project name KAMOLIA DAM PROJECT

Village [illegible] Sub location [illegible] Location [illegible]

Name [illegible] ID no [illegible]

TEL 0718655512 Email

Date [illegible] Signature [illegible]

Age 30 Gender [illegible]

i). How long have you lived in this place? [illegible]

ii). Were you aware of this project before? YES

iii). In your opinion what are the likely impacts of the project on the community and the environment (Yes/No)

Impact category	Positive	Negative	Comment
Environmental i. Biodiversity ii. Aesthetics(natural beauty) iii. Erosion iv. Water/Air pollution	✓ ✓ ✓ ✓		this project will improve the lifes of the people and it will not affect the environmental.
Social i) HIV/AIDS AND STIs ii) Culture iii) Gender relations	✓ ✓ ✓		It would be affect by the social issues around us.
Economic i) Employment ii) Business and trade iii) Value of Land iv) Household income	✓ ✓ ✓ ✓		it will create [illegible] around the community and will improve the value of the land

iv) In your opinion, are there better alternatives to the project?

Category	Yes	No
Technology		✓
Siting		✓
Raw material		✓

v). In your opinion, can the project design be improved ? Yes/ No

vi). Briefly explain your answer [illegible]

vii). Based on your opinion (iii to v), do you support project implementation? Yes/ No

viii). Briefly give your comment on why you support/Oppose the project?

[illegible]

Project name: Kamaly Waterpan project

Village: Hap-Lafa Sub location: Okach Location: East Yimbo

Name: Vitalis Okach ID no.: 1012409

TEL: 0724070120 Email: N/A

Date: 30/01/2020 Signature: [illegible]

Age: 39 yrs Gender: Male

i). How long have you lived in this place? Since Childhood

ii). Were you aware of this project before? Yes

iii).In your opinion what are the likely impacts of the project on the community and the environment (Yes/No)

Impact category	Positive	Negative	Comment
Environmental			
i. Biodiversity	✓		will encourage irrigation
ii. Aesthetics(natural beauty)	✓		Air purification by planting trees around
iii. Erosion	✓		Controlled by
iv. Water/Air pollution	✓		positive
Social			
i) HIV/AIDS AND STIs	✓		Won't encourage immorality
ii) Culture	✓		Positive
iii) Gender relations	✓		Positive
Economic			
i) Employment	✓		
ii) Business and trade	✓		
iii) Value of Land	✓		
iv) Household income	✓		

iv)In your opinion, are there better alternatives to the project?

Category	Yes	No
Technology		✓
Siting		✓
Raw material		✓

v).In your opinion, can the project design be improved ? Yes/ No

vi). Briefly explain your answer: No its perfect

vii). Based on your opinion (iii to v), do you support project implementation? Yes/ No

viii). Briefly give your comment on why you support/Oppose the project?

I fully support the project

It will be much beneficial to the community

Name [illegible] ID no. [illegible]

TEL. [illegible] Email [illegible]

Date [illegible] Signature [illegible]

Age 26 Gender M

i). How long have you lived in this place? 26 yrs

ii). Were you aware of this project before? Yes

iii).In your opinion what are the likely impacts of the project on the community and the environment (Yes/No)

Impact category	Positive	Negative	Comment
Environmental i. Biodiversity ii. Aesthetics(natural beauty) iii. Erosion iv. Water/Air pollution	✓ ✓ ✓ ✓ ✓		- It helps the community - It helps our nature - It prevent soil erosion - It does not pollute air
Social i) HIV/AIDS AND STIs ii) Culture iii) Gender relations	✓ ✓ ✓		- It does not bring division of our c[illegible] - It brings gender relations
Economic i) Employment ii) Business and trade iii) Value of Land iv) Household income	✓ ✓ ✓ ✓		- It brings employment - It brings business - It bring income in house

iv)In your opinion, are there better alternatives to the project?

Category	Yes	No
Technology		✓
Siting	✓	
Raw material	✓	

v).In your opinion, can the project design be improved ? Yes/ No

vi).Briefly explain your answer It helps the community

vii). Based on your opinion (iii to v), do you support project implementation? Yes/ No

viii). Briefly give your comment on why you support/Oppose the project?

Because it improves our economic growth

Project name KARIOLA DAM PROJECT

Village LELA Sub location [illegible] Location E. [illegible]

Name [illegible] ID.no [illegible]

TEL [illegible] Email

Date [illegible] Signature [illegible]

Age [illegible] Gender F

i). How long have you lived in this place? [illegible]

ii).Were you aware of this project before? YES

iii).In your opinion what are the likely impacts of the project on the community and the environment (Yes/No)

Impact category	Positive	Negative	Comment
Environmental I. Biodiversity II. Aesthetics(natural beauty) iii. Erosion iv. Water/Air pollution	✓ ✓ ✓ ✓		[illegible] It will [illegible] [illegible]
Social i) HIV/AIDS AND STIs ii) Culture iii) Gender relations	✓ ✓ ✓		It will not affect us
Economic i) Employment ii) Business and trade iii) Value of Land iv) Household income	✓ ✓ ✓ ✓		[illegible] employment [illegible] the community Business will [illegible] It will [illegible] the land [illegible] the community

iv)In your opinion, are there better alternatives to the project?

Category	Yes	No
Technology		✓
Siting		✓
Raw material		✓

v).In your opinion, can the project design be improved ? Yes/ No

vi).Briefly explain your answer [illegible]

vii). Based on your opinion (iii to v), do you support project implementation? Yes/ No

viii). Briefly give your comment on why you support/Oppose the project?

Because in our community, water is the biggest problem, and most of [illegible] [illegible] to get water.

Appendix XI: Key Informant (KI) Interview schedule

The world Bank funded Kamola Water Pan - KCSAP Project is being implemented in Siaya County. As the project falls under the second schedule of EMCA, an Environmental Impact Assessment is to be undertaken. This is in addition to mainstreaming of World Bank ESS guidelines AND operational procedures. As a Key informant resource your contribution in decision making and ultimate licensing of the project is critical. Please make your comments regarding the following

Are you aware and been involved in the of the project? Yes……... No……

What are the main statutes in your docket that touch on this project?

Are there any issues of concern (Social and environmental) that you think should be considered in this project?

In your Professional judgement does the implementation of the project require licensing/ permits from your department/ Authority/ Ministry?

Any other comment?

Thank You for your cooperation

Appendix XII: Record of issues (minutes) of the baraza held on at proposed water pan site

Present (See Appendix viii)

Agenda

Prayer

Opening Remarks

Introductory remarks

Participatory Assessment in ESIA

Filling of questionnaires

Community reaction and approval

Closing remarks and way Forward

The meeting was opened with a word of prayer from Jennifer Ogala, department of Agriculture followed by self-introduction. The **CESSCO** gave introductory remarks mostly touching on the KCSAP Project and the history of the subproject. The Agricultural officer in charge of the ward also sensitized on the Agricultural component of the project. The CESSCO then invited the NEMA registered expert to give a few remarks on the ESIA process, in particular the importance of public participation.

Filling questionnaires

Prepared questionnaires were introduced with the Nema Expert going in through all the items on the questionnaire to clarify all the issues. Translation of the questionnaire items into DHOLUO language (Though majority of the attendees could read in English). The questionnaire was distributed and members given the opportunity to fill them. The respondents were given leeway to consult whenever issues were not clear.

Community reaction

- ✓ The BQ and the Project implementation were also discussed and the community asked to raise up any issue of concern. The following issues came up
- ✓ No of toilets in view of gender
- ✓ Fecal contamination
- ✓ Employment
- ✓ Cloth line
- ✓ Competition of livestock in accessing water points

Support to groups to undertake agricultural production and conservation (tree nursery)

The CESSCO and the Project engineer gave satisfactory responses to all the raised matters as follows;

- ✓ Two toilets would be built
- ✓ Bio-digester technology will be installed
- ✓ Fencing of the area with chain link
- ✓ Two water points
- ✓ All the issues raised will be incorporated into the BQ
- ✓ Community members would practice integrated Pest Management and Agroecology principles to reduce surface contamination
- ✓ Community would be encouraged to build latrines in homesteads

The community was asked to ensure cases of Gender based Violence was minimizes. Towards this a security subcommittee would be formed and coordinate with Nyumba Kumi initiative. However, the gates to the water point will only be opened during daytime to minimize on any rape cases. To reduce siltation, the cattle thorough would be only be on the downstream.

On conservation and income generating activities, the CPU will assess any submitted proposal and fund in line with the Project proposal document but in the meantime capacity building on pan management committees, Environmental social safeguard committees and social accountability integrity committees

Voting and proposal approval

The community unanimously voted for the project asking KCSAP to expedite the process as it would greatly alleviate the water scarcity in the area

Closing remarks

The ward manager and administrator were invited to make a comment. In his remark, he welcomed the initiative and pledged his support for the implementation process. The meeting adjourned with a word of prayer from the village elder.

Appendix (XIII)Minutes of sensitization meeting on the Project held in Lela Village Central Sakwa ward

PUBLIC PARTICIPATION REPORT ON KAMOLA PAN IN EAST YIMBO WARD, BONDO SUBCOUNTY.

Report on Public Participation forums held in Lela Village Central Sakwa Ward Bondo Sub County on the Validation of the Pan

1.1 Introduction

The Public Participation forum was held on **6th March 2020** at the Kamola Pan in collaboration with the Department of Agriculture (Kenya Climate Smart Agriculture Program) World Bank Departments of Health, Water (National Environmental Management Authority), The Directorate of Communication and Office of The Sub County Administrators.

1.2 Profile of Participants

The forum brought together members of the public from the Village The participants were drawn from different sectors which included Opinion leaders, Residents, Area Chief, Women Representatives, Youths Groups, People Living with Disability, The Clergy, Projects Management Committee Members and the MCA's representative.

1.3 Agenda and Format of Workshops

The fora commenced with a word of prayer and self-introductions were done subsequently.

The Head of Public Participation

Madam Rebecca Opondo emphasized the importance of Public Participation to the citizens. She informed them that before any project is undertaken. The Citizens have the power to approve, recommend or disapprove the activity this is enshrined in the constitution of Kenya 2010, She urged the community living around the dam to support the project as it will promote agricultural activities.

Department of Agriculture:

Mr. Ben Ayaga , Environmental and social safeguard and compliance officer from the Kenya Climate Smart Agriculture said is a World Bank funded project in collaboration with Ministry of Agriculture and County Government of Siaya which operates in three Sub Counties in Siaya County this are Ugunja, Rarieda and Bondo projects are given based on the best proposal, main Objectives of the project is to;

- Increase Agricultural productivity
- Increase resilient in climate change smallholder farming community
- Reduction of green gas emission

He stated the following **five** Value Chain

- Fish
- Apiculture
- Maize/Beans
- Tomatoes

NEMA representative Mrs. Faith Cherono the Environmental Officer said as an organization we are responsible for environment we will monitor the project and ensure it does not interfere with the environment.

Agriculture: This project is to improve crop and animal production; the pan will be used for agriculture purposes only.

Health: We use chlorine to purify water, our trained staff (Nyamrerwa) will pass the information the community once the pan is ready, they will come and train the community on the importance and treatment of water

Engineer Agriculture: Eng. Fred This water will be for both Human and agriculture use we must protect it, all the trees close to the dam must be uprooted, Fencing of the dam will be done with concreate poles, cattle trough, bathrooms and toilets both male and female are in the design the dam had two gates, two cattle troughs and two water points which the Project Management Committee must make sure when the contractor starts working . Solar water pump will be installed both sides and the community must put security measures. Bamboo tress near the dam should not be removed instead more should be added, security of the pump is upon the Committee members.

Appendix XIV: ESMP Feedback meeting baraza held on 6/6/2020

Kenya Climate Smart Agriculture Project (KCSAP)

Office of the CPCU - Siaya

REGISTRATION FORM

ACTIVITY: DISCLOSURE OF ESMP AT KAMOLA WATER PAN. DATE 5/6/2020

NO	NAME	ORGANIZATION	DESIG	CONTACT: MOBILE	CONTACT: EMAIL	SIGN
1.	Jackson Onyango Abuonji	KAMOLA DAM		0727462435		
2.	Daniel Owino Mola	"		07458902/4		
3.	VITALIS A. OKECH	"		0724007220		
4.	PHEOBE A OGOLA	"		0797616514		
5.	MAGRENI OWUOR	"				
6.	Charles Otieno	"	Chair Person	0724712557		
7.	Benson Achayo	"	Secretary	0740571949	bensonachayo@gmail.com	
8.	NEREAH A OKECH	"		0710313060		
9.	MARY AWINO OTIENO	"	V/Chair	0723468517		
10.	Edwine Oketch	"	Member	0708231468	edwineoketch1@gmail.com	

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Appendix (XV): Integrated Pest Management Plan (IPM)

Commented [JMA10]: If required, an IPMP will be prepared separately!

Commented [JMA11]: This is not necessary here. Please remove from the report

INTRODUCTION

Pests are populations of living organism (animals, plants, or microorganism) that interfere with use of healthcare and other facilities for human purposes. Integrated Pest Management (IPM) is an approach that establishes a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks. KCSAP, SIAYA has adopted this Integrated Pest Management Plan for Horticultural and agricultural sub and micro projects. The plan outlines procedures to be followed to protect the health and safety of farmers the environment and operators from pest and pesticide hazards. The plan is designed to voluntarily comply with policies and regulations promulgated by World Bank Pest Management (Operational Policy, OP/BP 4.09)

Objectives of this IPM plan include:

- ✓ Elimination of significant threats caused by pests to the health and safety of farmers, and the public.
- ✓ Prevention of loss or damage to structures or property by pests.
- ✓ Protection of environmental quality inside and outside buildings.

This IPM plan will be oversighted by the CPU and provided for adaptation to all micro and subproject committee.

IPM COORDINATOR

The C (Cessco) or designee shall be the IPM Coordinator and be responsible to implement the IPM plan and to coordinate pest management-related communications between subprojects/ microprojects, farmers and the CPU. The CESSCO shall designate a leader for each subproject and micro Project of KCSAP funded groups to serve as the IPM Site Coordinator for the site.

IPM COMMITTEE

The microproject/ subproject committed will maintain an IPM or other safety-related committee with responsibility for quarterly review of the IPM program and for assisting the IPM Coordinator in resolving pest-related issues. The committee will address IPM issues as needed and at least quarterly. Minutes will be taken of committee meetings and kept on file by the IPM Coordinator. Membership will include the IPM Coordinator and IPM Site Coordinators, and may also include community members, health advocates, patients and representatives from the KCSAP-Siaya IPM program.

POSTING AND NOTIFICATION OF PESTICIDE APPLICATIONS

The IPM Coordinator shall be responsible to annually notify farmers and guardians of the procedures for requesting notification of planned applications of pesticides on crops. The Service Providers and the committee shall provide notification in accordance with law, including:

Posting a pest control information sign with the date, time and location of the application and the product applied in an appropriate area and including contact information for additional details.

Providing this information to all sprayers.

Providing this information to all farmers who have requested notification of individual applications of pesticides.

RECORD KEEPING & PUBLIC ACCESS TO INFORMATION

The Kamola Pan Management committee will maintain records of all Service Provider visits and pest control treatments for at least three (3) years. Information regarding pest management activities will be made available to the public at the administrative office. Requests to be notified of pesticide applications may also be made to KCSAP- Siaya.

TRAINING

All farmers and staff will be provided with training on IPM policy before the onset of the project agricultural activities and during annual update training. Training will include the rationale for the IPM policy and program and specific elements including use of the pest-sighting log and prohibition on pesticide applications by non-certified individuals. Additionally, designated committee member for the subproject including the IPM Coordinator, IPM Site Coordinators and those who conduct regular inspections of the farms will receive advanced training on identifying pest infestations and pest-conducive conditions. This training will improve the ability of the farmers and Project staff to oversee Service Providers and compliance IPM policy and plan.

GENERAL IPM STRATEGIES

Pest management strategies may include education, exclusion, sanitation, maintenance, biological and mechanical controls, and pre-approved, site-appropriate pesticides. An Integrated Pest Management decision at Lela community shall consist of the following steps:
Identify pest species.
Estimate pest populations and compare to established action thresholds.
Select the appropriate management tactics based on current on-site information.
Assess effectiveness of pest management.

KEEP APPROPRIATE RECORDS

Decisions concerning whether or not pesticides should be applied in a given situation will be based on a review of all available options. Efforts will be made to avoid the use of pesticides by adequate pest proofing of facilities, good sanitation practices, selection of pest-resistant plant materials, and appropriate horticultural practices. When it is determined that a pesticide must be used in order to meet pest management objectives, the least-hazardous material, adequate for the job, will be chosen.

All pesticide storage, transportation, and application will be conducted in accordance with the requirement of Plant protection Act (Cap324), Pest Control Products (Cap 346), Pest Control Products(registration) Regulations 1984 and Pest Control Products (Disposal) regulations 2006 and World Bank Pest Management (Operational Policy, OP/BP 4.09) No person shall apply, store, or dispose of any pesticide prescribed by law. All pesticide applicators will be trained in the principles and practices of IPM and the use of pesticides approved for use. All applicators must comply with the IPM policy and follow appropriate regulations and la precautions when using pesticides.

ROLES AND RESPONSIBILITIES

The KCSAP administration will provide support to assist the IPM Coordinator in maintaining an IPM program that relies on minimal pesticide use. Such support will include efforts to promptly address any structural, horticultural, or sanitation changes recommended by the coordinator to reduce or prevent pest problems. Furthermore, the CPU will assist the Coordinator in developing and delivering materials and programs for staff, farmers, and the public to educate them about the importance of good sanitation and pest control. The CESSCO is responsible for ensuring farmer compliance with the IPM policy and plan, including the attached check list.

Appendix (XVI): Chance Find Procedures

1. Purpose of the chance find procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

2. Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

3. Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

4. Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;

2. Immediately notify a foreman. The foreman will then notify the Resident/Supervising Engineer and the Environment Officer (EO)/Environmental Manager (EM);

3. Record details in Incident Report and take photos of the find;

4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over;

5. Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;

6. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule

of the Contractor. The results of all archaeological work must be reported to the National Museums of Kenya (NMK), once completed.

7. In case of significant find the National Museums of Kenya (NMK) should be informed immediately and in writing within 7 days from the find.

8. The onsite archaeologist provides the NMK with photos, other information as relevant for identification and assessment of the significance of heritage items.

9. The NMK must investigate the fact within 2 weeks from the date of notification and provide response in writing.

10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;

11. Construction works could resume only after permission is granted from the responsible authorities.

12. In case no response received within the 2 weeks' period mentioned above, this is considered as authorization to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photo log, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports - kept.

5. Additional information

Management options for archaeological site

a) ***Site avoidance.*** If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option)
b) ***Mitigation.*** If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)
c) ***Site Protection.*** It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

Management of replicable and non-replicable heritage

Different approaches for the finds apply to replicable and non-replicable heritage.

Replicable heritage[1]

[1] Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures.

Plate 10: Lead expert in the consultation with ward administrator amid FGD meeting to the right hand

Note the Environmental issues to the left (site observation as a data collection procedure)

Plate 11: Area chief addressing general sensitization baraza on the project in the ward

Plate 12: Director of public participation of County Government of Siaya, addressing Lela community at Kamola water pan

Plate 13: Public consultation of PAPs on site