Republic of Kenya

Kenya Climate Smart Agriculture Project

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

THE PROPOSED LELDET EARTH-DAM IN LELDET SUB LOCATION, KAMASIAN WARD, KIPKELION WEST SUB-COUNTY
KERICHO COUNTY

BENEFICIARY

LELDET VILLAGE COMMUNITY

PROJECT PROPONENT

KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
DEPARTMENT OF AGRICULTURE, LIVESTOCK AND FISHERIES

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PROJECT SPONSOR

GOVERNMENT OF KENYA/COUNTY GOVERNMENT OF KERICHO
WITH SUPPORT FROM THE WORLD BANK

LEAD ENVIRONMENTAL EXPERT

RAPHAEL KIPKIRUI NGETICH
NEMA Reg. No. 2712

MARCH, 2019

WORLD BANK GROUP
Agriculture

PARTICIPATING CONSULTANTS

The following table shows the list of the participating consultants in the Environmental Impact Assessment for the **Proposed Leldet Community Earth Dam Project**.

Table 1: List of the participating consultants

NAME	CONSULTANTS QUALIFICATIONS
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Mr. Paul Muhia Karanja Nema Reg. No. 10286	BSc. Disaster Preparedness and Environmental Technology (MMUST)
Ms. Catherine Chebet Siele NEMA Reg. No. 10129	BSc. Environmental Science (Laikipia University), Occupational Health and Safety (OSH) specialist
Ms. Naomi Kosgei	BSc. Environmental Science, Environmentalist and Field Assistant

DECLARATION

DECLARATION

I submit the following Environmental Impact Assessment (EIA) project report for the Proposed Leldet Community Earth Dam.

To my knowledge all information contained in this report is accurate and truthful representation of all findings as relating to the proposed project.

NEMA EIA/EA LEAD EXPERT

MR. RAPHAEL KIPKIRUI NGETICH

EIA/AUDIT EXPERT REG NO. 2712

SIGNATURE: .....

DATE: 13/05/2019

MR. RAPHAEL K. NGETICH
P.O. Box 426-20210 LITEIN
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PROPONENT

ON BEHALF OF THE COUNTY GOVERNMENT OF KERICHO

C/O: KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)

NAME: Eng. Odoyo J. Bittar

DESIGNATION: County Project Coordinator

SIGNATURE: .....

DATE: 30 May 2019

COUNTY PROJECT COORDINATOR
KENYA CLIMATE SMART
AGRICULTURE PROJECT
30 MAY 2019
KERICHO COUNTY

ACRONYMS

^{0}C	Degrees Celsius
V	Volts
Ft	Feet
Ha	Hectare
KM	Kilometers
BGL	Below Ground Level
KVA	Kilo Volts Amperes
PEC	Poverty Eradication Commission
PPE	Personal Protective Equipment
TOR	Terms of Reference
TSS	Total Suspended Solids
NEC	National Environment Council
KFS	Kenya Forestry Service
EIA	Environmental Impact Assessment
IEA	Initial Environmental Audit
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
EMC	Estate Management Company
CPP	Consultation and Public Participation
EMP	Environmental Management Plan
KCSAP	Kenya Climate Smart Agriculture Project
KWS	Kenya Wildlife Services
Kshs	Kenya Shillings
IMCE	Inter-Ministerial Committee on Environment
OSHA	Occupational Safety and Health Act
EMCA	Environmental Management Coordination Act
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NPEP	National Poverty Eradication Plan
WRA	Water Resources Authority
WSSD	World Summit for the Social Development

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EXECUTIVE SUMMARY

Introduction:

This project report presents the outcomes of an environmental impact assessment (EIA) for the proposed Leldet Community Earth Dam in Leldet Sub-location, Kamasian Ward of Kericho County. The proposed project is located on Public Land N0: Kericho /Kipsegi/183 on GPS Coordinates: **Lat. 00^0 9.998'S and Long. $35^0$26.069'E**. It was proposed by the Leldet Community Group led by a 14-member committee comprising of five (5) Women and nine (9) Men; democratically elected by the Leldet Village Community. The group is among the many community based institutions that participated during public engagement process that led to the formulation of phase-II of Kericho County Integrated Development Programme (CIDP-II) for the period, 2017-2022. Members of the group will form part of the project management committee (PMC) intended to oversee implementation of the project under leadership of Kericho County Project Coordination Unit (CPCU). The interventions of the project are classified under two categories namely; natural resources conservation and livelihood improvement; and community participation and capacity building.

The specific intervention measure proposed in this project is the construction of an Earth Dam, which is a climate smart agriculture (CSA) management practice intended to support sustainable agricultural production in spite of the erratic weather patterns. This will be implemented under the guidance of the Kericho County Climate Smart Agriculture Project (KCSAP) domiciled in the Department of Agriculture, Livestock and Fisheries (DALF) in conjunction with the departmental technical experts from Water and Irrigation.

EIA is a tool for environmental planning and, therefore, a key component in the implementation of new projects. According to section 58 of the Environmental Management and Coordination Act (EMCA) No.8 of 1999 Second Schedule 9 (1), and Environmental (Impact Assessment and Audit) Regulation, 2003, new projects must undergo EIA. The Report arising from the EIA must be submitted to National

Environment Authority (NEMA) for approval and issuance of relevant certificates. This is necessary as many forms of developmental activities cause damage to the environment and hence the greatest challenge today is how to maintain sustainable development without interfering with the environment.

Scope, Objective and Criteria of the Environmental Impact Assessment:

For this project, NEMA registered and licensed Experts in Environmental Impact Assessment and Auditing were appointed to conduct the EIA of the proposed Leldet Earth Dam. The main objective of the assignment was to assist Leldet Community Group conduct an EIA and prepare a report on environmental suitability of the proposed water-pan. The scope of the work involved examining all the proposed activities for the study entity and the surrounding environment. The expected output of the assignment was a comprehensive EIA report, complete with an environmental management plan (EMP), for the purposes of applying for an EIA licence.

As required, the EIA team undertook environmental screening and scoping to determine the scope of assessment and avoid unnecessary data. Data collection was carried out through questionnaires and standard interview schedules, use of checklists, and field observations and photography during site visits. This was supplemented by desk top review of secondary environmental data in the manner specified in Part V (section 31-41) of the Environmental (Impact Assessment and Audit) Regulations, 2003.

The exercise was used to identify existing and potential environmental impacts and concerns that the interested and/or affected parties have with the proposed development intervention, as well as the associated prevention and mitigation measures for the negative impacts as stipulated in the proposed Environmental Management Plan (EMP) in section……..

Other terms of reference (ToR) included, but not limited to, the following objectives:-

i. To collect relevant information required for preparing the project report.

ii. To assess and report on the location of the project including the physical area that may be affected by the project's activities.
iii. To assess and report the nature and design of the project.
iv. To assess and report on the economic and socio-cultural impacts of the project to the local community and the nation in general.
v. To assess and report the activities that shall be undertaken during the sub project construction, operation and commissioning phases.
vi. To assess and report on the materials to be used, and products and by-products including waste to be generated especially during construction phase and the methods of their disposal.
vii. To assess the potential environmental impacts of the project and develop the environmental management plan for the construction, operation and maintenance including mitigation measures as per the World Bank guidelines.
viii. To develop an action plan that ensures the health and safety of the workers and neighbouring communities in the sub project cycle.
ix. To fill in and submit the NEMA Project Report Form.
x. To provide recommendation if any, for improving the existing environment screening process.
xi. Prepare and submit a Project Report to NEMA.
xii. To provide any other information that the NEMA may require.

Methodology Outline:

The proposed interventions are conservation-oriented in nature aimed to harness and conserve one of the main sources of water in Leldet Sub-location. The total effect of this project to the surrounding community is projected to be an improvement in the livelihoods of the local people and, therefore potential impacts can't be adverse. And noting that the intended development and use of the facility will be in line with what exists in the surrounding areas, an environmental project report was considered adequate. The general steps followed during the assessment were:

- *Environment screening*, in which the project was identified as among those requiring environmental impact assessment under schedule 2 of EMCA, 1999.
- *Environmental scoping* that provided the key environmental issues.
- *Desktop studies* and interviews.
- *Physical inspection* of the site and surrounding areas.
- *EIA Public participation* Meetings and Reporting.

Scope of the Works:

The specific intervention measures proposed by the proponent are to; construct an Earth Dam including excavation of the reservoir area, building and compacting 5metre high earth embankment, spillway and its associated fixtures, construction of control and intake structures as well as domestic water drawing points. There were remnants of an old embankment at the site which has been eroded and broken at certain points. This will have to be removed to pave way for a new one.

Anticipated Positive Impacts:

The proposed interventions will result into environmental as well as livelihood improvement manifested by the following.

- *Increased availability of water* for domestic use and livestock drinking thereby reducing water conflict among communities particularly in dry season;
- *Available water for productive uses*, including small scale irrigation for the identified value chain crops;
- *Increased disposable household income* arising from agricultural enterprises
- *Increased employment for local people*; for example, during the construction phase;
- *Reduced distance and time for fetching water* therefore more time for other activities;
- *Rural economic growth* and development;
- *Improved social amenities* in the rural areas;
- *Improved livelihood and aesthetics* of the rural environment.

Anticipated Negative Impacts:

Even good projects often have some impacts that can be harmful to their surrounding environment. The most realistic approach to side effects of such beneficial projects is to institute measures to minimize their impacts, rather than abandoning them altogether.

The possible undesirable impacts of the project and measures of mitigating them are as stated in the table 2 below.

Table 2: Impacts and Mitigation Measures

Possible Impacts	Mitigation measures
Biodiversity interference during construction of site toilet for workers	o Employ minimum mechanization to minimize migration of inhabitant fauna o Minimize dust and noise during excavation to avoid scaring away inhabiting fauna o Minimize destruction of vegetation around the Dam area o Maintain water-friendly trees and other vegetation
Occupational health, safety & Life risks e.g. bilharzia disease infection, snake bites and drowning	o Provide training on water-use hygiene and treatment o Provide awareness on safety skills o Use of snake repellents o Provide relevant PPEs and follow up compliance by respective group members o Fence the water pan area o Restrict access by children and unauthorized members
Increase in vector borne diseases	o Clear bushes around the Dam and neighbouring homes to keep off mosquitoes and other insects. o Use of mosquito nets and other preventive measures o Rear recommended species of fish in the pond to reduce or eliminate vector insects
Environmental pollution from heavy use of industrial machineries	o Improve the machinery scheduling capacity i.e. balance the use of machinery and man power to ensure efficiency during construction. This will lead to faster project completion rate so as to limit amount of exhaust waste gases exhaled into the environment.

	o Ensure proper disposal of used oils and fuels emanating from the industrial machinery being employed in the project. o Avoid any oil spillages in the project site
Resource use conflicts among the community members	o Devise participatory water resource sharing regimes. o Establish water use management committee to regulate the use of the facility
Water reservoir Siltation	o Construct silt traps along the feeder channels to filter excess sediment or soil from the contributing catchment (farms, roads, paths etc.) o Employ soil conservation measures and institute sustainable livestock grazing management in the grazing areas around the water pan. o Promote sustainable land management practices (e.g. planting cover crops, agro-forestry trees etc.) in farms within the Water-pan catchment.
Project Sustainability	o The project beneficiaries to form operation & maintenance committee to manage the Water-pan o Create co-benefits from the water pan after withdrawal of the development partners (KCSAP, CGK etc.) by starting income generating activities (IGAs) using the availed water. o Provide training to all the beneficiary group members on project sustainability techniques and IGAs. o Create external watering trough for livestock and draw-off point for domestic use to minimize pollution and siltation. o County Government of Kericho, through KCSAP, should avail funds in time to ensure execution of all the components. o The beneficiaries of the project should constitute a dispute resolution committee to address any grievances and disputes which may derail the project continuity. o Plant cover grasses on the Earth Dam embankment to reduce embankment destruction.

Conclusion and Recommendations:

The EIA study has established that the proposed project presents no adverse socio-economic and environmental impacts to the area. The positive impacts of the project far much outweigh the anticipated negative impacts. Furthermore, the negative impacts can be adequately mitigated. The proponent shall be committed to putting in place several measures to mitigate the negative environmental, safety, health and social impacts associated with the life of the project.

It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the environmental management plan (EMP) as well as adhering to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects.

On the basis of the above, and taking cognizance of the fact that the proponent has proved to be financially and environmentally credible, it is our recommendation that the project be allowed to go on provided the mitigation measures outlined in this report are adhered to and the EMP is implemented as prescribed.

1.0 INTRODUCTION

1.1 Background and Rationale of the EIA:

This project report presents the outcome of an environmental impact assessment (EIA) undertaken on proposed Leldet Community Earth-Dam. The project was proposed by the Leldet Community Group. The group is one of the Community-based organizations that met the selection criteria for financial support by the Kenya Climate-Smart Agriculture Project (KCSAP) co-funded by The World Bank and County Government of Kericho.

Execution of the Leldet project will be spearheaded by a project management committee (PMC), which includes members from the beneficiary group, and shall be over-sighted by KCSAP's County Project Coordinating Unit (CPCU). The proposed interventions in this project are domiciled in component-1 of KCSAP which promotes the up-scaling of climate-smart agricultural (CSA) practices, with the overall goal of increasing agricultural productivity and building resilience to climate change effects. Achievement of the goals of these CSA interventions will be greatly complemented by strengthening climate-smart agricultural research and seed systems (component-II) and, supporting agro-weather, market and climate advisory services (component-III).

The over-arching intervention measure proposed in this project is the construction of Earth-Dam for agricultural development purposes. Use of the developed water source will enhance household incomes and food security in the surrounding areas. Execution of the project is intended to be completed by July 2019. Department of Agriculture, Livestock and Fisheries of the County Government of Kericho will, through KCSAP, be responsible for overall management and supervision.

EIA is a tool for environmental planning and management. It is a key factor in the implementation and subsequent operation of new projects. According to section 58

of the Environmental Management and Coordination Act (EMCA) No.8 of 1999 second schedule 9 (1), and Environmental (Impact Assessment and Audit) regulation, 2003, new projects must undergo EIA. The resulting report is submitted to National Environment Authority (NEMA) for approval and issuance of relevant certificates. EIA is necessitated by the many forms of environmental damages often caused by developmental activities. The greatest challenge today is therefore about how sustainable development can be achieved without interfering with the environment.

The proposed Leldet Earth-Dam project falls under category *B-projects* within the World Bank environmental classification. Although such types of projects generally have positive impacts, negative effects often emanate from subsequent project activities. In reference to EMCA, 1999 the project partly falls under section 12 of the second schedule, and this implies in-depth assessment of environmental and social implications may not be very critical.

However, as environmental concerns are now taken to be important factors in development planning and implementation processes, it is advisable to avoid conflicts between projects and their surroundings. To avoid unnecessary conflicts that may retard execution and subsequent utilization of Leldet Earth-dam, the proponent undertook this EIA and incorporated environmental concerns as advised by the National Environmental Management Authority (NEMA). Finally, a comprehensive Environmental Management Plan (EMP) is mandatory for a project of this magnitude and nature. Thus, a comprehensive EMP has been prepared, and forms part of this report.

1.2 Scope, objective and criteria of the EIA:

1.2.1 *Scope:*

The Government of Kenya policy on all new programmes, projects or activities requires that an EIA is carried out at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into

consideration during the design, construction, operation and decommissioning of the facility. The scope of this EIA therefore covered:

- The baseline environmental conditions of the area.
- Description of the proposed project.
- Consideration of the provisions of the relevant environmental laws.
- Identification and discussion of any adverse impacts to the environment anticipated from the proposed project.
- Recommended appropriate mitigation measures.
- Formulation of an environmental management plan (EMP).

1.2.2 *Terms of Reference (ToR) for the EIA Process:*

Since any form of development, such as the proposed project, is likely to impact the site and its surrounding environment, it was found prudent to carry out EIA as provided by EMCA, 1999 and Environmental Impact Assessment/Audit Regulations, 2003.

In conformity with the relevant legislations, experts registered and licensed in Environmental Impact Assessment and Auditing by NEMA were appointed as the consultants to conduct the EIA of the proposed Leldet Earth-dam project. The scope of the assessment covered activities proposed in the design report, together with their anticipated spill-over effects in the neighbourhood of the project site. These include removal of old Earth-dam embankment, excavation works to create reservoir storage, embankment re-construction and compaction, spillway construction, intake and water control structures, and operational and decommissioning works of the proposed development. The output of this work was a comprehensive Environmental Impact Assessment report for the purposes of applying for an EIA licence.

The EIA involved specialist studies to determine the environmental impacts relating to biophysical and socio-economic aspects, and issues or concerns from relevant authorities and interested and/or affected parties. Appropriate measures to ensure sustainable co-existence of the proposed development with other social

and economic activities in the area are provided as part of Environmental Management Action Plan (EMP).

The main objective of the assignment was to assist KCSAP (proponent) carry out EIA; and prepare a report to ensure that appropriate measures for mitigating any adverse impacts to the environment are taken into consideration during the life of the project. The study revealed existing and potential environmental impacts as well as possible concerns that interested and/or affected parties have with the intended development. The study also suggests associated prevention and mitigation measures for the negative impacts; and these are stipulated in the proposed EMP.

On behalf of the proponent, the Consultant conducted the study as guided by, though not limited to, the following terms of reference (ToR):

- Background study of the proposed location of the project
- A concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- The objectives of the project.
- The technology, procedures and processes to be used in the implementation of the project.
- The materials to be used in the construction and implementation of the project.
- The products, by-products and wastes to be generated by the project.
- A description of the potentially affected environment, including indigenous peoples (IPs) and other vulnerable groups.
- The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.
- To recommend a specific environmentally sound and affordable wastewater management system.
- Provide alternative technologies and processes available and reasons for preferring the chosen technology and processes.
- Analysis of alternatives including project site, design and technologies.

- An environmental management plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.
- Provide an action plan for the prevention and management of the foreseeable accidents and hazardous activities in the cause of carrying out development activities.
- Propose measures to prevent health hazards and to ensure security in the working environment for the employees, residents and for the management in case of emergencies.
- An identification of gaps in knowledge and uncertainties which were encountered in compiling the information.
- An economic and social analysis of the project.
- Such other matters as the Authority may require.

1.2.3 *Data Collection Procedures:*

Initial undertaking involved environmental screening and scoping to avoid unnecessary or irrelevant data. Data was collected by use of questionnaires, standard interview schedules, checklists, observations and photography, site visits, and desktop environmental studies in the manner specified in Part V (section 31-41) of the Environmental (Impact Assessment and Audit) Regulations, 2003.

1.2.4 *EIA Organization and Structure:*

The EIA was carried out to full completion within a period of one month. The Consultant (Lead Expert), in consultation with KCSAP County Project Coordinator (CPC), coordinated the day-to-day operations of the EIA team including any related institutional support matters.

Field guidance and linkages with project beneficiaries and other stakeholders was provided by CPC and KCSAP team. This team was very resourceful in terms of ensuring that the EIA exercise remained focused on environmental and social considerations and other interests critical to KCSAP and World Bank.

All formal communications and inquiries directed to County Director, NEMA were channeled through KCSAP – CPC.

1.2.5 *Reporting and Documentation:*

The findings from the EIA project report was compiled in accordance with the guidelines issued by NEMA; and submitted for consideration and approval by KCSAP (proponent). The Consultant and the Client (CPC) maintained constant reciprocal briefing during the entire exercise. This was important in ensuring that the Consultant kept abreast of environmental and social safeguard (ESS) issues of interest to KCSAP and the development partners.

Description plans and sketches showing various activities are part of the Appendices.

1.2.6 *Responsibilities and Undertaking:*

The Consultants undertook their duties as outlined in the ToR while the client met all logistical costs relating to the assignment, including those of production of the report and any other relevant material. The client arranged for consultants transport and travels during the exercise. On the site of the proposed project, the proponent provided contact person(s) to provide information required by the Consultant. The proponent also provided site plan(s) showing roads, service lines, engineering designs and the actual sizes of the sites, details of raw materials, proposed process outline and anticipated by-products, future development plans, land-ownership documents and site history, and estimated investment costs.

The outputs from the consultants include:

- An EIA report comprising of an executive summary, study approach, baseline conditions, anticipated impacts and proposed mitigation measures, Environmental and Social Management Plan (ESMP).
- An ESMP outline which also forms part of the report recommendations.

1.2.7 *Outline of the Methodology:*

The proposed site is located within an area without indigenous peoples (IPs) and historical sites, no natural habitats for fauna and flora, and any hazardous materials. Being a water resource development project, the intervention will have numerous benefits, for instance; improving rights of women by making water accessible, and enhancing livelihood of inhabitants through water for irrigated agriculture. Thus, the project's potential adverse effect to the surroundings was estimated to be very little or almost nil. Also, the intended Earth-dam project and its operation were noted to be in line with type of technologies that are already going on in the Ward. Therefore, an Environmental Report was considered an adequate tool to guide implementation and subsequent operation of the project. The general steps followed during the assessment were as follows:

- Environment screening, in which the project was identified as among those requiring environmental impact assessment under schedule 2 of EMCA, 1999
- Environmental scoping that provided the key environmental issues
- Desktop studies and interviews
- Physical inspection of the site and surrounding areas
- EISA Public participation Meetings and
- Reporting.
- Review of draft report

1.2.7.1 Environmental Screening:

This step was applied to determine whether an environmental impact assessment 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. Additional considerations covered the requirements specified in KCSAP project screening tool. Issues considered, among others, included:

- *The physical location* of the project;
- *Type and nature of the project*, and its compliance with County planning documents (e.g. CIDP);

- *Sensitive issues* such as adverse effects on historical sites; displacement of people; interference with indigenous peoples (IPs); effect on livelihood or rights of women; etc., and;
- *Nature of anticipated impacts* e.g. adverse effect on natural habitats; soil degradation and salinity; human health or safety risks; change or loss of livelihoods to people; restricted access to pastures, crops or cultural resources etc.

1.2.7.2 Environmental Scoping:

The Scoping process helped to narrow down on the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects.

1.2.7.3 Desktop Study:

This included documentary review of the nature of the proposed activities as well as the environmental setting of the project among others.. Secondary sources of information scanned included project appraisal documents, minutes of participatory identification reports, engineering design report, and policy and legislative framework documents. It also included focused group discussions (FGDs) with the proponent representative (KCSAP) and design engineers as well as interviews with members of the beneficiary community.

1.2.7.4 Site Assessment:

Field visits were made to undertake physical appraisal of the site characteristics, and also evaluate environmental status of the surrounding areas of the proposed project. It also included further interviews with members of the surrounding communities. These assessments helped to form opinion on the anticipated impacts, both positive and negative.

1.2.7.5 Public Participation during EIA:

To ensure adequate public participation in the EIA process, the following activities were undertaken:

- Held one public meeting with the affected parties and communities to explain the project and its possible effects; and to receive their oral comments (see minutes of meetings and list of attendance in appendices).
- The EIA Experts, while co-ordinating the public meetings, ensured that appropriate notices were sent out at least one week prior to the meetings and Leldet Group's chairperson mobilized the community members.
-

1.2.7.6 Reporting:

In preparing the EIA report, constant briefing of the client (KCSAP) was maintained so as to ensure that the Consulting team achieved the required content and desired reporting standards.

A draft report was presented to the KCSAP Coordinating Unit at County level for their comments and input. A final draft, incorporating KCSAP inputs, was thereafter submitted to Kericho County NEMA Office for approval.

2.0 PROJECT DESCRIPTION AND ANALYSIS OF ALTERNATIVES

2.1 Project Location and Target Population:

The proposed project will be undertaken at the Leldet site, a public land in Leldet Sub-Location of Kamasian Ward. The project was proposed by Leldet community during public engagement in the lead-time to the formulation of Kericho County Integrated Development Plan (CIDP-II), 2017-2022. The land measures about 1.6ha (or 4.0 Acres) and is situated in a valley bottom transected by a seasonal stream, and dotted with four (4) water springs. The site also serves as disposal area for run-off water from the surrounding catchments including road discharges. The proposed Earth-dam will serve the entire Sub-location with approximately 800 households and 2,000 heads of cattle.

2.2 Project Design & Alternatives:

The proposed Leldet Earth-dam is likely to have significant social, health and economic impacts on the lives of Leldet community. With land area of 4.0 acres, the design report estimates that an Earth-dam of more than 42,000m^3 (or 42Million liters) water storage capacity is possible to be achieved. At an average Household (HH) consumptive usage of 100litres/day this amount of water can supply the 800 HHs for a period of at least 12 months, which is longer than the dry gap in the area of 3 months.

2.2.1 Rationale for a Water-pan:

The following reasons are advanced with regard to the selection of Earth-dam as the best technical alternative:

- Availability of public land (4.0 acres) with a seasonal river and several un-developed water springs.
- High water demand by the surrounding community: the community attest to their heavy reliance on the existing un-developed Water springs at the proposed site for water needs. This is evidenced by the amount of time

wasted queuing for water instead of dedicating such temporal resource to more productive work.

- Need to provide water for domestic and livestock use, and supplemental irrigation to improve food security.
- Through rapid participatory rural appraisal (PRA) conducted in August, 2018 and participatory integrated community development (PICD) process undertaken by KCSAP in March, 2019, the community has settled for an Earth-dam as the best solution for addressing water needs in the area. They have also established this prioritization through the project's inclusion in the CIDP (2017 – 2022), and therefore guaranteed support by County Government of Kericho.
- Availability of human labour (non-mechanized), as part of community contribution, to complement mechanized operations. This will foster the sense of ownership necessary for project sustainability.

2.2.2 Earth-dam Construction Procedure:

Step 1:	The site of the Earth-dam is cleared and the reservoir boundaries and embankment location demarcated; all inlets and spillway locations also done.
Step 2:	The reservoir section is excavated with the soil being used to build the embankment or walls.
Step 3:	Construct the spillway to discharge excess runoff water when the dam is full.
Step 4:	Install or construct intake and control structures
Step 5:	Construct silt traps along the inlet channels to filter excess sediment load.
Step 6:	Close the Earth-dam with barbed wire and live fence to keep off livestock and children, a gate will be left for access purpose.
Step 7:	Provide livestock and domestic water points off the fenced area.

2.3 General Management of the Leldet Earth-dam:

This section highlights important information relating to project implementation and management as required by ToR

2.3.1 Factors to consider when siting the Earth-dam:

- Select a site with soils such as clay that retain water.
- Avoid sandy soils
- Availability of public land
- A natural depression or small valley to minimize excavation while allowing all storm, spring and river water to be harvested
- A vegetated catchment to minimize siltation

Figure 1: Photo of Typical Earth-dam in Kamasian Ward – showing suitable site selection

2.3.2 Stabilization of the walls of the Earth-dam

By ensuring proper Earth-dam embankment side slopes and compaction, planting shrubs and grasses on the embankment wall and placing stones on the embankment sides

2.3.3 Operation and maintenance of the Earth-dam:

Repair broken perimeter fence as need arises. Avoid direct entry of livestock into the Earth-dam to prevent trampling on bed and walls where livestock water draw off point is not provided, use portable wooden troughs, drums cut into half or old tires to water livestock.

2.4 Project Implementation Activities

2.4.1 General Overview:

In order to predict impacts for this project, it is important to describe its various phases and the activities to be carried out in each phase. These have been described below:

- Community Mobilization
- Survey and design
- Environmental Impact Assessment
- Excavation of the Earth-dam reservoir and building the embankment
- Excavation and construction of spillway
- Construction of control and intake structures
- Fencing the water pan area to reduce health and safety risks of people and livestock.
- Installation of livestock watering/drinking point
- Installing water supply system (pipes and tanks)
- Capacity building on sustainable water management and regulation.
  - Water utilization and maintenance of the equipment.
  - Project supervision, monitoring and evaluation
  - Project Commissioning and handing over to community

2.4.2 Community Mobilization

This project activity involves: creating community awareness about the proposed Leldet Earth-dam construction, site identification/verification/confirmation, and selection of community based organization to be in charge of the project.

2.4.3 Survey and Design

The survey and design is part of the preliminary activities that gives the details of the Earth-dam parameters such as site dimensions for excavation; intake works; excess water release provision; volumes of excavation, embankment, reservoir, and other components incidental thereto and connected therewith.

2.4.4 Environmental and Social Impact Assessment (ESIA)

It is a requirement that EIA be conducted and EIA license issued by NEMA before commencing the water pan construction works. This project ensured to fulfil the requirements by initiating the process in compliance with the law.

2.4.5 Excavation of the Earth-dam:

The works will be contracted. The excavation will be done by industrial machinery. The specific activities include:

- Site clearing and removal of top soils
- Excavation of the Earth-Dam reservoir
- Scooping, depositing and compacting soil on the embankment
- Excavating the silt trap
- Construction of spill way
- Constructing the intake and control structures
- Planting vegetative cover (e.g. grass) on the embankment to control soil erosion

The site is covered by grass, shrubs and scattered trees. Site preparation involves: clearing of grass, shrubs and trees. This stage will have some impacts on the environment and is discussed in chapter five of this report.

2.4.6 Fencing

A perimeter fence will be put around the Earth-dam to restrict access. The objectives of fencing are to reduce water pollution and contamination; reduce vandalism, prevent risks of fall, allow proper management and accounting of water use.

2.4.7 Construction and installation of water use infrastructure

The water use infrastructure include water distribution system mainly intake structure, control structure, delivery pipes, a pump and storage tanks, water troughs for domestic and livestock use and other facilities where applicable. These works are technical and require technical personnel to execute. The project component will be contracted. Before construction, site clearing will be done. During construction, the major environmental concern is occupational, health and safety of workers.

2.4.8 Water Utilization, Management and Maintenance

The main water use is for domestic consumption and agricultural production. Other uses include livestock drinking. Water pollution will be minimized at source through the use of livestock water troughs and fencing to prevent them from directly accessing the Earth-dam reservoir. Once the project has been commissioned, then maintenance schedule will be established. Maintenance includes repair and maintenance of pipes as well as intake and control structures; spill way; repair of leakages and pipe bursts; cleaning and repairing livestock water trough, repair or replacement of booster pump whenever applicable. It also includes immediate environment greening and soil conservation at the water catchment area.

2.5 Project Sustainability

The community was involved in the earlier stages of project inception and will participate in the remaining stages of implementation, monitoring and evaluation. The project is planned to involve the community during the implementation stage. Capacity building on water management will also be conducted. This is the beneficiary approach that transfers knowledge to the benefiting community. At the same time linkage will be created between relevant government departments/ministries. In addition, Leldet Earth-dam Management Committee will manage the project on behalf of the community. Community contribution in-kind such as land for excavating the pan and other infrastructure; provision of locally available materials; unskilled labour (site clearing during survey); security

and management of the project among other is an indicator of community project acceptance.

2.6 Project Monitoring and Evaluation

KCSAP and the County government of Kericho being the main project development partners, will use its already developed log frame to effectively monitor and evaluate implementation of activities in line with the set targets. Quarterly review with the benefiting community, line ministries and stakeholders will be conducted on progress towards achievement of set targets and outcomes. The project is planned to relay feedback to the target beneficiaries on progress and changes as they occur.

2.7 Cross-cutting Issues:

The project has been planned to address environmental issues through catchments protection, tree planting and general environmental conservation as well as community education. There will be deliberate inclusion of men, women, boys and girls in the implementation of the projects in order to address gender issues. The water supply structures will be designed considering its users in terms of age and disability.

2.8 Equipment, Materials, Utilities & Waste:

Civil works will mainly comprise use of machinery. Notable machines shall be Grader, Bull-dozer, Excavator and, where necessary handheld tools. Other handled equipment's e.g. wheelbarrows, jembes and spades might be used. Equipment's, machinery, materials and utilities that will be required for construction may be assembled at site as appropriate. A specific location will be identified for holding these equipment's for good house-keeping and safety

2.9 Materials:

Materials to be used will include among others construction materials and various plumbing devices. For fencing, locally available natural materials will be provided

by Leldet Community Group. The proponent and collaborators should seek local methods and alternatives to such materials.

2.10 Utilities:

Utilities that will be required for the project include water, grader fuel and labour. These must be used sustainably. Required labour for construction work is available locally. Highly specialized labour will also be available through the available channels of collaborations, but the proponent is not restricted to the source so long as the works is implemented in an economically and socially justifiable manner

2.11 Project Cost:

The total cost of the project is **KShs. 11,588,642.50;** and is well articulated component by component, and involves community contribution totaling **KShs. 1,158,864.25** As well as funding from County Government of Kericho of KShs**. 2,317,728.50**. The World Bank funding through KCSAP will be **KShs. 8,112,049.75.**

3.0 BASELINE INFORMATION OF THE STUDY AREA

3.1 Project Target Areas:

KCSAP is being implemented in 24 Counties across Kenya. The project aims to increase agricultural productivity, build resilience to climate change risks in the targeted smallholder farming and pastoral communities in Kenya, and reduce emission of greenhouse gases (GHGs); and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response.

The KCSAP focuses primarily on: (i) improving water/soil management, especially within smallholder maize systems in the marginal rainfall zones— specifically, in smallholder mixed crop-livestock and crop forest (agro-forestry) production systems; (ii) promoting sustainable, community driven rangeland management and improved access to quality livestock services in ASALs— specifically, in pastoral/extensive livestock production systems; (iii) supporting the generation and dissemination of improved agricultural TIMPs and building sustainable seed systems; and (iv) enhancing access to quality agro-weather, climate, advisory, and market information services among farmers/herders for improved decision making.

3.2 Physical Environment

Leldet Earth-dam is located in Leldet Sub-location, Kamasian Ward of Kipkelion West Sub-county in Kericho County. Generally, the Sub-county falls within the Lake Victoria basin as all the streams end up draining in the lake. The proposed site is on a public land. Currently, it is the only water point in this Sub-location serving both domestic consumption and livestock use.

3.3 Bio-Physical Environment:

3.3.1 Climate and Rainfall:

The proposed Leldet Earth-dam project is located in Leldet Sub-location, Kamasian Ward in Kipkelion West Sub-county, Kericho County. The area lies in the Northern part of the Ward with average annual rainfall of 1,200 – 1,500mm

distributed into two rainy seasons namely; long and short rains. Long rains occur in April – June period while short season comes in October - December. However, the second season has low reliability thus leading to acute water shortage during driest period of the area which occurs in January – March.

The area has temperature variation ranging between 10^0 C, in the rainy season and 22^0 C, during dry period.

The climatic conditions in the area have the potential to support a wide range of agricultural enterprises including climate smart agriculture (CSA) value chains such as Indigenous Chicken, Sorghum, Finger Millet, Banana, and Dairy. Production of these agricultural value chains (AVCs) is currently below the potential owing to poor distribution of rainfall and lack of appropriate water harnessing and conservation technologies.

3.3.2 Topography:

The proposed project lies in the part of Kipkelion Ward characterized by hilly but undulating topography with occasional deep valleys. The overall slope of the land is towards the West, with the Water-shed consequently draining in the same direction. The project's Water-shed is expansive but well drained, with run-off generated emanating from as far as 10km away. Much of this run-off eventually drains into the Nyando/Kipchorian River, a major catchment within the larger Lake Victoria Basin.

Owing to the topography and location of the proposed project, high volumes of run-off water feed into the Earth-dam site, most of which are from water springs, seasonal river, roadside channels and adjacent farmlands and homesteads. This surface run-off water poses the challenge of land degradation manifested by soil erosion on farms and grazing fields, and emerging gullies.

Figure 2: Photo: Seasonal River transecting the proposed Earth-dam Site

3.3.3 Water Resources:

Leldet area and a large part of Kipsegi Location, during dry period, rely on the four (4) springs found at the proposed site. The nearest alternative source of water is Leldet River which is about 8 Km away.

Kipkelion West Sub-county lies west of the Mau escarpment which forms the catchment area of River Nyando. One of the main rivers in the Ward is Kipchorian whose source is Western Mau Forest and flows through Londiani, Kipkelion and Chilchila Divisions to join river Nyando as the main tributary on the Kericho/Nyando border. However no main river passes through Leldet Sub-location, the proposed project area. The site was however noted to have several springs that have continued to dry with time.

Leldet Sub Location suffers acute water shortage for about 3-4 months out of the 12 months of the year owing to its relatively undistributed rainfall regime and high evaporation rates. Leldet Springs and Leldet Stream are the main sources of water for both domestic and livestock use in the entire Sub-location with approximately 800 households and 2,000 heads of cattle.

In a good year the spring yields water for about 8–10 months and dries up for 2–4 months meaning that when this happens the user-community must seek for water from outside the sub-location.

Figure 3: Photo: Water Spring at the proposed Earth-dam Site

3.3.4 Geology and Soils

The area surrounding the proposed Water-pan site is characterized by fertile agricultural lands.

Figure 4: Photo: Typical Farmland around the proposed Project – with limited in-field Soil & Water Conservation measures

3.3.5 Vegetation:

The site lies in an area surrounded by croplands, with cultivation occurring within a reach of about 200 meters to the river and eye of the Water Springs found at the site. The site is also surrounded in all directions by few shrubs and trees. During excavation, few shrubs will be cut down at the area where embankment will be constructed causing impact on flora and fauna around the site.

3.3.6 Wildlife:

The area is predominantly under agricultural activities and no wildlife conservation activities occur in the entire area. Farming has greatly reduced the biodiversity of the area with no notable wild animals seen during the field survey.

3.4 Social Environment

3.4.1 Population:

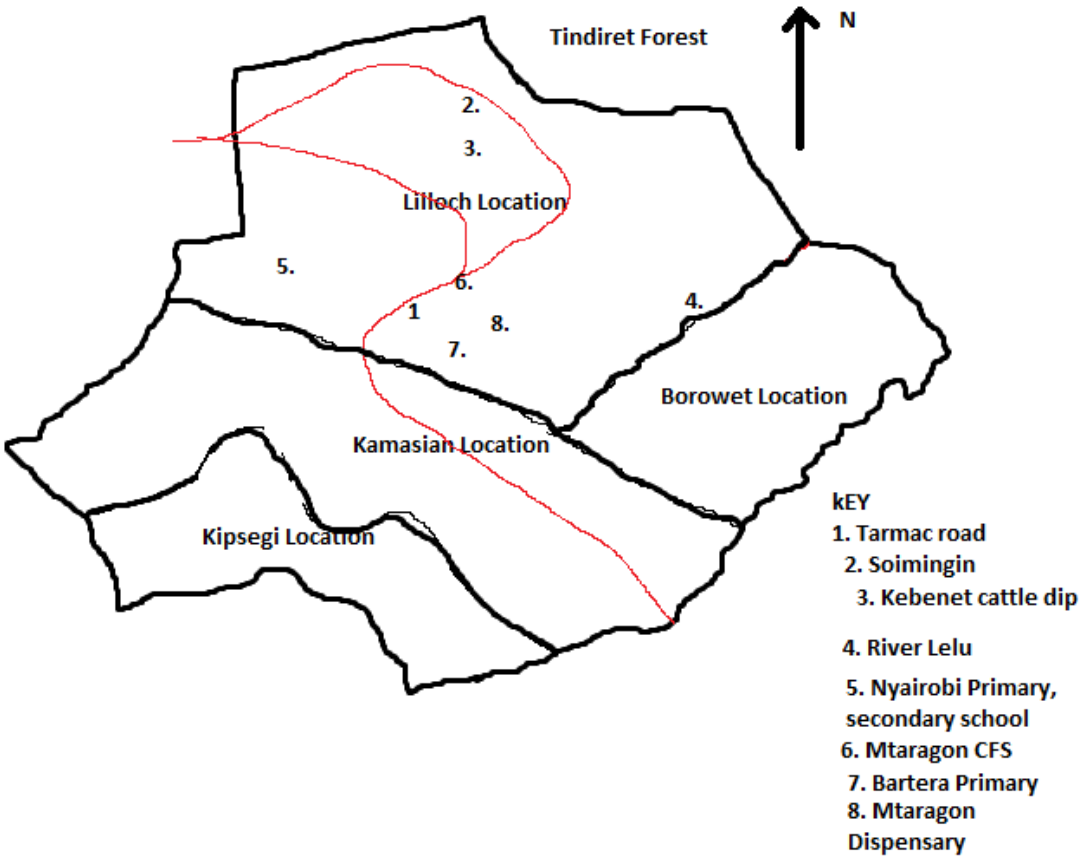
The proposed Leldet Earth-dam is located in Kamasian Ward, which is one of the KCSAP focal intervention areas. In terms of KCSAP zonal sub-divisions, the project lies in Kipsegi Zone covering an area of about 13.0 square Km. The Zone is inhabited by 4,841 people residing in 10 Villages comprising of 950 households (KNBS, 2009). The current number of HHs is estimated at about 1,368 with population projected to be about 5,000 people. The population statistics of the Ward estimated from participatory integrated community development (PICD) survey is as indicated in the following table.

Table 1: Population Statistics for Kamasian Ward

N0.	KCSAP Zone	Area Km²	Population (2009 Census)	No. of HHs (2009 Census)	No. of Villages
1	Borowet	13.2	3,400	1,080	15
2	Lilloch	28.5	5,960	1,292	23
3	Kamasian	25.8	5,768	1,254	25
4	Kipsegi	13.0	4,841	1,368	10
TOTAL		**80.5**	**19, 969**	**4,994**	**73**

Source: KNBS, 2009 & PICD Report, 2019

Figure 5: Map of Kamasian Ward Showing KCSAP Zones



3.5 Economic Environment

3.5.1 Commercial Farming:

Leldet Sub-location generally has favorable climatic and soil conditions to support intensive agricultural production systems. Maize is the main agricultural enterprise in the area, but Coffee and Dairy are also practiced in most parts of the Sub-location. Cultivation of other food crops mainly Sorghum, Finger Millet, African Leafy vegetables, Kales, Beans, and Banana is also done.

The major livestock enterprises are Dairy and Poultry rearing; with most farmers keeping both pure breed and cross-bred livestock owing to their suitability to the prevailing climatic conditions. The greatest limitation to agricultural production in the area is the long duration of dry season and lack of permanent sources of water. And yet large volumes of run-off water generated during rainfall events go untapped. This is an opportunity that the proposed Leldet Earth-dam intends to tap to increase water availability for agricultural purposes.

Inadequate or irregular supply of livestock feeds is the single most bottlenecks to attaining high yield in dairy industry. Dairy herd in the Sub-location have low milk yields averaging about 5 liters per cow per day, ostensibly due to low feed intake, as pastures dry up in the long dry period between January and March.

Potential for irrigated agriculture is great, and can be exploited if farmers can get trained on CSA technologies, innovations and management practices (TIMPs).

4.0 RELEVANT LEGISLATIVE AND REGULATORY FRAMEWORK

4.1 Introduction

It is a legal requirement in Kenya that a development of such magnitude as the proposed Leldet Earth-dam adheres to the relevant legal parameters. This section therefore describes the policy, legal, and institutional framework pertaining to the proposed development. These frameworks have been put in place to ensure that development projects adhere to environmental conservation standards at all times. Since development activities have the potential to damage the environment, it is desirable that development interventions are made sustainable.

The proposed development will certainly cause changes in the landscape; these environmental changes include exposure of the soils, land compaction, loss of vegetation, and waste generation among others. It is these issues that legislation sets to address. In recognition of the importance of environmental conservation in development endeavours, Kenya government has put in place a number of policies, institutional and legislative frameworks to guide development. These instruments aim at minimizing environmental degradation which may occur in the process of undertaking development activities.

4.2 Environmental policy

In order to achieve economic development goals while safeguarding environmental integrity, Government of Kenya developed EMCA, 1999 as the legal instrument to help in regulating environmental activities in the country. The broad objectives of the national environmental policies include;

- Optimal use of natural resources while improving environmental quality;
- To conserve resources such that the resources meet the needs of the present without jeopardizing needs of future generations;
- Develop awareness that inculcate environmental stewardship among the citizenship of the country;
- Integrate environmental conservation and economic activities in the development process;

- ❖ Ensure that national environmental goals contribute to international obligations on environmental management.

To achieve this, it is the policy that appropriate reviews and evaluations of developmental plans and operations are undertaken to ensure compliance with the environmental policy.

4.3 Institutional Arrangements:

Presently, there are over twenty (20) institutions and departments which deal with environmental issues in Kenya. Some of these institutions include National Environmental Council (NEC), National Environmental Management Authority (NEMA), Forestry Department, Kenya Wildlife Services (KWS) and others. There are also local and international NGOs championing environmental protection in the country. Among these institutions, NEMA plays the regulatory role in the management of environment in Kenya.

4.4 Legal Framework

There are several legal provisions on environmental protection, which regulate the development of infrastructure like the one which is the subject of this proposal. Summaries of the various legislations relevant to the proposed development are as follows:

4.4.1 The Environmental Management and Coordination Act, 1999(Amended in 2015)

The act defines the legal and administrative co-ordination of the diverse sectoral initiatives in the field of environment. The act harmonizes the sector specific legislations touching on the environment in a manner designed to ensure greater protection of the environment. In terms of policy direction, this act is guided by the national environmental council (NEC), while enforcement falls under the Director General of the National Environmental Management Authority (NEMA). Thus, NEMA enforces the Act on behalf of the Cabinet Secretary responsible for Environment. Its functions include:-

- ❖ The coordination of various environmental management activities;

- Initiation of legislative proposals;
- Research, investigations, and surveys ion the field of environment.
- Creation of environmental education and awareness programmes;
- Advise the government on regional and international agreements to which Kenya is party to;
- Executing the Environmental Impact Assessment (EIA) under the Environmental Impact (Assessment and Auditing) regulations, 2003, among other duties.

4.4.2 The Environmental Impact (Assessment and Auditing) Regulations, 2003:

Environmental Impact Assessment under the act is guided by the Environmental Impact Assessment (Assessment and Auditing) Regulations of the year 2003, which was issued through legal notice no. 101. The regulations stipulate ways of conducting environmental impact assessment and audits. The proposed project falls under the second schedule of EMCA, 1999 Section 58 (1), (4) which requires that Environmental Impact study is done. As stipulated by the legal notice No. 101, 2003, PART V, Section 31 (3((a) (i) and (ii) it is necessary that an environmental assessment be undertaken to provide baseline information upon which subsequent environmental control audit shall be based.

4.4.3 The Physical Planning Act; Laws of Kenya, Chapter 286

This act provides for the preparation and implementation of national, regional, and local development polices guidelines and strategies. The Act is enforced by the Director of Physical Planning on behalf of the Minister responsible for lands and settlement. He advises the commissioner of lands on appropriate uses of land, and on land management. This Act also has a direct bearing on the proposed development providing prohibition, and offers controls on the use and development of land and buildings.

4.4.4 Land Planning Act (Cap. 303):

Section 9 of the subsidiary legislation (The Development and Use of Land Regulations, 1961) under this Act requires that before the local authorities submit

any plans to the Minister for approval, steps should be taken as may be necessary to acquire the owners of any land affected by such plans.

4.4.5 Electric Power Act No. 11 of 1997:

The Electric Power Act No. 11 enacted in 1997 deals with generation, transmission, distribution, supply and use of electrical energy as well as the legal basis for establishing the systems associated with these purposes. In this respect, the following environmental issues will be considered before approval is granted:

- The need to protect and manage the environment, and conserve natural resources;
- The ability to operate in a manner designated to protect the health and safety of the project employees; the local and other potentially affected communities.

Under schedule 3 of the Electric Power (licensing) Regulations 2003, it is mandatory to comply with all safety, health, and environmental laws. Moreover, schedule 2 (regulation 9) of the Electric Power (licensing) Regulations 2003 stipulates that licensing and authorisation to generate and transmit electrical power must be supported by the following documents which are approved by NEMA.

1. Environmental Impact Assessment Report (EIA) or
2. Initial Environmental Audit Report (IEA) and;
3. Environmental Management Plan (EMP)

4.4.6 Land Titles Act Cap 282:

The Land Titles Act Cap 282 section 10 (1) states that there shall be appointed and attached to the Land Registration Court a qualified surveyor who, with such assistants as may be necessary, shall survey land, make a plan or plans thereof and define and mark the boundaries of any areas therein as, when and where directed by the Recorder of Titles, either before, during or after the termination of any question concerning land or any interest connected therewith, and every area so defined and marked shall be further marked with a number of other distinctive symbol to be shown upon the plan or plans for the purposes of complete identification and registration thereof as is herein after prescribed.

4.4.7 Forestry Act (Cap 385):

This forestry act is implemented by the ministry of environment and natural resources and its provisions for the establishment, control, and regulation of central forest and other forests of Kenya. It encourages sustainable conservation of all types of vegetation. The Act is enforced by the conservator of forests while research issues are undertaken by the Kenya Forestry Research Institute.

4.4.8 The Wildlife Conservation and Management Act:

The Kenya Wildlife Service is responsible for the protection of Kenya's indigenous animals, plants, and habitats. Its operations are guided by the Wildlife Conservation and Management Act.

4.4.9 The Constitution of Kenya:

Under the current Constitution Kericho County Government assumes a number of roles in its area of jurisdiction, which includes the study entity area. The roles include issuance of licenses for businesses, collection of refuse, setting up of adequate lighting, provision of water and sewerage services in the area, among others.

4.4.10 The Public Health Act; Laws of Kenya, chapter 242:

The act prohibits activities that may be injurious to human health. It then becomes the responsibility of the local authority to maintain clean and sanitary conditions. This Act:

- Calls for cleanliness of premises;
- Calls for supply of potable water for human purposes;
- Offers guidelines on waste water disposal and management; and
- Prohibits the discharge of emissions that may be injurious to health.

4.4.11 Occupation safety and health Act (2007)

The act makes provisions for health, safety, and welfare of person employed in places of work. Part VI of the act covers health general provisions, part X welfare

general provisions and XI health, safety and welfare special provisions issues, which includes;-

- The state of cleanliness;
- Sanitary conveniences;
- Drainage of floors;
- overcrowding;

Part X covers:-

- Supply of drinking water,
- Washing facilities,
- Accommodation of clothing,
- Facilities for sitting
- First Aid.

Part XI deals with welfare issues, which include:-

- Permit to work
- Meals in certain dangerous trade
- Protective clothing and appliances

These are all necessary for the continuous running of facility.

4.4.12 The Factories (First Aid) Rules, Legal Notice No. 160, 1977:

This specifies the content of the first aid box, first aid training of personnel and measures to be undertaken in the incidence of minor injuries.

4.4.13 The Water Act 2016 (No. 8 of 202); Laws of Kenya:

The Water Resource Management Authority (Currently known as WRA) has been established under this act to:

- Develop principles and guidelines for allocation of water resources;
- Monitor and re-assess water resource management strategy;
- Monitor and enforce permission attached to water use;
- Regulate and protect resources quality from adverse impacts;
- Manage and protect water catchments;

- To liaise with other bodies for better regulation and protection of water resources.

The Water Act provides for the conservation and controlled use of water resources in Kenya. Under the Ministry of Water, the Act prohibits pollution of water resources and controls the discharge of industrial and municipal effluents into the ocean and other water bodies.

These affect developments in their impacts to water resources and in their ability to have the required demand of water consumption for their stated activities. The above acts taken together guide the development of such infrastructure as the one proposed by the proponent.

4.5 World Bank's Safeguard Policies:

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 bank and borrower staffs 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. (World Bank, 1999-2006).

4.5.1 World Bank Safeguard Policy 4.01-Environmental Assessment

The environmental assessment process provides insights to ascertain the applicability of other WB safeguard policies to specific projects. This is especially the case for the policies on natural habitats, pest management, and physical cultural resources that are typically considered within the EA process. The policy describes an environmental assessment (EA) process for the proposed project. The breadth, depth, and type of analysis of the EA process depend on the nature, scale, and potential environmental impact of the proposed project. The policy favours preventive measures over mitigation or compensation measures, whenever feasible.

The operational principles of the policy require the environmental assessment process to undertake the following:

- Evaluate adequacy of existing legal and institution framework including applicable international environmental agreements. This policy aims to ensure that projects contravening the agreements are not financed.
- Stakeholder consultation before and during project implementation
- Engage service of independent experts to undertake the environmental assessment
- Provide measures to link the environmental process and findings with studies of economics, financial, institutional, social and technical analysis of the proposed project.

Develop programmes for strengthening of institutional capacity in environmental management. The requirements of the policy are similar to those of EMCA which aims to ensure sustainable project implementation. Most of the requirements of this safeguard policy have been responded to in this report by evaluating the impact of the project, its alternatives, existing legislative framework and public consultation.

4.5.2 Bank Safeguard Policy 4.36-Forests

This safeguard policy provides measures for protection of forests through impact evaluation and conservation of forest during project development. This policy is not triggered because the proposed project area does not have natural forest. The area is fully settled with various land uses but a few community members have privately owned tree plantations in the area. It is advisable that the trees be preserved as much as possible as the sections neighbouring the trees are open land that can be used to re-align the route of the transmission line. If other project factors necessitate the harvesting of the trees, then it is recommended that rehabilitation programmes be developed.

4.5.3 Bank Safeguard Policy 4.11-Physical Cultural Resources

This policy assists in preserving physical cultural resources and helps reduce chances of their destruction or damage. The policy considers Physical Cultural Resources (PCR) to be resources of archaeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic or

other cultural significance. The project shall not traverse any homes in rural Kamasian Ward. There are no such sites at Leldet or near the proposed Earth-dam site therefore this policy is not triggered.

4.5.4 Bank Safeguard Policy 4.12-Indigenous People

This policy requires project to be designed and implemented in a way that fosters full respect for Indigenous Peoples' (IPs) dignity, human rights and cultural uniqueness and so that they receive culturally compatible social and economic benefits and do not suffer adverse effects during the development process. This policy will not have any repercussion on the Kamasian community since the project Ward is not settled by any IPs. Further, there will be no displacement of any community.

4.5.5 World Bank Safeguard Policy BP 17.50- Public Disclosure:

This BP encourages Public Disclosure (PD) or Involvement as a means of improving the planning and implementation process of projects. This procedure gives governmental agencies responsibility of monitoring and managing the environmental and social impacts of development projects particularly those impacting on natural resources and local communities. The policy provides information that ensures that effective PD is carried out by project proponents and their representatives. The BP requires that Public Involvement should be integrated with resettlement, compensation and indigenous peoples' studies. Monitoring and grievances address mechanism should also be incorporated in the project plan. The proposed project incorporated public participation and stakeholders' consultation as part of the ESIA studies in order to collect the views of the local communities and their leaders for incorporation in the project mitigation plan. The consultation was successful and the community members gave a number of views that have been considered in the mitigation plan.

5.0 PUBLIC PARTICIPATION

5.1 Introduction

This chapter describes the process of the public consultation and participation followed to identify the key issues and impacts of the proposed project. Views from the general public, local leaders, surrounding institutions and development partners who in one way or another would be affected or rather interested in the proposed project were sought through interviews and public meetings as stipulated in EMCA, 1999.

5.2 Objectives of the consultation and public participation

The objective of the consultation and public participation was to:

(i) Disseminate and inform the stakeholders about the project with special reference to its key components and location.

(ii) Gather comments, suggestions and concerns of the interested and affected parties.

(iii) Incorporate the information collected in the EIA study.

In addition, the process enabled;

(i) The establishment of a communication channel between the general public and the team of consultants, the project proponents and the Government.

(ii) The concerns of the stakeholders to be known to the decision-making bodies at an early phase of project development.

5.3 Interested and Affected Parties Consulted:

Important stakeholders who are likely to be affected and those with interest in the proposed Leldet Earth-dam were consulted in the process of undertaking the EIA exercise. The full list of the people/Stakeholders consulted is provided in appendix 6 of this report.

5.4 Consultation and Public Participation Methodology:

The Consultation and Public Participation (CPP) process is a policy requirement by the Government of Kenya. It is a mandatory procedure stipulated by EMCA,

1999 section 58, on EIA for the purpose of achieving the fundamental principles of sustainable development. It is an environmental and social assessment exercise which was conducted between 8th and 22nd of March, 2019. The exercise was conducted by the consultant and his team in three ways, namely: (i) Focus Group Discussions (FGD) and Key Informant Interviews (KII), (ii) Field surveys and observations and (iii) Public meetings. A major public meeting that was held on 12th of March 2019 on site captured the concerns of the people especially those directly affected by the project.

Figure 6: Photo: Public Participation Exercise held at the Project Site

It was possible to meet a representative population at the time of this meeting due to the nature of the project. The number of people affected by the project was high given that Leldet Springs are the major source of water in the area. Similarly, a number of local institutions (e.g. MCA Office, Schools, Polytechnics, and Churches etc.) and farmer groups (Youth groups, Women Groups etc.) had great interest in the proposed project. A total of 102 people attended the main consultative Baraza held on the 12th of March, 2019. Completion of the questionnaires and 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 was undertaken.

The purpose for such interviews was to identify the positive and negative impacts and subsequently promote proposals on the best practices to be adopted to

mitigate the negative impacts. It also helped in identifying any other miscellaneous issues which may bring conflicts in case project implementation proceeds as planned.

In general, the following steps were followed in carrying out the entire CPP process:-

i. Identification of institutions and individuals interested in the process-database of the interested and affected parties
ii. Administration of questionnaires to the different target groups and local community members along the proposed project site
iii. Meetings at various levels and with different target groups

The one major meeting that was held at the project site was exhaustive in terms of the stakeholders that were consulted as they were found to be truly representative of the target population.

From the field work, it was apparent that majority of the stakeholders were aware of the proposed project. The direct impacts of the project were also known, especially to the community members. The project was nevertheless received positively, and Leldet Earth Dam Community Group members expressed eagerness on the prospect of the commissioning of the project.

Local communities and major stakeholders independently gave their views, opinions, and suggestions. They supported the project idea together with the circumstances and conditions under which project is to be established.

5.5 Issues Raised:

This sub-section covers the views and opinions of the key stake holders. It highlights both positive and negative socio-economic and environmental impacts anticipated during the project phases. This is followed by suggested mitigation measures that the proponent should incorporate to minimize environmental degradation and promote sustainable development. This section ends by highlighting the opinions and expectations of the stakeholders as they were presented at the public meeting:

- The proposed project was long overdue and no objection was raised from the local residents; they were for the idea that the project commences immediately
- Soil erosion was rampant
- There was a previous Water Abstraction facility in the same Site which was constructed by a White Settler, Major Kasheen, to supply water to his dairy farm. The structure has since been filled up with sediment owing to many years of lack of maintenance.
- The proposed Earth-dam would help provide water which they have to walk long distances to access for their animals and domestic utilization.
- As a result of the above, there would be reduced water use conflicts
- A management committee should come up with a Resource management plan to ensure water-use rules are not violated, and that safety of the auxiliary structures is guaranteed.
- That members must avail their labour when needed
- Management should be proactive and improve community communication and consultation methodologies.
- Among the positive measures mentioned by the members present included:
  - Availability of water
  - Soil conservation
  - Community unity due to shared resource use
  - Animal safety once a drinking point is made
  - Social- reduced time to get water. More time for children to go to school and parents to concentrate on other economic activities
  - Sustainable agriculture

- **Challenges** noted by members present included:,
  - Drowning of children or even older members of the society. Members were made aware and committed to adhere to safety measures such as keeping off children from the pan, and fencing the Earth-dam area. A watering trough would be provided to ensure safety.

- Members also noted that there was chronic lack of drinking water and wondered whether a treatment/filtering technology could turn part of the water into a clean source for human consumption. The water treatment will take place at the storage tanks.
- Land ownership was communal. It was also agreed that MoU would be signed by the landowners adjacent to the proposed site to confirm their support for the project where the project might extend slightly touching the edges of their lands as they had observed and promised verbally.
- Government Agencies e.g. WRA, NEMA, Fisheries and Marine Department, etc should be all round on the ground to monitor the project and ensure adherence to the laws of the land.

6.0 POTENTIAL ENVIRONMENTAL IMPACTS

This section identifies both negative and positive impacts associated with the proposed project. These are identified according to the proposed project phases namely: Construction Phase, Operational Phase and the Decommissioning Phase.

6.1 Overview of Impact Segments

6.1.1 *Construction Phase:*

During excavation of pan and construction and installation of other infrastructure, potential negative impacts include: loss of grazing land; loss of potential agricultural land; interference by curious onlookers who finally waste their time. The cleared grass, shrubs and light trees as well as excess excavated soil will form unwanted heaps around water pan.

6.1.2 Operation Phase

When the proposed Earth-dam is commissioned, it is bound to change environmental, physical, biological and socio-economic parameters in the project site and its environs, and the nation in general. The predicted impacts on various parameters are highlighted below:

(i) Physical Environment:

The implementation of the project will lead to minor loss of vegetation cover in the pan area and the surrounding where other infrastructure are established. A significant portion of land will also be cleared for crop production. There is also change in the land use at the water points. Similarly emission of exhaust fumes from machinery, incidentally affect the operators and its environs. The effects are minimal however mitigation measures are highlighted in the EMP

(ii) Ecology:

Ecology is the study of relations between organisms with respect to their environment. There is no significant ecological change due to small scope of the

project. However, there will be change of flora and fauna from naturally undisturbed sections of land to high activity level point (human beings, livestock, wildlife, fish, snakes, trees, grass, birds, garden crops) favoured by water availability and green environment.

(iii) Socio Economic Impacts:

The proposed project will improve socio-economic status of the local community and its neighbouring environment. Water will be available for crop production, domestic use, livestock and others. This will create daily income for the people hence uplifting their economic status.

The implementation of the project will bring water close to the community thereby reducing distance to water points. Women and children in particular will have more time for other activities. Women will have time for household chores, gardening and income generating activities while children will have time for studies. It is expected to improve livestock production as well as community livelihood and health. Adequate water reduces the rate of rural-urban migration. A greater population will therefore be maintained in the area that can put their efforts on farm cultivation and improved livestock production leading to the rise in the local economy and the entire nation in general. Adequate clean water will enable subsistence kitchen gardening nearby leading to food security, improved nutrition and employment creation.

(iv) Environmental Health and Safety:

According to International Labour Organization (ILO), Occupational Health and Safety (OHS) is a service that is essentially preventive, promotive and responsible for advising employers and employees and their representatives in health and environmental requirements for optimal health of workers and safe work environment while WHO states that occupational health and safety programmes should aim at promoting and maintaining highest degree of physical, mental and social well-being in all occupations.

During the construction and operation phase of this project the operators and service providers should adhere to laid down work place regulation by wearing

protective gears and observing working time. These efforts will bear fruit if the project management committee embraces the OHS requirements.

(v) Transfer of Knowledge:

With expected collaborations and intention of the project as an entry point into individual community members adopting similar proposals on a small scale level, there is no doubting that there is going to be plenty of technological transfer by the project.

BOX 1: Summary of Positive Impacts

(i) Reduced land degradation by harnessing road water run-off and turning it from "problem water" to productive input for livestock and crop production

(ii) Availability of water for animal and crop husbandry for food security. The project will enable establishment of kitchen garden crops and vegetables under micro irrigation hence improved nutrition and health.

(iii) Reduced soil erosion in adjacent farms due to reduction of surface runoff thereby improving soil cover and planting of Napier grass

(iv) This also has an effect on improved productivity.

(v) Increased tree cover by introducing water-efficient agro-forestry tree species for water and environmental conservation

(vi) Availability of water for domestic use. By distributing treated water to homesteads or designating a water point for domestic water, the water will be comparatively clean hence reduced water borne diseases and improves human health.

(vii) Water will be available for livestock. This improves livestock production. Livestock breeds are expected to improve leading to increased milk and meat production.

(viii) The water pan may act as fish pond for fish farming. In addition the fish will act as biological control of mosquitoes as fish feeds on mosquito larvae.

(ix) The water project will reduce water conflict among neighbouring communities with regard to watering livestock

(x) The project will bring water close to the community. This reduces the distance to water points. Women and children will spend less time while fetching water. Women will have time for house chores and other economic activities such as kitchen gardening and income-generating activities (IGAs) while children will have

time for studies and recreation. Also mud wall houses will be smeared regularly and clothing cleaned as frequent. Overall, this will improve performance in schools and socio-economic status of the benefiting community.

(xi) The project can be used as a model demonstration for similar projects and its design can be adopted by individuals in the community thus knowledge transfer.

(xii) Establishing tree nurseries adjacent to the water pan will help in afforestation programmes

BOX 2: **Summary of Expected Negative Impacts**

(i) Loss of grazing land by community members as the site is used for project implementation.

(ii) During excavation of the Earth-dam and other infrastructure, there is the likelihood of loss of man-hours by curious onlookers and that of the workers due to interference.

(iii) There is also a likelihood of overgrazing around the livestock watering point(s).

(iv) The Earth-dam will encourage rapid multiplication of mosquitoes that causes malaria. It is expected that malaria prevalence will increase.

(v) There is the potential of increased chances of the public health and occupational health hazards and safety (OHS). Accidents may occur during construction or during the operation phase. Some of the OHS concerns include ergonomic related problems. An effective use of protective gear and adherence to place of work regulation is recommended.

(vi) During dry season, there is a likelihood of water conflict between the users and neighbouring communities. This leads to insecurity and even loss of life. There is therefore the need to form project management committee to regulate the use of water and to amicably resolve conflicts through dialogue. In addition provincial administration to provide security and restrict influx of livestock from other areas. Furthermore, there is the need to put in place early warning and response systems in place.

(vii) Loss of life due to drowning of children and increased cases of snake bites

There is a likelihood of theft, vandalism or damage infrastructure damage during operational phase of the project

(viii) Abandoning the water project and associated activities leads to waste of precious commodity, possible resurgence of erosion and leaving of an opening that is hazardous in nature. There is therefore the need for landscape restoration to its original state before disturbance.

7.0 MITIGATION MEASURES AND MONITORING PROGRAMMES

7.1 Introduction:

This section highlights the mitigation measures for the expected negative impacts of the proposed project. The potential impacts and the possible mitigation measures have herein been analysed under three categories: Construction, Operational and Decommissioning Phases.

7.2 Mitigation of Related Impacts:

The table below presents the mitigation measures. Note that these have been captured in depth in the methodology, design and design alternative sections of this report:

Potential Impact 1	**Loss of grazing and potential agricultural land for project implementation**
Project Activities	Excavation of water, construction and installation of related works
Environmental Receptor	Land, Human
Duration	Project lifespan
Magnitude	Long term
Mitigation Measures	This is an opportunity cost foregone.
Significance	Direct/minimal negative/adaptable impact
Potential Impact 2	**Loss of man-hours by curious onlookers and that of workers due to interference**
Project Activities	During construction phase
Environmental Receptor	Human being and livestock
Duration	Short term
Magnitude	Minor
Mitigation Measures	Keep away idlers and livestock by putting warning signs at strategic places and informing the residents.
Significance	Minor, direct, occasional, avoidable impact.
Potential Impact 3	**Dust /Air pollution**

Project Activities	Excavation of the water pan and other infrastructure.
Environmental Receptor	Livestock, wildlife, human beings and plants.
Duration	Short term
Magnitude	Medium
Mitigation Measures	Appropriate scheduling of activities. Construction monitoring. Dust suppression through sprinkling water. Proper servicing of equipment to reduce exhaust fumes. Communication with residents. Provision of dust protective screens.
Significance	Minor negative/indirect/sporadic/avoidable impact
Potential Impact 4	**Obstructive heap of cleared shrubs and trees as well as excavated soil**
Project Activities	Site Clearing and preparation.
Environmental Receptor	Livestock, human beings, wildlife, water and land tillage machinery
Duration	Short term
Magnitude	Minor
Mitigation Measures	Use material as reinforcement
Significance	Minor, direct, avoidable impact
Potential Impact 5, 6 & 7	**Loss of vegetation, habitat, land degradation & loss of income**
Project Activities	Site clearance
Environmental Receptor	Land, flora, fauna, endemic species
Duration	Immediate/medium term
Magnitude	Small
Mitigation Measures	The removal of vegetation, ecological habitat and loss of income is unavoidable, and is the main trade-off to be made against the economic benefits to be derived from the project. By design a few vegetation will be removed to pave way for implementation of the water project. There is therefore the need for rehabilitation through planting of grass s and trees around the water pan, practice agro-forestry and general environment greening to restore flora and fauna habitat.
Significance	Direct/minor negative/reversible impact

Potential Impact 8	**Increased Vector-bone diseases e.g. malaria due breeding of Mosquitoes**
Project Activities	During Operational phase (pool of water)
Environmental Receptor	Human
Duration	Long term
Magnitude	Minor
Mitigation Measures	• Use mosquito nets and clear unnecessary bushes and grass around homesteads • Equip dispensaries with malaria drugs
Significance	Minor, indirect, un - avoidable impact.
Potential Impact 9	**Accidents**
Project Activities	During construction and operation phase
Environmental Receptor	Workers
Duration	Short to long term
Magnitude	Minor
Mitigation Measures	Wear protective/safety gear and adhere to work place regulations.
Significance	Minor, direct, occasional, avoidable impact.
Potential Impact 10 & 11	**Water Conflict, Increased Insecurity and loss of life**
Project Activities	Competition for scarce water among local community and neighbours during dry season
Environmental Receptor	Human being
Duration	Short term
Magnitude	Medium
Mitigation Measures	• Form project management committee to regulate the use of water and pasture and to amicably resolve conflicts. • Area administration to provide security and restrict influx of livestock from other areas. • Put in place early warning and response systems in place.
Significance	Direct, medium negative, occasional, avoidable impact.
Potential Impact 12	**Drowning of children and snake bites**
Project Activities	During operational phase
Environmental Receptor	Human being
Duration	Long term

Magnitude	Minor
Mitigation Measures	• Have a perimeter for the water pan and restrict children from the site. • Equip the dispensaries with drugs to treat snake bites
Significance	Direct, short term negative, occasional, avoidable
Potential Impact 13	**Theft, vandalism and damage of infrastructure**
Project Activities	During operational phase
Environmental Receptor	Human being
Duration	Long term
Magnitude	Minor
Mitigation Measures	Involve community at all levels of project implementation for acceptance and ownership and provide water for domestic and livestock.
Significance	Direct, short term negative, occasional, avoidable
Potential Impact 14	**Waste of land due to project abandonment**
Project Activities	Decommissioning/abandonment
Environmental Receptor	Human, land
Duration	Long term
Magnitude	Medium
Mitigation Measures	Demolition and disposal of structures, landscape rest oration by removing pipeline, filling depressions, removing unused equipment, structures and facilities to give room for new activities.
Significance	Medium negative, Direct, Occasional, avoidable impact.

8.0 ANALYSIS OF PROJECT ALTERNATIVES

This section analyses the project alternatives in terms of site, design, technology, waste management options and beneficiary. It also looks at uncertainties during the project cycle.

8.1 The "No Project" Alternative:

This option will mean that the project will not be undertaken. This implies that the proposed project will not be implemented and, opportunities created by the project will not be realised. Though, if positively affirmed, the site would remain intact, and any concerns of environmental and alteration would be non-existent. Thus, the "no project" option was not considered viable because:

- The donor objectives would not be met
- The positive impacts associated to the project would not come to light
- Pressure on existing resources would not be reduced.
- Socio-economic benefits from the proposed project would not be accrued.

8.2 The 'Yes Project' Alternative:

This option was considered viable as opposed to the 'no project' because:

- All the positive impacts as raised above would be realised.
- Under the proposed construction alternative, the Proponent would be issued with an EIA license. In issuing the license, NEMA would approve the Proponent's proposed excavation of the water pan and activities incidental thereto and connected therewith provided all environmental measures are complied with during the planning, design, excavation/ construction, operation and decommissioning phases. Due to NEMA approval, excavation/construction and operation of the proposed water pan project, the positive and negative impacts given in chapter five will be experienced.

8.3 Re-location Alternative

Relocation to a different site is an option available for the project implementation. At present the proponent does not have an alternative site for the target residents of Buchenge. This means that the donor has to look for another suitable site. Looking for the land to accommodate the water project and completing the transfer of land ownership or lease agreement may take a long period although there is no guarantee that the land would be available. Assuming that the land is available the cost of starting community mobilization, survey/design and conducting EIA may cost an additional substantial amount of money that is not available. The proponent would also have to spend another one month to re-do the process according to site conditions and whatever had been done and paid to date will be counted as a loss to the collaborators. This is a delay that our economy cannot afford. This would also lead to a situation like "No Project" Alternative. The other consequence of this is that it would be a discouragement to the sponsor and the benefiting community.

8.4 Analysis of Alternative Construction Materials and Technology

The Earth-dam will be excavated using machinery. Excavation of the dam reservoir using manual labour and hand tools is not suitable for an Earth-dam of the proposed size. It is not only relatively expensive but takes a longer time. *It should be noted that Earth-dams would be conveniently excavated over short window of time, that is, during the dry season; and for this case before the end of government financial year*. Equipment that saves energy (earth-moving machineries) and water (irrigation system) will be given first priority without compromising on cost or availability factors. Materials will be sourced locally whenever applicable and local labour will be optimised.

8.5 Solid Waste Management Alternatives

There are no much wastes that will be generated from the proposed Leldet Earth-dam project. However an integrated solid waste management system is recommendable. The Proponent will also manage the wastes generated in accordance with Waste Management Regulations of 2006. The proponent will give

priority to reduction at source of the materials. This option will demand a solid waste management awareness programme in the management. Recycling, reuse and composition of the waste will be the alternative in priority. This will call for a source separation programme to be put in place. Sanitary land filling is the best option the proponent needs to consider

Uncertainties may arise during the project cycle from a variety of aspects in any development.

8.6 Uncertainties:

(i) General Uncertainties:

(a) Changes that may occur in baseline conditions due to external factors over the lifetime of the project.

(b) Uncertainties related to policy initiatives that might influence the assessment of future baseline and post development conditions.

(c) Uncertainties in design information, which in the current state is dealt with by a good definition of design parameters for the development.

(d) Uncertainty with respect to project implementation and planning, since the detailed program and means of excavation/construction may be influenced by the choice of contractor, and the detailed design of the development

(ii) Specific Uncertainties**:**

(a) Possibility of presence of unsuitable geological formation that renders the site unsuitable for the Earth-dam due to highly porous soils, solid rock among other uncertainties.

(b) Water conflict between the various users may render use of the Earth-dam not achieve the intended purpose.

(c) Failure by the sponsor to release funding for the project implementation. This leads to stalled project that waste precious expectations and resources

9.0 ENVIRONMENTAL MANAGEMENT/MONITORING PLAN

9.1 Introduction

The proponent of the proposed project acknowledges the fact that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public, and socio economic well-being of the local residents. Thus, the main focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a programme of continuous improvement.

An environmental management/monitoring plan has been developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project. The EMP has been developed to provide a basis for an Environmental Management System (EMS; ISO 14001 principles) for the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the EMP. As such, the EMP will be subject to a regular regime of periodic review.

The EMP Involves construction, operational and decommissioning phases of the proposed project respectively. In general, the tables outline the potential safety, health and environmental risks associated with the project and detail all the necessary mitigation measures, their financial costs, as well as the persons responsible for their implementation and monitoring. The EMP will be used as checklist in future environmental audits.

9.2 Significance of an EMP

An Environmental Management Programme is an important result of an Environmental Report because it provides a framework or checklist for project monitoring and evaluation/audit. Some of the mitigating measures proposed, will be incorporated into the project designs. The monitoring plan should be implemented during the whole project cycle. The monitoring involves the observation, review, and assessment of onsite activities to ensure adherence to

regulatory standards and the recommendations made to reduce negative impacts. The programme must be comprehensive and address relevant issues, with a reporting component that will be made available to the regulatory agencies based on a mutually agreed frequency. The monitoring report includes but not limited to:

a) Raw data collected
b) Table/graphs (where appropriate)
c) Discussion of results with respect to the development in progress, highlighting parameters, which exceed standards.
d) Recommendations
e) Appendices with photos/data, etc.

The EMP for the proposed water pan project provides a logical framework within which identified negative environmental impacts can be mitigated and monitored. It assigns responsibilities of actions to be taken, and provides a timeframe within which mitigating measures and monitoring are done. The EMP has addressed and identified potential negative impacts and mitigating measures.

9.3 Desktop preparation phase

This refers to the stage whereby all the documents and designs pertaining to this project were being undertaken in various offices. Some of these activities have since been completed while others are ongoing.

9.4 Implementation and Operational Phase

This is the longest stage of project activities. It is at this stage that the intended project activities are accomplished. During this phase a lot of care and concerns are considered in matters concerning impacts

9.4.1 Mitigation Measures for Impacts Anticipated During Construction Phase

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs.)
1. Minimize Solid Waste Generation				
Generation of solid waste	Use excavated soil for embankment	Contractor	2 months	-
	Polythene bag should be reused/recycled	Contractor	Throughout	-
2. Minimize vegetation disturbance at and/or around construction site				
Vegetation disturbance	Ensure proper demarcation and delineation (fencing the project site) of the project area to be affected by construction works and also after the construction through to operation and decommissioning phases.	Proponents (KCSAP)	1 week	5,500
Loss of grazing and potential agricultural land	This is an opportunity cost foregone. Practice intensive farming.	Community Members, Specific Land owners at the whose edge of their farms is likely to be affected (have already consented willingly through writing)	Entire Project life	Nil to project
Loss of vegetation, habitat, land degradation & loss of income	Rehabilitation through planting of grass and trees along pipeline and around the water points and general environment greening to restore flora and fauna and habitat.	Community Members, relevant collaborator	1 year	Catered

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs.)
3. Reduce dust emissions				
Fugitive dust, Exhaust fumes, Air pollution	Appropriate scheduling of activities. Construction monitoring. Dust suppression through sprinkling if any. Proper servicing of equipment to reduce exhaust fumes. Communication with residents.	Public works Office, Community, KCSAP	Excavation period	Routine work
4. Minimize water pollution				
Water pollution	Block excavated soil from being washed into the water pan by compacting them around the pond and planting trees and grass on top.	Proponents	Throughout construction period	10,000
5. Minimize occupational health and safety risks				
Approval of project design	Ensure that design for water pan is approved by the Ministry of Water	Proponents	One-off	0
Health and safety	• Sensitize the construction team on occupational health and safety • Discourage unauthorized idlers at the site • Provide adequate PPE's to workers	Proponents	One-off	0

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs.)
Site accidents	• Train community members on basic safety	Collaborators	Before commissioning of project	Tender procedure
	• Provide written instructions on how to avoid and respond to accidents. Safety gears should be given as necessary.	Collaborators, Community.	Once	Negligible
	• Leaving the site as clean as possible.	All stakeholders on site.	Always	Routine
	• Provide a well-stocked onsite first aid box	Contractor	Once	Contractor cost
	• Provide a list of contact persons and ambulance to be contacted during accidents	Public Works, Contractor	Once	Negligible
Loss of life due to drowning of children and snake bites	• Have a perimeter for the water pan and restrict children from the site. • Equip the area dispensaries with drugs to treat snake bites	Community, public Health	Project period	• Value of life • 180,000
Sanitary conveniences	Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers	Proponents	One-off	10,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs.)
First Aid	Well stocked first aid box which is easily available and accessible should be provided within the premises	Proponents	One-off	5,000
Increased Malaria prevalence	Clearing bushes Keep fish in the water pan Use of mosquito nets by those close to the water pan.	Community, Ministry of health,	Continuous	Varies
6. Ensure the general safety and security of the site and surrounding areas				
Insecurity	Ensure the general safety and security at all times by providing day and night security guards	Proponents	Continuous	-
	Ensure only authorized personnel get access to the site.	Security Officer	Continuous	-
7. Environmental monitoring of the project				
Environmental concern during the construction phase	The proponent will liaise with the environmental consultants throughout the construction phase and ensure that the conditions of approval are adhered to.		Throughout construction phase	-

Oil and fuel Spill	Equipment, oil and fuel storage will be monitored and maintained on a regular basis. Any indication of leaks, discharge to the ground will be addressed immediately. Equipment maintenance on site will be minimal and monitored. In an event of oil/fuel spill, the affected soils will be scooped and disposed away from water course and terrestrial and aquatic life.	Public works Office	Excavation period	Routine work
8. Other Forms of Interference				
Loss of man-hours by curious onlookers and that of workers due to interference	• Keep away idlers and livestock by putting warning signs at strategic places and informing the residents.	Leldet Earth Dam management committee, County Public works Officer	Excavation period	Negligible
Water Conflict, insecurity and loss of life	• Form project management committee to regulate the use of water and pasture and to amicably resolve conflicts. • Local administration to provide security and restrict influx of livestock from other areas. • Put in place early warning and response systems in place.	Leldet Community, KCSAP	Before commissioning of project	Mainstreamed
9. Other Forms of Interference				

Water Quality Issues	• Due to its open siting and surface water inflows in ponds, the water can become polluted and cause health hazards. Guinea worm, water hyacinth, mosses, algae may invariably invade the pond in large quantities. • Each household to treat the water for domestic use.	Public health/ Individuals	Always	Value of life
Theft, vandalism and damage of infrastructure	• Construct livestock water troughs and kiosks close to community for them to own and protect the entire project.	Community/ KCSAP	Project period	Varies

9.4.2 Mitigation Measures for Impacts Anticipated during the Operation Phase

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs)
Minimization of solid waste generation and ensuring more efficient solid waste management				
Solid waste generation	Ensure that solid waste generated is regularly disposed of appropriately	Proponents/Contractor	Continuous	0
	Comply with the provisions of Environmental Management and Co-ordination (Solid Waste) Regulations 2006	Proponents/Contractor	Continuous	0
Minimize water pollution				
Water pollution	Ensure the polythene does not find its way into the river	Proponents and Ministry of Water Officers	continuous	0
Riparian encroachment	Sensitize the group on the usefulness of the riparian area and restrict cultivation.	Proponents/NEMA/Agriculture officers	One-off	10,000
Oil spills	Ensure that the pump area is impermeable so that all spills are contained. Use funnel when refueling and any maintenance should be done in the workshop.	Proponent/Contractor		5,000
Ensure more efficient water use				
Water management	Promptly detect and repair embankment when they leaks	Proponents	Continuous	-

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs)
	Encourage water demand management at household level	Proponents/ Leldet Earth Dam management committee	Continuous	-
Minimization of health and safety impacts				
Disease outbreak	-Keep the well dairy fed and clean in adequately sized enclosures	Proponents	Throughout operation phase	-
Risk of Drowning	Fence the water pan and construct a proper gate	Proponents	Once off	15,000.00
Ensure the general safety and security of the project site and surrounding areas				
Ensure the general safety and security at all times by providing day and night security guards		Proponents	Continuous	-

9.5 Winding up phase

This phase is more hypothetical than real. The basic rehabilitation measures are required to be undertaken once all operation activities have stopped. The activities, actions, mitigation measures person responsible to undertake the same and time span for doing this is given below

9.5.1 Mitigation measures for the impacts anticipated during the decommissioning phase

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (KShs)
1. Demolition waste management				
Demolition waste	The soil from the embankment to be used for landscaping the area	Proponents	Once-off	25,000
	All materials that will not be used for other purposes must be removed and recycled/reused as far as possible	Proponents	Once-off	15,000
2. Minimizing Land wastage				
Waste land due to project abandonment	Demolition and disposal of structures, landscape restoration by removing pipeline, filling depressions, removing unused equipment, structures and facilities to give room for new activities.	Community	Decommissioning	Varies
3.Rehabilitation of project site				
Site degradation	Implement an appropriate re-vegetation programme to restore the site almost to its original status	Proponents	Once-off	20,000
	Consider use of indigenous plant species in re-vegetation	Proponents	Once-off	0

10.0 ENVIRONMENTAL MONITORING AND AUDITING

10.1 Introduction

Monitoring to be undertaken will be both active and reactive. Active monitoring will include the following:-

- Monitoring of the achievements of specific plans of the EMP, performance criteria and fulfilment of objectives;
- Systematic inspection
- Surveillance and monitoring of the work environment, including the organization of work and activities involved;
- Monitoring of workers' health; and
- Monitoring of compliance with regulations and other requirements.

Reactive monitoring will include the following:-

- Work related injuries, ill health (including record keeping and monitoring of sickness/absence), disease and accidents

10.2 Specific Project Monitoring parameters

Leldet Earth-dam development group will adopt a participatory approach in monitoring and evaluation of sub project activities that will involve all stakeholders. Each team will monitor activities under it using indicators specified in the framework below and report to the unit. The approach will ensure accountability in the utilization of sub project resources vis-à-vis envisaged results; provide lessons that will allow correction and/or modification of plan. A number of intermediate and final indicators will be monitored to demonstrate progress towards attaining the sub project goal.

The framework shows the monitoring and evaluation plan for all the outcome and intermediate outcome indicators of the sub project. This includes the baselines, targets, data collection methods and responsibility and frequency of data collection. Community and household surveys will be used as the main methodology for collecting data on most of the outcome indicators as specified in framework.

The system is intended, in the first instance, to help stakeholders to routinely track the progress and performance of sub project components and activities, including quantity, quality, timeliness, and cost effectiveness of the outputs. It will also provide a systematic means for periodic assessment of activities and accountability for decisions and actions taken, and results achieved in relation to resources used, from the standpoints of Kenya Climate Smart Agriculture Project.

10.3 Environmental Monitoring Parameters

Monitoring will involve measuring, observing, recording and evaluation of physical, socio-economic and ecological variables within the project area and the neighbourhood. This may include the following: -

- Positive impact analysis
- water quality monitoring;
- Solid waste disposal monitoring; and
- Public Complaints monitoring

10.3.1 Environmental monitoring Programme

Indicator	Action required	Responsibility	Time-frame
Objective 1: To monitor impacts on biophysical environment			
Soil erosion	There should be regular checks to ascertain that top soils are not washed away. Restore eroded paths and other surfaces.	Environmental Management Committee	Continuous
Loss of natural vegetation	Monitor density of natural vegetation around the project site. Also, take stock of plants species around the project and see if there are any changes	Environmental Management Committee	Bi-annually
Objective 2: To monitor water pollution risks			
Area cleanliness	Conduct regular inspections to	Leldet Earth	Continuous

Indicator	Action required	Responsibility	Time-frame
	identify any inappropriate solid waste disposal practices or lacking facilities. Scattered litter will be an indicator of bad solid waste disposal practices.	dam management committee	
Objective 3: To monitor health, safety and socio-economic impacts			
Incidents/accidents	Collect data on the number, magnitude and frequency of occurrence of incidents/accidents including drowning children, falls, etc. within the project site and investigate their causes for appropriate remedial action.	Leldet Earth Dam management committee	For all occurrences
Occupational diseases	Regular medical examination of workers should be done to monitor and detect any occupational diseases associated with the work	Leldet Erath Dam management committee	Annually
Complaints	Surveys should be conducted through interviews and public.	Leldet Earth Dam management committee	Annually
Compliance with relevant legislation	List all the relevant environmental, health, safety and other relevant legislative requirements and conduct regular examination/audit of levels of compliance to them.	Leldet Earth Dam management committee	Annually.
Self-environmental audit	EMCA, 1999 requires that an annual environmental audit be conducted to determine	Leldet Earth dam management	Annually.

Indicator	Action required	Responsibility	Time-frame
	compliance level to the national environmental regulations and allow for continual improvement.	committee	

10.4 Environmental Auditing

The KCSAP will ensure that during the project activity period, all environmental parameters are well adhered to by the implementing group. Team composition will involve the County Environment Officers.

11.0 CONCLUSION AND RECOMMENDATION

11.1 Conclusions

The study has established that the positive impacts which will accrue as a result of establishment of the proposed project far much outweigh the anticipated negative impacts which can however be adequately mitigated. The proponent will be committed to maximizing on the positive impacts which will have far reaching effects. Also the proponent is committed to putting in place adequate measures to mitigate the anticipated negative impacts.

11.2 Recommendations

Since the proponent has proved to be environmentally and financially credible, we hereby recommended that the proposed project be approved subject to the following conditions:-

- The proponent applies for necessary licenses from the relevant authorities and adheres to the conditions therein.
- The proponent shall implement the proposed EMP to the letter and strictly adhere to the mitigation measures recommended so as to achieve the fundamental principles of sustainable development.

REFERENCES

1 EMCA (1999), Environmental (Impact Assessment and Audit) Regulations 2003.

2 Environmental Management and Coordination (Waste Management) Regulations 2006.

3 Occupation Safety and Health Act 2007.

4 Occupation Safety and Health Act 2007.

5 Odoyo-Bittar J. (2014). Environmental Issues in Project Planning & Management: A Synthesis Paper, University of Nairobi

6 Public Health Act (Cap 242). Government Press, Government of Kenya

7 UNEP (Industry and Environment), UNIDO, IFA: Environmental Management Systems, Technical Report No. 26 part 2, Paris France 1998

8 UNEP, An Environmental Impact Assessment – Framework for Africa, Nairobi, Kenya, 1994

9 UNEP, Policy Guidelines for the Control of Environmental Pollution in Urban Areas of Developing

10 Water Act 2005. Government Press, Government of Kenya

11 World Bank (1991). Environmental Assessment sourcebook volume I, II and III: Policies, procedures and cross-sectoral issues. World Bank, Washington.

APPENDICES

Appendix 1: Copy of ESS Screening Checklist

KCSAP KERICHO COUNTY –ESS SCREENING CHECKLIST

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

Section A: Background information

Name of County…*Kericho County*	
Name of CPCU/Monitoring Officer/Researcher *Okal Jacob (CESSCO)*	
Sub-project location… *Leldet Sub Location, Kamasian Ward, Kipkelion West Sub-County* Name of CBO/Institution… *Leldet Community Group* Postal Address:……**N/A**…… Contact Person…*Richard Koros*…Cell phone:…*0725439672* Sub-project Name **Leldet Earth-Dam**	
Estimated cost (KShs.)… *10.5Million*	
Approximate size of land area available for the sub-project *4 acres* Objectives of the subproject *Excavation and establishment of an earth dam for use by leldet community for the production of Dairy, Sorghum and Finger Millets*	
Activities/enterprises undertaken 1. *Installation of water abstraction & distribution system* 2. *Construction of temporary water storage gravity tanks*	
How was the sub-project chosen? *During public participation of the formulation of phase II of Kericho County CIDP 2018-2022* Expected subproject duration: *6 Months*	

Section B: Environmental Issues

Will the sub-project:	Yes	No
Create a risk of increased soil erosion?	☐	☒
Create a risk of increased deforestation?	☐	☒
Create a risk of increasing any other soil degradation	☐	☒
Affect soil salinity and alkalinity?	☐	☒
Divert the water resource from its natural course/location?	☐	☒

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KCSAP KERICHO COUNTY –ESS SCREENING CHECKLIST

Cause pollution of aquatic ecosystems by sedimentation and agro-chemicals, oil spillage, effluents, etc.?	☐	☒
Introduce exotic plants or animals?	☐	☒
Involve drainage of wetlands or other permanently flooded areas?	☐	☒
Cause poor water drainage and increase the risk of water-related diseases such as malaria?	☒	☐
Reduce the quantity of water for the downstream users?	☐	☒
Result in the lowering of groundwater level or depletion of groundwater?	☐	☒
Create waste that could adversely affect local soils, vegetation, rivers and streams or groundwater?	☒	☐
Reduce various types of livestock production?	☐	☒
Affect any watershed?	☐	☒
Focus on biomass/bio-fuel energy generation?	☐	☒

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

Section C: Socio-economic Issues

Will the sub-project:	Yes	No
Displace people from their current settlement?	☐	☒
Interfere with the normal health and safety of the worker/employee?	☐	☒
Reduce the employment opportunities for the surrounding communities?	☐	☒
Reduce settlement (no further area allocated to settlements)?	☐	☒
Reduce income for the local communities?	☐	☒
Increase insecurity due to introduction of the project?	☐	☒
Increase exposure of the community to communicable diseases such as HIV/AIDS?	☐	☒
Induce conflict?	☒	☐
Have machinery and/or equipment installed for value addition?	☐	☒
Introduce new practices and habits?	☒	☐
Lead to child delinquency (school drop-outs, 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

KCSAP KERICHO COUNTY –ESS SCREENING CHECKLIST

Will the sub-project:	Yes	No
Be located within or near environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands) or threatened species? ***NB: If the answer is yes, the sub-project should not proceed.***	☐	☒
Adversely affect environmentally sensitive areas or critical habitats – wetlands, woodlots, natural forests, rivers, protected areas including national parks, reserves or local sanctuaries, etc.)? ***NB: If the answer is yes, the sub-project should not proceed.***	☐	☒
Affect the indigenous biodiversity (flora and fauna)? ***NB: If the answer is yes, the sub-project should not proceed.***	☐	☒
Cause any loss or degradation of any natural habitats, either directly (through project works) or indirectly? ***NB: If the answer is yes, the sub-project should not proceed.***	☐	☒
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?	☐	☒
Use irrigation system in its implementation?	☒	☐

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

SECTION E: Pesticides and Agriculture Chemical

Will the sub-project:	Yes	No
Involve the use of pesticides or other agricultural chemicals, or increase existing use?	☐	☒
Cause contamination of watercourses by chemicals and pesticides?	☐	☒
Cause contamination of soil by agrochemicals and pesticides?	☐	☒
Experience effluent and/or emissions discharge?	☐	☒
Export produce? Involve annual inspections of the producers and unannounced inspections?	☐	☒
Require scheduled chemical applications?	☐	☒
Require chemical application even to areas distant away from the focus?	☐	☒
Require chemical application to be done by vulnerable group (pregnant mothers, chemically allergic persons, elderly, etc.)?	☐	☒

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

KCSAP KERICHO COUNTY –ESS SCREENING CHECKLIST

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 subproject?	☐	☒

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?	☐	☒
Be on monoculture cropping?	☐	☒

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

Section H: Proposed action

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

(iii) Recommended Course of Action

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

☐ CPCUs and CDE/NEMA will provide detailed guidance on mitigation measures as outlined in the ESMF; and

☐ Specific advice is required from CDE/NEMA[1], Lead Officer and CPCUs regarding sub-project specific EIA(s) and also in the following area(s)

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

☐ The proposals will then be submitted to NPCU for clearance for implementation by communities in the proposed subprojects.

Expert Advice

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

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

Completed by: ***Richard Koros***

Position / Community: ***Chair Person- PMC Leldet Earth Dam***

Date ***12th November 2019***

County Director of Environment /National Environmental Management Authority County Project Coordinating Unit National Project Coordinating Unit

KCSAP KERICHO COUNTY –ESS SCREENING CHECKLIST

Field Appraisal Officer (CDE/NEMA) Recommendation

Environmental Impact Assessment Required for Proper Mitigation Measures.

Name: SAMUEL ONDENG **Signature:** [signature] **Date** COUNTY DIRECTOR 02 DEC 2019

Note:

Project category	Characteristics
A	Full and extensive ESIA needed- irreversible environmental impacts; impacts not easy to pick or isolate and mitigation cost expensive; ESMP design not easily done; Must have the EIA done and future annual EAs instituted
B	Site specific environmental impacts envisaged; mitigation measures easy to pick, not costly and ESMP design readily done; need an ESIA and future EAs
C	Have minimal or occasionally NO adverse environmental impacts; exempted from further environmental processes save environmental audits

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Appendix 2: Engineering designs for the proposed project.

Attached as a separate Document

Appendix 3: Lead Expert's practicing Licence

FORM 7 (r.15(2))

nema
mazingira yetu | uhai wetu | wajibu wetu

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/9244
Application Reference No: NEMA/EIA/EL/12814

M/S **Raphael Kipkurui Ngetich**
(individual or firm) of address

P.O Box 35-20210 Litein

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **2712**

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

Issued Date: **1/28/2019** Expiry Date: **12/31/2019**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2008 Certified

Appendix 4: Copy of EIA Licence

NEMA/PR/KRC/5/2/533

Application Reference No.....

Registration No. 0055781

For Official Use

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENT IMPACT ASSESSMENT LICENSE

This is to certify that the Environmental Impact Assessment Project Report received from ....**KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)**.....(Name of individual/firm) of.....**P.O. BOX 112-20200, KERICHO**.....(Address) Submitted to the National Environment Management Authority (NEMA) in accordance with the Environment Impact Assessment and Audit Regulations 2003 regarding.....**PROPOSED LELDET EARTH DAM**.....(title of project)whose objective is to carry on **EXCAVATION AND CONSTRUCTION OF AN EARTH DAM FOR USE BY LELDET COMMUNITY**.....(briefly describe purpose)located at **LELDET SUBLOCATION, KIMASIAN WARD IN KIPKELION WEST SUBCOUNTY, KERICHO COUNTY**.....(locality and county)has been reviewed and a license is hereby issued for implementation of the project, subject to attached conditions

Date this.....**20TH**.....Day of.....**JUNE, 2019**.....

Signature.....

SEAL

Director General
The National Environment Management Authority

CONDITIONS OF LICENSE

1. This license is valid for a period of **24 months** (time within which the project should commence) from the date hereof.
2. The Director-General shall be notified of any transfer/variation/surrender of this license.

P.T.O.

ISO:9001-2008 Certified

General Conditions

1. The project is for the construction of Leldet Earth dam by Kenya Climate Smart Agriculture Project (KCSAP).
2. The licence shall be valid for 24 months from the date of issue.
3. Without prejudice to the other conditions of this license, the proponent shall implement and maintain an environmental management system, organizational structure and allocate resources that are sufficient to achieve compliance with the requirements and conditions of this licence.
4. The Authority shall take appropriate action against the proponent in the event of breach of any of the conditions stated herein or any contravention to the Environmental Management and Co-ordination Act, 1999 and regulations there under.
5. This licence shall not be taken as statutory defense against charges of pollution in respect of any manner of pollution not specified herein.
6. The proponent shall ensure that records on conditions of licences/approval and project monitoring and evaluation shall be kept on the project site for inspection by NEMA's Environmental Inspectors.
7. The proponent shall submit an Environmental Audit Report in the first year of occupation/operation/commissioning to confirm the efficacy and adequacy of the Environmental Management Plan.
8. The proponent shall comply with NEMA's improvement orders throughout the project cycle

A. Construction

1. In the event the project boarders a river or stream, pursuant to regulation 6 (C) of water regulations, 2006, the proponent shall protect the riparian reserve by ensuring that NO development activity is undertaken within the full width of the river or stream to a minimum of six (6) metres and a maximum of 30 metres on either sides based on the highest recorded flow level.

2. The Land ownership document should be kept and availed whenever required.

3. The proponent shall put up a project signboard as per the Ministry of Works Standards indicating the NEMA license number among other information.

4. The proponent shall ensure that all excavated material and debris is collected, re used and where need be disposed off as per the Environmental Management and Coordination (Waste Management) Regulations 2006.

5. The proponent shall ensure strict adherence to the provisions of Environmental Management and Coordination (Noise and Excessive Vibrations Pollution Control) Regulations 2009.

6. The proponent shall ensure strict adherence to the Occupational Safety and Health Act (OSHA), 2007.

7. The proponent shall ensure that construction workers are provided with adequate personal protection equipment (PPE), sanitary facilities as well as adequate training.

8. The proponent shall ensure that construction activities are undertaken during the day (and not at night) - between 08.00 hrs and 17.00 hrs; and that transportation of construction materials to and from site are undertaken during weekdays (and not weekends) off peak hours.

9. The proponent shall ensure strict adherence to the Environmental Management Plan developed throughout the project cycle.

10. The proponent shall ensure that the development adheres to zoning specifications issued for development of such a project within the jurisdiction of Kericho County with emphasis on approved land use for the area.

B. Operational Conditions

1. The proponent shall ensure that all equipment used for operations are well maintained in accordance with the Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations 2009.
2. The proponent shall ensure that all solid waste is handled in accordance with the Environmental Management and Coordination (Waste Management) Regulations 2006.
3. The proponent shall ensure that all workers are well protected trained as per the OSHA, 2007
4. The proponent shall comply with the relevant principal laws, by-laws and guidelines issued for development of such a project within the jurisdiction of County government of Kericho and other relevant Authorities
5. The proponent shall ensure that environmental protection facilities or measures to prevent pollution and ecological deterioration such as solid waste management, effluent discharge management, and Landscaping, occupation and health measures mechanisms are designed, constructed and employed simultaneously with the proposed project.
6. The Water extraction points and the treatment premises shall be fenced off and secured to ensure safety of the water produced.

1. The proponent shall seek written approval from the Authority for any operational changes under this licence.
2. The proponent shall ensure that the Authority is notified of any malfunction o any system within 12 hrs on the NEMA hotline 020 606041 and mitigatio measures put in place
3. The proponent shall keep records of all pollution incidences & notify the Authority within 24 hrs.
4. The proponent shall notify the Authority of its intent to decommission three months in advance in writing.

D. Decommissioning Conditions

1. The proponent shall ensure that a decommissioning plan is submitted to the Authority for approval at least three (3) months prior to decommissioning
2. The proponent shall ensure that all pollutants and polluted material is contained and adequate mitigation measures provided during the phase.

he above conditions will ensure environmentally sustainable development and ıust be complied with.

IOTE: THE CONDITIONS OF APPROVAL GO HAND IN HAND WITH THE EIA ICENSE AND FAILURE TO ADHERE TO THE CONDITIONS IS BREACH OF 'HE LICENSING CONDITIONS.

Samuel Ondeng)
COUNTY DIRECTOR OF ENVIRONMENT/KERICHO

Appendix 7: Public Participation

PHOTO GALLERY

Photo: Engagement with the leldet community members during the Public participation

Photo: Women participating actively and giving their views during the public participation exercise

Photos: Area sub-Chief addressing the gathering during the public participation and right shows women participating in site assessment

KENYA CLIMATE SMART AGRICULTURE PROJECT - KCSAP

Republic of Kenya

PCU - KERICHO

Kenya Climate Smart Agriculture Project

PROPOSED LELDET WATER-PAN - PROJECT APPRAISAL MEETING HELD ON 17 OCTOBER, 2018

Members Present:

1. Samson K. Kirui – M&E Assistant, KCSAP
2. Betty P. Chebet – CASO, KCSAP
3. Richard Koros – Chair: Leldet Water Supply & Irrigation Project
4. Selina Langat – Member: Leldet Water Supply & Irrigation Project
5. Filex Kipyegon Ruto – Member: Leldet Water Supply & Irrigation Project
6. Gladys Ngeno – Member: Leldet Water Supply & Irrigation Project
7. Joseah Chepkwony – Member: Leldet Water Supply & Irrigation Project
8. Philip Koskei – Member: Leldet Water Supply & Irrigation Project
9. Priscilla Sinei – Member: Leldet Water Supply & Irrigation Project
10. Samuel Kurgat – Member: Leldet Water Supply & Irrigation Project
11. Philip Sang – Member: Leldet Water Supply & Irrigation Project
12. Hillary Rotich – Member: Leldet Water Supply & Irrigation Project
13. Irene Mizik – Member: Leldet Water Supply & Irrigation Project
14. Caroline Ruto – Member: Leldet Water Supply & Irrigation Project
15. Salome Langat – Member: Leldet Water Supply & Irrigation Project
16. Josphat Samoei – Member: Leldet Water Supply & Irrigation Project
17. Lilian Langat – Member: Leldet Water Supply & Irrigation Project
18. Grace Kogo – Member: Leldet Water Supply & Irrigation Project
19. Frankline Koech – Member: Leldet Water Supply & Irrigation Project
20. Vincent Sang – Member: Leldet Water Supply & Irrigation Project
21. Emily Bore – Member: Leldet Water Supply & Irrigation Project
22. Gladys Chebochock – Member: Leldet Water Supply & Irrigation Project

Agenda:

1. Site Information AOB

Introduction:

The meeting started at 9.00 am with a word of prayer from Mr. Koros, one of the members from the group. The members were happy to have these information concerning water as this was one of the major setbacks in the area. Amongst the members was their area MCA and they all managed to give us the following information-:

Min.1/17/10/18 – Site information.

- **Location**: The spring is in Kipkelion West Sub County, Kamasian Ward, Kasheen location. It lies on a public land with an area of----square kilometres.The catchment area is with less than 1% acacia trees with no fence along the boundaries.

- **The history of the spring**: The Spring was first identified by a white settler so many years ago, who had tapped the spring water and pumped to his farm for dairy production and at the same time it could help the community, however when the settler relocated the project failed.

- **Distance to the water point**: The average distance covered by the beneficiaries to access water is 3km with almost all the feeder roads in very poor conditions, bearing deep gulleys and all kinds of erosions.

- **The management**: The spring is runned by a committee, headed by the chairman, however their leadership appears to be having less impact when it comes to the management of the spring in that there is a lot of encroachment from the neighboring members.

- **Beneficiaries**: The spring currently serves an average of 1000 families both male and female with an average of 1500 animals. The members cited their exposure to water borne diseases because the catchment is naked and their spring appears stagnant with no outlet. Despite having the inlet water appears dirty.

- **Productivity**: The members lamented that they suffer a lot during dry seasons because they have to travel for long distance to get water and this reduce productivity in terms of time wasted, and energy used. They also cited the dangers in rainy seasons one major being the sinking of their animals due to muddy state of the surrounding area of the spring. They said they have lost a number of their animals because of this.

Min.2/17/10/18: **AOB**

There was no AOB and the meeting closed at 1400hrs with a word of prayer from Mr. Koros.

Signed ..... Date.....

Chairman: Leldet Water Pan Project

Signed ..... Date.....

Secretary: Leldet Water Pan Project

Signed ..... Date.....

Secretary: CTAC/KCSAP

MINUTES FOR THE PUBLIC PARTICIPATION FOR LELDET EARTH DAM HELD ON 12TH MARCH 2019

MEMBERS PRESENT

1. SAMSON KIRUI – COUNTY GOVERNMENT REPRESENTATIVE
2. PAUL KARANJA – EIA EXPERT
3. CATHERINE CHEBET SIELE – EIA EXPERT
4. NAOMI KOSGEI – ENVIRONMENTALIST AND FIELD ASSISTANT
5. FELIX KIPYEGON RUTO – AREA ASS.CHIEF
6. GROUP MEMBERS (ATTENDANCE LIST ATTACHED)

AGENDA

1. Opening remarks
2. Introduction
3. Questionnaire filling
4. Expected outcomes
5. A.O.B
6. Closing of meeting

Min 1/03/2019: Opening Remarks

The meeting started at 11:40AM The chairman welcomed everyone to the meeting and asked one of the women to open with a word of prayer. He then welcomed the village elder William Terer who thanked the team of experts and expressed his happiness towards the project and thanked God for the favor. He said that he understood the purpose of the meeting and that they were willing to help and that other members were still on their way.

Min 2/03/2019: introductions

The team of experts introduced themselves and explained the purpose of their meeting, they each expressed their willingness to ensure that the project report would be ready in due time to allow for the commencement of the project. The women also introduced themselves too and really thanked the guests; they expressed their happiness and said that their backs have been saved as women from carrying a lot of water.

Josephat one of the group members thanked the World Bank through the County government and said that the community was really positive and welcoming the project without any objection as they had suffered for a very long time. They said that they had ten women groups that were active. He reiterated that they had already supported the engineers and the surveyors and were willing to do so to all teams who visited the site in preparation for the project. Joshua Tonui also supported Josephat that they really

were rallying for the start of the project. He reiterated that women had really suffered as they worked for up to 15hrs a day. He added that they had suffered a long time in search of water and cases of typhoid and amoeba had been reported in the area. Clean water for domestic use and consumption had been hard to find. He also said that they supported sustainable agriculture in their daily activities. He requested that they have workshops and teachings to ensure that they can support themselves. The area Assistant chief, Felix Kipyegon Ruto welcomed the visitors and thanked those that made it to the meeting, he then handed the programme to the county government representative Samson Kirui.

Samson thanked the villagers for the attendance to the meeting. He stated that the beneficiaries of the project were more than those who attended the meeting. He urged them to practice good agriculture and told them that they needed to conserve the environment and avoid deforestation. He asked the assistant chief to support the stakeholders firmly. Issues of soil erosion and their conservation measures were also discussed he reiterated that the purpose for the project was to improve the lifestyle and the livelihoods of the people.

Min 3/03/2019: Questionnaire Filling

Samson Kirui then welcomed Paul Karanja an EIA expert. He stated the purpose for the meeting and it was confirmed that all members understood the purpose of their being there. He then asked the other experts to distribute the questionnaires and went through the questions one by one to ensure that they understood clearly. He told them that if they needed any assistance they could call on the experts for assistance. Most of the members were guided in the questionnaire but they understood what their expectations were and were allowed to fill them by themselves.

Min 4/03/2019: Expected Outcomes

The county representative inquired about what the villagers expected as the outcomes for the meeting. He told them that according to the matrix data, women worked 15 hours in a day and men worked for 9 hours a day. This showed that women spent more hours laboring in work that included looking for water farming and looking for food yet it could be done in less time, the women said that they could take less time if the availability of water was not an issue as they spent so much time fetching water and firewood. Most of the villagers relied on coffee as the main source of income and they said that it was not entirely sustainable and wanted to plant other crops too. Maize was most planted crop and dairy farming was also a common practice.

Amongst the expectation by the villagers were:

- Better health due to reduced water shortage and less transmission of water borne diseases
- More time would be spent in productivity rather than search for water as before.
- Sustainable agriculture
- Better animals and crop production
- Improved education and lifestyle

He noted that the capacity of women participation was really low and the sited reason was that most of them were out in search of water and food for the children who were in school. The villager's also sited siltation of rivers due to soil erosion was the reason as to the blockage of many rivers. Poor soil conservation measures were the main reason for poor agriculture and low crop production. Tree planting and crops such as Napier grass and cassava were amongst the measures that would ensure better agricultural production as they will help control soil erosion.

Min 5/03/2019: A.O.B

The villagers were asked if they were registered in groups and most of them had been registered in different groups and most of these groups practiced agriculture and most had written their proposals and expected funding through the county government. Since most of them had finished answering the questionnaires, they were collected.

Having no other business, the group chair asked the members: one male and one female to give a vote of thanks and both of them thanked the team of experts and really anticipated for the onset of the project.

Min 6/03/2019: Closing remarks

Since there was no other agenda the meeting closed with a word of prayer from Selina Langat, a group member.

The meeting ended at 2:05 PM.

MINUTES CONFIRMED BY:

CHAIRPERSON: .....DATE: .....SIGNATURE:.....

SECRETARY: .....DATE:.....SIGNATURE:.....

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

	NAME	ID. NO.	CONTACTS	SIGNATURE
1	SAMWEL MARTIN	20612547		
2	LANGAT WILSON	21072007	0720665944	
3	LANGAT ERICK	22794150	0706861796	
4	SAMWEL K. BUSIENEI	13807780	0716153564	
5	William K Tonui	3868886	0722956716	
6	NICHOLAS MITEI	27459401	0724837900	
7	Daniel Terer	10215839	0710583529	
8	Wesley Kirui	26676804	0715316078	
9	Moses Lotich	11796008	0723504174	
10	Joseph K. [illegible]	1766055	0727878769	
11	[illegible]	3867499	0728999368	
12	Moses Koech	1769758	0712652198	
13	[illegible] MUTEI	12035770	0725364625	
14	Joshua K Tenai	11637288	0717269931	
15	FRANKLINE KOECH	21363278	0792787851	
16	[illegible]	[illegible]	[illegible]	
17	SIMION [illegible]	2909939	0719615637	
18	[illegible]	3862126	0718079922	
19	Mary Chepkwony	22053599	0720738233	
20	Alice Rutoh			
21	Damaris Masoe	20344008	0702363456	
22	Jane TOO	0867504	0720362545	
23	Teresa Terer	13687571	0717860808	
24	Grace Busienei	. . .		
25	Ester Samoei			
26	Ann Boi			
27	Joyline chepkirui	34860168	0757603141	
28	[illegible]	26676409	0790840054	
29	Caroline chemutai	26289196	0705578839	
30	ANN Chebet	23188306	0792787891	
31	Agnes Chelangat	20992252	0728135939	
32	Joice Rotich	21578005	0710152115	
33	CAROLINE TONUI	25456511	0715187880	
35	Stela Kurgat	28831784	0703357921	
36	Ann Kosgei		0715767538	
37	Faith gogo	33707133	0108812870	
38	lily Chelule		0718412269	
39	Caroline Rutto	20962834	0728309886	
40	Gladys Ngeno	20612243	0705444474	
41	ALICE Koros	8071957	0715389683	
42	MERCY Kotutwa	34656009	0716371436	

43	RAEL TUWEI			
44	FELISICR KEMOI	313856 35 ~~0710296 338~~	0710 296 338	
45	MARY NYABOKE	7062985	0726602636	
46	Jacklyne Langat	89100061	0704 399 385	
47	FLORENCE CHEPKEMOI	26655680	0729937944	
48	RUTH CHUMO			
49	STELLA Chumo	26146816	0719135901	
50	[illegible]			
51	JANETH CHEPKEMOI	21668364	0703161 388	
52	SARAH C. CHUMO	3874483	0702914649	
53	ROSE [illegible]		0799744907	
54	LUCY [illegible]	11299233	0102416840	
55	BETTY MUTAI	20135272	0710 655 655	
56	ERICK MUTAI	13036948	072347936[illegible]	
57	[illegible] KEMOI	25463690	[illegible]	
58	[illegible]	11079368	07230[illegible]	
59	SAMUEL CHERUIYOT	11639206	0723263118	
60	JOSHUA K TONUI	1764726	072296[illegible]	
61	SAMWEL YEGON	20817495	0729977435	
62	DANIEL RONO	20958342	0712223519	
63	[illegible]	32679829	0710613418	
64	[illegible]	22657983	[illegible]	
65	[illegible] Chepkemoi	22300527	0113352 756	
66	Samuel Rutto	20456197	0717 899851	
67	Dickson [illegible]	28340395	0717401855	
6[illegible]	[illegible]	20155502	0718793 649	
69	Joseph [illegible]		0704450955	
70	David Cheruiyot	20234145	0724 683 942	
71	[illegible]	2760658A	[illegible]	
72	Charles Langat	12748316	0714 058 661	
73	Paul [illegible]	3866517	0745444244	
74	Daniel Langat	31662395	0705 655 658	
75	[illegible]	2076131132		
76	[illegible]	2575 1255	07421313 [illegible]	
77	[illegible]		0715361474	
78	[illegible]	20975407	0703966077	
79	[illegible]	24964877	0700560314	
80	Benjamin [illegible]	20763276	0719546231	
81	Wilson [illegible]	9887253	0717092867	
82	[illegible]	25118915	0704222235	
83	[illegible]	27200553	0720056907	

ASST. CHIEF
LELDET SUB-LOCATION

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

The EIA/EA Experts are carrying out Environmental and Social Impact assessment for the proposed Leldet Earth Dam project. In order to ensure environmental sustainability of the project, the proponents wishes to meet the requirements of Environmental Management and Coordination Act (EMCA, 2015) under the jurisdiction of National Environmental Management Authority (NEMA) in the object of Environmental Impact Assessment (EIA) and Audit (EA) as a requirement under the EIA/Audit regulations 2003, and Schedule 2 of EMCA 1999.

ASST. CHIEF
LELDET SUB-LOCATION
DATE.....

Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: Wesley KIRUI TEL 0715 316 028

ID. NO: 26676804 SIGN: [signature]

Gender Male ☑ Female ☐

Age 18-30 ☐ 30-45 ☑ Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☐ >500m ☑

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?.....

project?

(a) Yes [✓] (b) No [ ]

If Yes, please list them

① Risk to young children ② displacement lowanside of resident

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

(1) Fencing should be done aliround

(2) Compact of soil erosion around the dam

(ii) Operation

(1) Permanent fencing should be made

(2) A dam should be builda in a well design to avoid distraltation in future

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project.

-The project will assist all people around the site egually and positively.

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: Agnes Chelangat TEL 0728135939

ID. NO: 20982252 SIGN: Ag

Gender Male ☐ Female ☑

Age 18-30 ☐ 30-45 ☑ Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☐ >500m ☑

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?.....

ASST. CHIEF
LELDET SUB-LOCATION

In your own view, are there any negative Social or Environmental impacts associated with the proposed project?

(a) Yes [ ]   (b) No [ ]

If Yes, please list them ....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction
should be done before rainy
~~the child~~ children should be
away

(ii) Operation
securyty fence, ~~plant~~ plantings
trees

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project
irrigation, example ~~vega~~ vegetable, Tomat

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: ..... TEL.....

ID. NO: .....SIGN: .....

Gender	Male ☑		Female ☐	
Age	18-30 ☑		30-45 ☐	Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☑ >500m ☐

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?.....

ASST. CHIEF
LELDET SUB-LOCATION
DATE.....

In your own view, are there any negative Social or Environmental impacts associated with the propo project?

(a) Yes [✓] **(b) No [ ]**

If Yes, please list them
........may encourage breed of mosquitoes........

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction -(i) construction of barricades - Bounding of Gabions to minimize (i) Regular disposal of mosquito nets to families surrounding the projection. Regular training of people surrounding the dam

(ii) Operation
(i) Treatment of water (iii) Regular training of people living s
(ii) Regular disposal mosquito nets

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Proj
(i) Access the road linking the dam, people from ... and leldet
(ii) Also use the dam to provide funds for horticulture and livestock keeping.

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: Jack NGENY TEL 0712677994

ID. NO: 9725967 SIGN: Jngeny

Gender	Male ☑	Female ☐		
Age	18-30 ☐	30-45 ☐	Above 46 ☑	

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☐ >500m ☑

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?.....

ASS.T. CHIEF
LELDET SUB-LOCATION
DATE.....

In your own view, are there any negative Social or Environmental impacts associated with the pro project?

(a) Yes [ ]   (b) No [✓]

If Yes, please list them

....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

.....ensure there is no any unau... ...pos person at the site.......

(ii) Operation

.....Security to prevent vandalism ...of pipes.......

....

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Proj

.....I have propose two paralel ...pipes which goes down on the val...

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPA ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDI EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: LANGAT WILSIN .... TEL. 072-665 1944 ....

ID. NO: 230 72 07 .... SIGN: [signature] ....

Gender Male [✓] Female [ ]

Age 18-30 [ ] 30-45 [✓] Above 46 [ ]

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) [✓] (No) [ ]

What is the approximate distance between your home and the proposed project site?

<100m [ ] 100-200m [ ] 200-500m [ ] >500m [✓]

Do you support the activities of the proposed project?

Yes [✓] No [ ]

IF No, state why?..

ASST. CHIEF
LELDET SUB LOCATION
DATE.................

In your own view, are there any negative Social or Environmental impacts associated with the propose project?

(a) Yes [✓] **(b) No [ ]**

If Yes, please list them

- Suicide | children swimming in the dam, Land Projecting to the d
- Spread of Malaria (Mosquitoes)

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

- Fencing before Commencing, Constructing of feeder roads
- Involving the stakeholders in all activities taking place.
- The Company must involve security; Distribute mosquito nets.

(ii) Operation

- Distribute pipes to high points such that the whole area Covered.

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project

The proposal is commendable one since the area will benefit alot.

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: ..... TEL.....

ID. NO: .....SIGN: .....

Gender	Male ☑		Female ☐	
Age	18-30 ☐		30-45 ☐	Above 46 ☑

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☑ >500m ☐

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?.....

ASST. CHIEF
LELDET SUB-LOCATION
DATE.....

In your own view, are there any negative Social or Environmental impacts associated with the proposed project?

(a) Yes [ ] **(b) No [✓]**

If Yes, please list them

.....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

You have construct during the dry.....

.....

(ii) Operation

Should be clean at any time and before the rain come.....

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project.

Should construct the road to towards the Dam road. Should have no tank to the hills.....

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: EZEKIEL KIPYEGON RONO TEL 0720056907

ID. NO: 27300553 SIGN: [signature]

Gender Male ☑ Female ☐

Age 18-30 ☑ 30-45 ☐ Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☑ >500m ☐

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?..........

ASST. CHIEF
LELDET SUB-LOCATION
DATE.........

In your own view, are there any negative Social or Environmental impacts associated with the propose project?

(a) Yes [✓] **(b) No [ ]**

If Yes, please list them
If not fence well Children may fall into the dam

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction
The dyke must be constructed very well to avaid being swept away by flood

(ii) Operation
* fena well to avoid children being drowned
*

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Projec
(1) Watchman should be employed to mind that the dam
well maintained
(2) A bridge should be constructed since Children Cross the da
(3) to School
Indigenous trees should be planted around the dam.

Thank you for your comments

project?

(a) Yes [ ] **(b) No [√]**

If Yes, please list them

....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

....

....

(ii) Operation

....

....

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Projec

...Better....Agricultural....Production.....of...~~[illegible]~~...Crops.......

....

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: ...Alice Chepkemoi Keles..... TEL....0716389683........

ID. NO: ......8071957.......................................SIGN: ....[signature].........................

Gender Male ☐ Female ☑

Age 18-30 ☐ 30-45 ☐ Above 46 ☑

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☐ >500m ☑

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?...

ASST. CHIEF
LELDET SUB-LOCATION
DATE

project?

(a) Yes [ ] **(b) No [✓]**

If Yes, please list them

.....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

They should minimize the noise made by the machine

(ii) Operation

Make fence along the dam and have security

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project.

The Project should be continued to be constructed

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: ANN CHEBET TEL. 0792787881

ID. NO: 23188305 SIGN: CH

Gender Male ☐ Female ☑

Age 18-30 ☐ 30-45 ☑ Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☑ >500m ☐

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?.....

ASST. CHIEF
LELDET SUB-LOCATION

project.

(a) Yes [ ] (b) No [✓]

If Yes, please list them

………………………………N/A………………………………………………………………

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

…………………………………………………………………………………………………

…………………………………………………………………………………………………

(ii) Operation

………~~the~~ When the Project is completed the Jacance should be constructed due to distruction of Animals.

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project.
This project can help the Community very much due to irrigation, so that we plant vegetables and Tomatoes

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

The EIA/EA Experts are carrying out Environmental and Social Impact assessment for the proposed Leldet Earth Dam project. In order to ensure environmental sustainability of the project, the proponents wishes to meet the requirements of Environmental Management and Coordination Act (EMCA, 2015) under the jurisdiction of National Environmental Management Authority (NEMA) in the object of Environmental Impact Assessment (EIA) and Audit (EA) as a requirement under the EIA/Audit regulations 2003, and Schedule 2 of EMCA 1999.

Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: TERESA CHEPKEMEI TEL 0717360303

ID. NO: 13667571 SIGN: TE

Gender Male ☐ Female ☑

Age 18-30 ☐ 30-45 ☑ Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☑ >500m ☐

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why? N/A

ASSIST. CHIEF
LELDET SUB-LOCATION
DATE .....

project?

(a) Yes [ ] (b) No [✓]

If Yes, please list them

.....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

.....Destruction of excessive noise from the machinery.....

.....

(ii) Operation

.....Construct gabion to reduce silting in the dam and soil erosion.....

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Project.

.....The project construction should continue.....

.....The project will be beneficial to the community.....

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: ...... TEL. ......

ID. NO: ...... SIGN: ......

Gender Male ☐ Female ☑

Age 18-30 ☑ 30-45 ☐ Above 46 ☐

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) ☑ (No) ☐

What is the approximate distance between your home and the proposed project site?

<100m ☐ 100-200m ☐ 200-500m ☐ >500m ☑

Do you support the activities of the proposed project?

Yes ☑ No ☐

IF No, state why?......

ASST. CHIEF
LEIDET SUB-LOCATION
DATE ......

In your own view, are there any negative Social or Environmental impacts associated with the proj project?

(a) Yes [ ] (b) No [ ]

If Yes, please list them

....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

When it's drue {season}, Noise marking, St hard warking with effort plus limit

(ii) Operation

Security to fence

....

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Proj

enough food, vegatables, Cleanness

Livestock will be ok etc

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: Damaris K. Masea TEL 0702363456

ID. NO: 20344004 SIGN: [signature]

Gender Male [ ] Female [✓]

Age 18-30 [ ] 30-45 [✓] Above 46 [ ]

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) [✓] (No) [ ]

What is the approximate distance between your home and the proposed project site?

<100m [ ] 100-200m [ ] 200-500m [ ] >500m [✓]

Do you support the activities of the proposed project?

Yes [✓] No [ ]

IF No, state why?..........

ASST. CHIEF LEIDET SUB-LOCATION

In your own view, are there any negative Social or Environmental impacts associated with the propos[ed] project?

(a) Yes [ ] **(b) No [✓]**

If Yes, please list them

…………………………………………………………………………………………………

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

……To……construct the dam during dry sea[son]

……to……………………………………………………………………………………

(ii) Operation

……The……tank……should……be……constructed in the chill……and……the

……other……water……should……be……distrupted……to……some true ape.

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Proj[ect]

……Road……should……be……constructed……towards……the dam

…………………………………………………………………………………………………

Thank you for your comments

PUBLIC PARTICIPATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED CONSTRUCTION OF LELDET EARTH DAM, AT KIPSEGI, KAMASIAN WARD, KIPKELION WEST, KERICHO COUNTY

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Kindly give us your opinion regarding the project's environmental impacts.

SECTION 1: RESPONDENT'S DETAILS

NAME: RICHARD CHERUIYOT ..... TEL 0723307086

ID. NO: 30135389 ..... SIGN: .....

Gender Male [✓] Female [ ]

Age 18-30 [ ] 30-45 [✓] Above 46 [ ]

SECTION 2: QUESTIONS

Are you aware of the proposed construction of Leldet Earth Dam?

(Yes) [✓] (No) [ ]

What is the approximate distance between your home and the proposed project site?

<100m [ ] 100-200m [ ] 200-500m [✓] >500m [ ]

Do you support the activities of the proposed project?

Yes [✓] No [ ]

IF No, state why?.....

project?

(a) Yes [ ] **(b) No [√]**

If Yes, please list them

....

What do you suggest should be done to minimize any negative impacts during the following stages:

(i) Construction

—

....

....

(ii) Operation

—

....

....

SECTION 4: PERSONAL OBSERVATION

Give any other information that may be necessary concerning the proposed Leldet Earth Dam Projec

...Better...agricultural...production...of...~~[illegible]~~...crops...

....

Thank you for your comments