ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT
REPORT FOR THE PROPOSED CONSTRUCTION AND
INSTALLATION OF A MEDICAL WASTE TREATMENT INCINERATOR
AT ALUPE SUB-COUNTY HOSPITAL

PSR39515

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<tr>
<th>Proponent</th>
<th>ESIA EXPERTS</th>
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<tr>
<td>MINISTRY OF HEALTH</td>
<td>DEVLINK RESOURCES CONSULTANTS</td>
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<td>NAIROBI KENYA</td>
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<td>TEL. NO. 0733666479/0721329596</td>
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January 2023
CERTIFICATION OF DOCUMENT
We, Devlink Resources Consultants, hereby approve that all information given here in this report is accurate and true to the best of our knowledge and understanding.

PRELIMINARY PROJECT DETAILS
Location of Project: L. R. No. South Teso/Angorom/14511, Alupe Sub-County Hospital located 8km north-east of Busia town along Busia-Malaba road. Alupe Sub-Location, Angorom Location, Teso South Division, Busia Constituency, Amagoro Sub-County, Busia County
PS Coordinates: 0.49921, 34.13115
Neighbours: KEMRI-Alupe Research Centre
Nature of Activity: Construction of a Shelter, Procurement and Installation of a 50kg/hour Medical Waste Treatment Incinerator (MWTI)
Name of Health Facility: Alupe Sub-County Hospital

ENVIRONMENTAL AND SOCIAL IMPACT EXPERTS
This Environmental and Social Impact Assessment (ESIA) Project Report has been prepared by a team of Experts from Devlink Resources Consultants in accordance with the World Bank Environmental and Social Framework (ESF), World Bank Group Environment, Health and Safety (ESH) Guidelines and the Government of Kenya (GoK) policies and regulations for Environmental Assessments.

Devlink Resources Consultants (NEMA Registration Number 2355)
P. O. Box 76065 00508, Nairobi

Signature: .................................................. DATE: 27/02/2023
For ESIA Experts

On behalf of Proponent
Ministry of Health
P. O. Box 3001800100
Nairobi.

Signed .................................................. Date: 24/12/2023
Designation: Environmental Safeguards Officer

Official Stamp
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Signature:..........................................................DATE......................................................
For ESIA Experts

On behalf of Proponent
Ministry of Health
P.O. Box 30016-00100
Nairobi.
Signed.......................................................... Date......................................................

Designation..........................................................
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<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
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<td>ASCH</td>
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<td>CCC</td>
<td>Comprehensive Care Centre</td>
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<td>CDE</td>
<td>County Director of Environment</td>
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<td>CEP</td>
<td>Community Engagement Plan</td>
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<td>C-HERP</td>
<td>COVID-19 Health Emergency Response Project</td>
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<td>CHW</td>
<td>Community Health Worker</td>
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<td>CLO</td>
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<td>CPHO</td>
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<td>CPP</td>
<td>Consultation and Public Participation</td>
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<td>CSDS</td>
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<td>DOSH</td>
<td>Directorate of Occupational Safety and Health</td>
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<td>E&amp;S</td>
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<td>ESMP</td>
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<td>Gender-Based Violence</td>
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<td>GIIP</td>
<td>Good International Industry Practice</td>
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<td>GoK</td>
<td>Government of Kenya</td>
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<td>GPS</td>
<td>Geographical Positioning System</td>
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<td>Grievance Redress Mechanism</td>
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<td>HAIs</td>
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<td>Health Care Waste Management</td>
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<td>HTS</td>
<td>HIV Testing Services</td>
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<td>HUTLCs</td>
<td>Historically Underserved Traditional Local Communities</td>
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<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<td>ICWMP</td>
<td>Infection Control and Waste Management Plan</td>
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<td>ICU</td>
<td>Intensive Care Unit</td>
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<td>IPC</td>
<td>Infection Prevention and Control</td>
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<td>ITCZ</td>
<td>Inter Tropical Conventional Zone</td>
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<tr>
<td>IYCF</td>
<td>Infant and Young Child Feeding</td>
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<tr>
<td>KBC</td>
<td>Kenya Broadcasting Corporation</td>
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<td>KeNHA</td>
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<td>MoH</td>
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<td>MSDS</td>
<td>Material Safety Data Sheet</td>
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<td>NCA</td>
<td>National Construction Authority</td>
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<td>NEMA</td>
<td>National Environment Management Authority</td>
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<td>NG-CDF</td>
<td>National Government Constituency Development Fund</td>
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<td>Acronym</td>
<td>Description</td>
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<td>NMK</td>
<td>National Museums of Kenya</td>
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<td>NPGD</td>
<td>National Policy on Gender and Development</td>
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<td>NSSF</td>
<td>National Social Security Fund</td>
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<td>OPIM</td>
<td>Other Potential Infectious Materials</td>
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<td>OSHA</td>
<td>Occupational Safety and Health Act</td>
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<td>Project Influence Area</td>
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<td>PM10</td>
<td>Particulate matter of size 10 microns</td>
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<td>PMC</td>
<td>Project Management Committee</td>
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<tr>
<td>PMTCT</td>
<td>Prevention of mother-to-child transmission</td>
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<td>PPE</td>
<td>Personal Protective Equipment</td>
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<tr>
<td>PWE</td>
<td>Public Works Engineer</td>
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<td>QS</td>
<td>Quantity Surveyor</td>
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<td>Risk Communication and Community Engagement</td>
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<td>SEP</td>
<td>Stakeholders Engagement Plan</td>
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<td>SHE</td>
<td>Safety, Health &amp; Environment</td>
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<td>SOP</td>
<td>Standard Operations Procedures</td>
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<td>STIs</td>
<td>Sexually Transmitted Infections</td>
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<td>TPY</td>
<td>Tons Per Year</td>
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<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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EXECUTIVE SUMMARY

Overview
The World Bank through The Kenya COVID-19 Health Emergency Response Project (C-HERP) has provided funding to The Ministry of Health (MoH) of Kenya to construct a shelter, procure and install a Medical Waste treatment incinerator (MWTI) of 50kg/hour rating at Alupe Sub-County Hospital (ASCH). The objective is to improve on Health Care Waste Management (HCWM) generated from the hospital's activities. The Kenya COVID-19 Health Emergency Response Project (C-HERP) is a multi-phase programmatic approach for strategic preparedness and response which aims to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness. One of the components in the programme entails enhancement of medical waste management by Health Care Facilities (HCFs).

Alupe Sub-County Hospital was started in 1947 as the Alupe leprosarium when the government of Kenya set up a hospital for this purpose in Alupe. The hospital currently has a capacity of 130 beds and provides comprehensive and specialized health care services. During the COVID – 19 pandemic response, the Busia County Government designated the hospital as the county isolation and treatment centre. The hospital's activities generate potentially infectious waste which include sharps, cultures from medical laboratories or infected blood, infected wipes or masks from the quarantine, isolation and treatment center. These wastes carry a higher risk of infections and injury than any other type of wastes. Other wastes of importance are body fluids, all body parts, human tissues, placenta and radioactive wastes.

The hospital lacks proper health care waste management plans, and this exposes the patients and health care workers to risks associated with poor waste management. The hospital disposes its healthcare waste (HCW) through open burning at a site located within the hospital compound, an average of 100m from other hospital facilities. Casuals hired by the hospital collect wastes generated at various hospital facilities and transfer it to the burning site. The waste is often allowed to accumulate for about 2 to 3 days before being burnt. The site is not fenced off, hence the HCW can easily be accessed by scavenging animals such as dogs, cats and birds. The waste is also exposed to weather elements such as wind and rains, causing scattering around the site.

MWTI Design
The installation of the proposed MWTI will require construction of a shelter to house it. The shelter will provide for a temporary waste holding area, an incinerator chamber, sanitation facilities, operators’ changing rooms, material/equipment store room, operators’ office, an emergency response system and a fire suppression system. There will also be the actual installation of the 50kg/hour MWTI and construction of a perimeter fence to secure and control movement into and out of the waste management designated area. The estimated total area needed for MWTI and all support facilities is approximately 220m². The project is also estimated to cost Kshs. 23,000,000.

Project Alternatives
Project alternatives considered in relation to implementation of the proposed project included:

- Relocating the proposed project to an alternative site. This was found not to be a viable option because the proposed installation of a MWTI is meant to assist in the efficient management of HCW from the operations of the hospital.
- The “No Project Alternative”, meaning that the status quo is maintained. Despite the fact this is the best alternative in terms of ensuring that the current environmental and social set up is not disturbed, this alternative is the least preferred in the long run from public health, socio-economic and environmental perspective due to the fact that not installing the MWTI will only lead to intensification of the already existing challenges in the treatment and disposal of HCW at the hospital. Maintaining the status quo by poor handling of the HCW and the continued use of the old burning chamber will aggravate atmospheric, soil and ground water pollution.
- Disposal of wastes in a sanitary landfill. Properly constructed and operated landfill sites offer a relatively safe disposal route for most wastes including HCW. However, this method requires an expansive site as well as specialized machines for compaction of each day’s waste.
• Autoclaving of the waste. This entails steam treatment of the waste in a metal chamber sealed by a charging door and surrounded by a steam jacket. Autoclaves are expensive to install and maintain, and the technology does not render waste unrecognizable. It also does not reduce the volume of treated waste unless a shredder or grinder is added.

• Incineration of waste. Incineration is a high-temperature dry oxidation process that reduces organic and combustible waste to inorganic, incombustible matter and results in very significant reduction of waste volume and weight. Incineration enables disposal of the greatest variety of waste, results in significant volume reduction, sterilizes wastes completely, and the treated waste is unrecognizable as ash.

Need for ESIA
The construction and installation of a MWTI at Alupe Sub-County hospital is likely to cause environmental and social impacts. To proceed with the implementation of this project without causing adverse impacts on the environment and social fabric, the MoH with guidance from the World Bank has undertaken this ESIA. Based on the nature of works of the CHERP project, as well as magnitude of anticipated environmental and social impacts likely to arise from its implementation and operations, the project was initially rated at the risk category of “High” in accordance with the World Bank’s Environmental and Social Framework (ESF). However, following the overall improvement of the project performance i.e., the gradual improvement in preparedness and the capacity of HCFs to respond to COVID-19 infections and the engagement of environment and social (E&S) specialists to support in management of E&S risk among other improvements, the current project risk rating has been adjusted to “Substantial”.

The MoH appointed Devlink Resources Consultants to carry out the Environmental and Social Impact Assessment (ESIA) of the proposed incinerator project in line with the World Bank’s Environment and Social Framework (ESF) as well as project specific environmental and social safeguards instruments, which include the Environmental and Social Management Framework (ESMF), the Infection Control and Waste Management Plan (ICWMP), the Labour Management Procedures (LMP), the Security Management Plan (SMP) and the Stakeholders Engagement Plan (SEP). The ESIA was also developed in light of a number of national and international policies, procedures, regulations, laws and statutes, some of which are discussed in detail in Chapter 4 of this report. ESIA has been recognized as a crucial practice for forecasting and assessing the potential environmental and social impacts of a proposed project, assessing alternatives, planning appropriate mitigation, management, and monitoring measures. Early identification of possible development impacts to the environment and human populations enhances and promotes environmental sustainability as anthropogenic factors are balanced with natural environmental needs.

Policy, Legal and Institutional Framework
The administrative and legal framework relevant to the proposed MWTI Project in terms of relevant and applicable Policy Framework (Table 1), Legal Framework (Table 2), Institutional Framework (Table 3), Social Statutes (Table 4) including World Bank Environment and Social Standards (ESS) (5) and World Bank Group EHS Guidelines and other relevant Good International Industry Practice (GIIP) (Chapter 4) have been reviewed in relation to implementation of the project and presented in this ESIA.

ESIA Methodology
The ESIA team carried out the project’s ESIA using a combination of methods, which included; ground surveys and a public consultative meeting. In addition, existing literature on legislative and other requirements were reviewed. The potential environmental and social impacts identified are classified into either positive or negative. These impacts are site specific and none is irreversible with mitigating measures that can readily be designed. Therefore, there has been made recommendations to prevent, minimize, mitigate, or compensate for the adverse impacts and improve on the project’s environmental and social performance and acceptance. This is geared towards avoiding, preventing and mitigating undue harm to people and their environment in the project implementation and operationalization process.

Stakeholder Consultation
Stakeholder consultation was achieved through holding a public meeting at the hospital on the 13th January, 2021. The meeting was attended by 18 representatives of the identified stakeholders from the MoH, Alupe Sub-
The consultations yielded positive feedback from the stakeholders who expressed full support for the proposed MWTI. More details of the stakeholder outcome are captured in section 5 as well as elaborated more in sub section 5.4 and Table 6 of this Report.

**Findings of the ESIA**

The findings of the ESIA carried out for this project indicate that the possible environmental and social impacts generated during construction, installation, operation and decommissioning phases can be addressed effectively by the hospital management through specific mitigation measures that are proposed in environmental and social management and monitoring plans for the project.

The potential positive impacts associated with implementation and operations of the proposed project include: employment opportunities, additional infrastructure to the hospital, improved HCWM, source of income from sale of construction materials and capacity building for the hospital human resource.

Possible deleterious impacts during construction phase of the proposed project include: interference with the Physical Setting of the area including the loss of vegetation, increased noise and vibration, air / dust emission, increased waste generation, accidental spillages, increased use and extraction of construction materials, possible encounter with physical cultural resources, occupational safety and health (OSH) risks, which may result to health and safety risks due to truck movements in and out of the HCF, fire hazards, spread of communicable diseases and other infections including COVID-19, increase in HIV/AIDS prevalence and other sexually transmitted infections (STIs), labour influx, cases of human rights violation and gender inequalities. There is also a possibility of having cases of conflict and insecurity, sexual exploitation and abuse, work and community related grievances.

Potential negative impacts during operation phase include improper HCWM, fire risk, OSH risks for healthcare workers, air pollution from inefficient operation of the MWTI and uncollected/ undisposed wastes, community health risk from improper HCWM, OSH risk to HCW handlers and the MWTI operators, increased water use and liquid waste generation and increased energy use by the MWTI, and generation and potential mismanagement of ash from the MWTI.

This ESIA report outlines appropriate mitigation measures for the anticipated negative environmental and social impacts such as re-vegetation of open patches of the project site, putting in place proper drainage channels for discharge of storm waters, rain water harvesting, restricted vegetation clearance to minimize vegetation loss, sprinkling of water on bare/open surfaces to suppress dust. Detailed mitigation measures for all the potential impacts are summarized on Table 8 (ESMP) and the monitoring options have been suggested on Table 9.

From the field studies there are no known archaeologically protected monuments and cultural properties in the proposed project area and therefore, there will be no impacts on them. However, should any archaeological or culturally important artefact be discovered during the construction/excavation process, the contractor should implement a Chance Find Procedure (CFP). The CFP will be incorporated into the main contractor’s contract and monitored by the Public Works Engineer (PWE). Presently, the Alupe Sub-County Hospital does not have a documented Grievance Redress Mechanism (GRM). It involves lodging of complaints by aggrieved stakeholders or submission of comments from hospital staff, patients, neighbours or community members to a suggestion box located in the hospital’s premises or registering it with the hospital. The proponent (MOH) shall establish GRM specifically for the proposed project to ensure that all issues as pertains to the proposed project are addressed as and when they arise. The contractor shall be required to adopt the GRM by the MoH for addressing all grievances during the construction phase of the project. On the other hand, once the contractor hands over the facility to MOH, the project level GRM may cease to function and all grievances would then be handled from the hospital level GRM.

**Project Implementation and Monitoring Arrangements:**
The primary role of monitoring and supervision of project environmental and social compliance falls squarely in
Busia County Government Public Health Department since they have the mandate as enshrined in the County Government Act, 2012. Key players in the monitoring of compliance in the project will include:

i. MoH (E&S Specialists, Hospital Administrator)
ii. The contractor
iii. Public Works Engineer/Resident Engineer
iv. Busia County staff include:
   - County Director for Environment
   - County Director for Physical Planning,
   - Labour Officer
   - Community Development Officer
   - County Social Development officer
   - Physical Planner
   - Public Health Officer/Inspector
   - Occupational Health and Safety Officer

Conclusion
i. The proposed project does not pose any serious environmental and social concerns, other than those of a moderate scale that accompany similar projects;
ii. The positive impacts associated with the implementation and operationalization of the proposed project far outweigh the probable negative ones, which will be mitigated adequately by following the prescribed environmental and social impact management and monitoring plans;
iii. The MWTI project is highly needed to address the breaches in medical waste treatment in Alupe Sub-County Hospital; and
iv. As such, as per the above analysis on the aspects of both positive and negative environmental and social impacts of the project development and operations, we, the experts found no significant negative impacts that could pose adverse effects to the extent of barring the proposed project from being implemented, assuming the project is designed, constructed, monitored and operated in compliance with all applicable designs and ESHS requirements.

Recommendations
The following are recommended going-forward with the project:

a. Though the anticipated negative environmental and social impacts of the project are considered moderate, localized and can be easily mitigated, the ESMP needs to be operationalized to ensure sustainable delivery of this project.
b. In addition, the institutional framework for the delivery of the project needs to be operationalized to effectively follow up compliance as per their mandates.
c. The project should earmark some resources for supporting the optimal operation of the MWTI and its operators to benefit from continuous capacity building especially on aspects of waste management and safety and emergency preparedness.
1. INTRODUCTION

1.1 Introduction of the Project
The Government of Kenya (GoK) through the MoH received financing from the World Bank Group (WBG) towards implementation of the Kenya COVID-19 Health Emergence Response Project (C-HERP). The Project is a multi-phase programmatic approach for strategic preparedness and response which aims to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness. The C-HERP project entails eight components1 among them being **Component 4 - Medical Waste Management**: This component supports the safe management of HCW generated by laboratory and health facilities such as Alupe Sub-County Hospital.

This ESIA falls under Component 4 because the proposed project entails construction of a shelter, procurement, installation and commissioning of MWTI of 50kg/hour rating at Alupe Sub-County Hospital. The Level 4 hospital was established in Started in 1947 as the Alupe leprosarium when the Government of Kenya set up a hospital for this purpose in Alupe. The hospital currently has a capacity of 130-beds, and provides comprehensive and specialized health care services.

The proposed project is expected to cost KES. 27,500,000, which is to cover the procurement of the MWTI and the construction of the shelter.

1.2 Infection Control and Waste Management
HCW is defined as “all waste generated by healthcare establishments (human or veterinary), including research facilities and laboratories. It can include waste generated in the course of healthcare in homes. Hazardous healthcare waste is of primary concern, due to its potential to cause infections, disease or injury. Infection Prevention and Control (IPC) are evidence-based practices and procedures that are applied consistently in healthcare settings to prevent or reduce the risk of transmission of micro-organisms to healthcare providers, clients, residents and visitors. Therefore, either at healthcare or community setting, IPC is concerned with interventions relating to health and environment. According to the WHO, about 15-25% of total health-care waste is infectious waste, and improper handling of healthcare waste can cause serious health problems for workers, community and environment.

IPC strategies to prevent or limit transmission in healthcare settings as per the WHO IPC in healthcare settings especially those handling COVID-19 cases include ensuring triage, early recognition, and source control (isolating patients with suspected COVID-19); applying standard precautions for all patients; implementing empiric additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19; implementing administrative controls and using environmental and engineering controls.

1.3 Problem Statement
IPC and especially waste management challenges are numerous and a salient feature in Kenya especially within hospitals. The Alupe hospital together with the PIA is not different. Open burning of HCW is practiced at the hospital, while some of the waste is left in the open without being treated. Potentially infectious wastes generated by the hospital are sharps, cultures from medical laboratories or infected blood, infected wipes or masks. Other wastes of importance are body fluids, all body parts, human tissues, placenta and radioactive wastes. The absence of proper HCWM exposes the patients, health care workers and the surrounding community to health and safety risks. For IPC and waste management, the hospital treats its HCW through use of a waste burning chamber coupled with open burning. The waste burning chamber is partly fenced off with chain-link but no lockable gate. The open waste burning area is also not fenced off. Medical Waste Management is under the Public Health department where we have the County Public Health Officers and the Hospital Public Health Officers.

According to the hospital administrator, the wastes generated at the hospital per day are estimated to be

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1 Appendix 2: The Eight Components of C-HERP
between 700kg to 900kg, which is mostly disposed through open burning. Therefore, the proposed MWTI will go a long way in ensuring effective treatment of HCW at Áupe Hospital as well as assist other HCFs that have been requesting to be allowed to deliver their HCW for proper treatment.

However, the utilization of the MWTI will be effective if waste segregation is fully exercised from source all the way to the waste treatment point.

1.4 The proposed solution
1.4.1 An Infection Control and Waste Management Plan (ICWMP)
Through the technical support of CHERP in early 2021, an Infection Control and Waste Management Plan (ICWMP) was developed for the ASCH. The ICWMP covers: roles and responsibilities including designate waste management officer and waste classification (including quantities of waste generated). Other aspects covered by the ICWMP include: waste minimization; reuse and recycling; waste segregation; onsite handling, transport and storage practices (including containerization, color coding, labelling and signage); waste-treatment and disposal options (onsite and offsite); record keeping and documentation, training and monitoring; costs relating to waste management, including capital, operational and maintenance costs.

One of the components of the ICWMP was the installation of a MWTI to ensure the effective treatment of HCW
at the hospital as well as assist other HCFs in the Sub County to manage their wastes. The proposed MWTI will have a capacity to treat 50 kg of waste per hour, and therefore the ability to treat 400 kg/day of waste if operated for 8 hours per day. The MWTI capacity is adequate to treat the infectious and highly infectious waste generated by the HCFs, which is the main focus of the support.

The MWTI will require periodic maintenance and checks such as monitoring of emissions to ensure appropriate waste treatment. Waste segregation and sorting will also be carried out from the source and at the waste treatment point. The hospital has been practicing the disinfection of its wastes with 0.5% chlorine solution before the wastes are delivered to the existing burning chamber. This practice is expected to continue when the hospital will be transferring waste from highly infectious units to the MWTI.

1.4.2 Capacity Building for Healthcare Waste Management at ASCH
The hospital has a designate waste management officer, who is the Public Health Officer (PHO) responsible for waste management, sanitation among other hospital environmental health and public health duties. The PHO at ASCH was trained on waste management and on the development of the facility ICWMP for the financial year 2021/2022. However, the PHO was immediately transferred from the health facility, while those working under the officer (especially the waste handlers) were yet to be trained. The facility ICWMP was therefore not implemented, and this is expected to be concluded during the 2022/2023 financial year. Training is also planned for those not trained on the ICWMP, including inducting the new PHO as soon as the MWTI is installed.

1.5 Project Objective
The objective of the proposed project is to enable safe HCWM at the health facility and build capacity for better management of infectious waste.

1.6 ESIA Scope
The scope of this consultancy entailed the preparation of an ESIA on the project cycle right from planning, construction of the shelter and installation of MWTI, operation and decommissioning phases. The aim was to identify the potential environmental, social, health and safety impacts associated with the proposed project and recommend appropriate environmental and social mitigation measures for integration in all the mentioned phases of the proposed project.

1.7 Terms of Reference
The Terms of Reference (ToRs) of this ESIA are to:

i. Identify and assess potential positive and negative environmental and social impacts associated with the proposed MWTI project implementation cycle phases;

ii. Recommend appropriate environmental, social, health and safety mitigation measures for integration in all phases of the project cycle;

iii. Determine how far the activities that relate to the construction and installation at the project site, as well as its operation, comply with sound environmental health and safety management practices;

iv. Undertake project alternative analysis;

v. Identify potential design opportunities and appropriate measures to have sustainable MWTI;

vi. Conduct a public consultation process as described in the Stakeholder Engagement Plan (SEP), and in conformity with the provisions of the Constitution of Kenya (2010), the EMCA (2015), the EMCA (Environmental Impact Assessment and Environmental Audit) Regulations and the Legal Notice Number 31 and 32 of 2019;

vii. Generate an ESMP and ESMMP that describes the mitigation measures to be carried out, scheduling and responsibility of such measures, and a detailed monitoring process and its schedule; and

viii. Prepare an ESIA report compliant to the requirements of the relevant laws, policies and institutions.

1.8 Justification of the Project and Preparation of Safeguards Instruments
1.8.1 Justification of the Project
There is need for the Project since the infectious diseases function coupled with the normal operations of the hospital requires the effective treatment of the infectious waste produced. The MWTI will treat other wastes
generated from the HCF, including waste from other health facilities within Alupe area. This will contribute or enable the ASCH and the County Government of Busia to meet their waste management objectives, and the protection of the health of communities and the environment.

1.8.2 Justification for preparation of the Safeguards Instruments
The C-HERP project aims to assist the country in ensuring safe management of waste generated by laboratory and medical activities. Thus, the proposed construction of a shelter, procurement and installation of a MWTI is premised on ensuring the effective and sound management of infectious medical waste. Under the provisions of the EMCA, 1999, amended in 2015, the EMCA (Environmental Impact Assessment and Environmental Audit) Regulations of 2003 (Revised in 2016) and the Legal Notice Number 31 and 32 of 2019, it is a requirement by law that an ESIA is undertaken prior to construction, installation and commissioning of any waste treatment equipment (WTE). In addition, the C-HERP project is prepared under the World Bank ESF, whereby the Environmental and Social Risk associated with the proposed project was initially classified as “High” based on the nature of works of the CHERP project, as well as magnitude of anticipated environmental and social impacts likely to arise from its implementation and operations. However, following the overall improvement of the project performance i.e., the gradual improvement in preparedness and the capacity of HCF to respond to COVID-19 infections and the engagement of environment and social (E&S) specialists who support in management of E&S risk among other improvements, current project risk rating has been adjusted to “Substantial”.

Based on this significant environmental and social risk rating, six of the ten ESSs of the WB’s ESF have been screened as relevant as stated below:

i. ESS1: Assessment and Management of Environmental and Social Risks and Impacts;
ii. ESS2: Labour and Working Conditions;
iii. ESS3: Resource Efficiency and Pollution Prevention and Management;
iv. ESS4: Community Health and Safety;
v. ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities
vi. ESS10: Stakeholder Engagement and Information Disclosure2.

1.9 Definition and Purpose of the ESIA
ESIA is a systematic analysis of projects, policies, plans or programs to determine their actual and potential environmental and social impacts, the significance of such impacts and risks and to propose measures to mitigate the negative ones, (NEMA, 2002). It is mainly used at the level of specific development projects (IIED, 1998) such as the proposed project on the construction and installation of a MWTI at Alupe Sub-County Hospital.

Through the ESIA, the World Bank requires the borrower to provide sufficient information on the potential environmental and social risks and impacts of the project. The ESIA process requires that public participation and consultations are carried out to inform and obtain the views of stakeholders about the proposed project and associated activities in order to provide meaningful input into the project design, implementation, operation and mitigation measures. Such information should be disclosed in a timely manner, accessible place, form and language understandable to project-affected and other interested parties as set out in ESS10 (Stakeholder Engagement and Information Disclosure). The underlying key principles of ESIA are that every person is entitled to a clean and healthy environment and that every person has a duty to enhance and safeguard the environment.

1.10 ESIA Methodology
The ESIA is based on site visits, literature review, environmental and social screening form for C-HERP (Appendix 4) and discussions with the project proponent (MoH) and the hospital management including Public Health Officers (PHOs) and Biomedical Engineers as well as public consultation with the relevant stakeholders such as church leaders, political leaders and local administrators. In preparing the ESIA report, there was

2Environmental and Social Screening Report (MoH,2020)
Identification of the potential positive and negative impacts and their mitigation measures in relation to project location and project design during project construction, operation and decommission phase. For the purpose of the assessment and preparation of the ESIA report, the following approaches and methodologies were employed:

i. **Desktop studies**: This involved the review and analysis of literature (project documents, design layout and specifications, legislative framework) for acquisition of secondary data;

ii. **Environmental and social screening**, in which the project was identified as among those requiring ESIA under schedule two (2) of EMCA, 2015, and whereby the proposed project of installation of medical waste equipment (incinerator) is classified as a High-Risk project under the Legal Notice Number 31 and 32 of 2019 provisions. In addition, under the World Bank ESF, the environmental and social risk associated with the proposed project initially classified as “High” and currently rated as “Substantial”.

iii. **Environmental and social scoping** that provided the key environmental and social issues to be investigated in relation to implementation of the proposed project;

iv. **Physical inspection of the site and surrounding areas**;

v. **Consultation and Public Participation**: Conduct a public consultation process as described in the Stakeholder Engagement Plan (SEP) for collection of primary data. This is in conformity with the provisions of the Constitution of Kenya (2010), the EMCA (2015), the EMCA (Environmental Impact Assessment and Environmental Audit) Regulations and the Legal Notice Number 31 and 32 of 2019;

vi. **Identification of potential impacts and preparation of an ESMP**; and

vii. **Reporting**: Confirmation and sharing of findings with the project proponent
2. PROJECT DESCRIPTION AND LOCATION

2.1 Proposed Location of the Project

The proposed MWTI will be located within the Alupe Sub-County Hospital compound. It will be within proximity of the currently used HCW burning chamber, which is not fenced off and neighbors the maternity wing under construction. Other properties near the proposed project site are KEMRI and the hospital facilities which are more than 200m away. Therefore, the site is fairly isolated and good for a burn technology of HCWM. The site can be accessed via a road that had been developed during the construction of the nearby maternity wing, thus avoiding disturbance of the normal hospital activities.

![Figure 3: The Proposed Project Site (Source: ESIA Field Visit)](image)

2.1.1 Site and Land Ownership

The proposed project will be located within the Hospital compound which is a public hospital whose land ownership is vested in the MoH of Kenya through the County Government of Busia. As per a copy of letter (Appendix 9) from The Hospital Administrator, the hospital sits on Land Reference Number South Teso/Angorom/14511 of size 50.8 hectares, of which only 32.2 hectares has been surveyed and allocated for hospital use. The proposed project will be located within the surveyed and allocated area of the hospital land. There was no dispute raised on land ownership during the public consultation session.

2.2 Project Description

The proposed project will involve the construction of a shelter, procurement of a 50kg/hour rating MWTI, its installation and operationalization. The total area required for the facility is 220m². The project is estimated to cost KES. 27,500,000 and will be procured in line with the requisite MOH specifications.

The MWTI will be sheltered in a permanent structure designed to ensure that there is adequate ventilation (See Appendix 10 on plans and designs for the proposed incinerator shelter). Elements of the shelter will have the following specifications:

- Walling-natural building blocks;
- The Roofing-metallic trusses, iron sheets;
- Metallic grills (for ventilation);
- A Burglar proof metallic door; and
- Cemented floor;

The proposed MWTI is expected to have various components that will complement each other to ensure that
wastes are burnt as per the desired levels and as per the design of the incinerator. The components include the Manual loading door; Main/Primary and Secondary combustion chambers; after burning emission control chamber/Gas Scrubber; Discharge chimney; Control panel and Fuel storage.

Figure 4: A schematic Cross Section of a Modern MWTI Showing its different Component
(Source: https://www.researchgate.net/figure/The-schematic-diagram-of-a-clinical-waste-incinerator_fig1_23749959)

a) Manual Loading Door
This is the inlet where solid waste will be fed to the incinerator.

b) Primary Chamber
This is where combustion of the solid wastes will take place. The chamber is cylindrical in shape and will horizontally be fitted along the floor of the incinerator shelter.

c) Secondary Chamber
The products of combustion from the primary chamber exhaust into the secondary chamber to be located directly above the primary chamber for treatment. Within the secondary chamber additional heat and air will be added to promote combustion in the gaseous phase, thus ensuring complete combustion of the volatile and solid particulate.

d) Gas Scrubber/Emission Control Chamber
Treated gases will exit the secondary chamber, directly into the emission control chamber, what is popularly known as scrubber. The gas scrubber/ washer is designed to suck all particulate matter from gases emanating from the burning chambers. Particulate matter from combustion process will be entrained within the spray of water which also will cool the gases to approximately below 450°C.

e) Control Panel
The control panel is fitted with various control knobs that are used to operate the incinerator. The control panel entails controls for time and temperatures.

f) Fuel Storage
The fuel (diesel) used in burning the wastes will be stored in metallic tank raised above the main machine. The incinerator will be fed by a 200L diesel tank. The tank will be fitted with a level gauge, feeder and fill pipes and a breather.

2.3 Project Design Considerations
The installation of the proposed MWTI unit at the Hospital will require the following considerations to be undertaken to make it fully operational. These include;

i. Construction of a shelter to house the MWTI that will entail waste storage/holding area, incinerator chamber, sanitation facilities, staff changing rooms, material store room, office, emergency response system, fire suppression system;

ii. Installation of the medical waste treatment incinerator with Plant Duty and Design Parameters as follows:
- Design Burn rate: Up to 50Kg/Hour in batch loads/ Up to 400kg range per 8-hour day
- Duration of Operation: Nominally 8 hours/day 310 days/annum (Up to a maximum of 14hrs/day)
- Waste: General / Medical
- Moisture content of waste: 20-50%
- Weight of ash residue: 10%-12% (Subject to waste profile)
- Volume of ash residue: 5-7% (Subject to waste profile)
- Auxiliary fuel: Diesel
- Maximum Noise level: 82dB (A) at 1m
- Ambient operating condition: -5°C to 50°C
- Energy--ignition and after burners maximum power rating 450KW/hr. Ignition diesel consumption average of 3ltrs and after burner consumption average of 6lts and connected to 3 phase 415 V at 50/60 Hz
- Water supply – requires adequate water supply
- Waste water management – MWTI to be connected to the hospital waste water system

iii. Construction of an ash pit and perimeter fence around the waste management area so as to secure and control movement into and out of the waste management designated area. The ash pit is the final disposal point of healthcare waste. It should therefore be carefully constructed to avoid possible underground water contamination, about 1.5m above the water table and its wall lined to prevent contamination of underground water as well as positioned to prevent the risk of flooding. The pit should be secured with a lock to prevent access to unauthorized persons/ avoid accidents.

Considering that the nearest hospital facility and other developments are more than 200m away coupled with some fully grown trees surrounding the site and a well-developed access road away from the main hospital activities, the proposed project site location was deemed appropriate.

2.4 Project Activities for Medical Waste Treatment Incinerator

2.4.1 Planning and Design Phase
This is a purely preparatory stage of the project with minimal physical engagements at the project site. The activities generally entail boardroom consultations/meetings, site visits, desktop works, awareness meetings, stakeholders and public consultations and participation. Some of the specific activities during this phase include the design and drawing of the specific architectural plans for the MWTI shelter, applying for approvals from the Busia County Development control section, getting into collaborative agreements with key stakeholders and undertaking the ESIA and seeking NEMA approvals.

2.4.2 Construction Phase
Activities applicable during the construction of the waste treatment shelter and subsequent installation of the incinerator will entail;

I. Recruitment of construction and installation staff by the Construction Company and induction on environmental and social safeguards requirements.
II. Establishment of a store for materials storage and handling,
III. Transportation of building materials;
IV. Site clearance and fencing,
V. Excavation of foundations, Construction and connection of utility services such as water, electricity; installation of the MWTI; external works to include construction of a perimeter wall, and
VI. Construction of the ash pit.

The number of staff needed for construction and installation works may be about 20, and 6 months required to construct the shelter and install the MWTI;

During this phase and in the other subsequent phases, there will be continuous grievance management, engagement of relevant stakeholders including monitoring and reporting on the ESMP implementation.

2.4.3 Operation Phase
Upon commissioning of the MWTI, the proponent will utilize it in ensuring proper treatment of HCW generated from the hospital activities. Maintenance activities will include facility cleaning, routine checks including air quality monitoring for quality assurance and other necessary repairs. Operators of the MWTI will be employed by the hospital management and trained initially by the project on operation and maintenance of the equipment.

a. Solid Waste Management
The waste stream recommended to be treated by the MWTI include contaminated sharps, haemodialysis waste, plastic material, glass material including used or damaged vaccine vials, single use surgical instruments and Materials, PPE Material, Liquid bio-hazardous waste, blood bags, urine bags, anatomical and pathological waste. However, volatile and semivolatile organic compounds, chemotherapeutic waste, mercury, other hazardous chemical waste and radiological waste will not be treated in the MWTI. These kinds of special waste if liquid, shall be appropriately diluted before disposal into the hospital main sewerage management system, solid ones shall be managed case by case according to available guidance specific to the kind of waste while the radiological waste shall be collected for proper disposal by the contracted radiological materials suppliers. All such processes must be in line with available MOH guidelines and NEMA waste management Regulations 2006.

If waste streams are not properly segregated to prevent hazardous chemicals from being fed into the primary combustion chamber, toxic contaminants will be released into the air, condensate, or in the treated waste. To minimize problems relating to bad incineration practices, the operation of the MWTI should strictly follow the operation highlighted here below in 2.4.3 (d). Maintenance activities for the incinerator shall include facility cleaning, routine checks for quality assurance and other necessary repairs following the standard operating procedures (SOPs).

The hospital management will be expected to ensure prompt disposal of incineration ash into the ash pit.

b. Effluent and Waste Water Management
The hospital has an internal waste water management system that serves to dispose waste water from the entire hospital. It is expected that all waste water generated by the operations of the proposed incinerator will be safely disposed via connection to the said internal waste water system.

There is no pre-treatment of waste water before its release to the internal waste water management system. The HCF has also not carried out any waste water sampling, testing and analysis, thus it has not been ascertained whether the HCF has complied with applicable waste water and effluent discharge limits. Furthermore, the HCF does not have any records on quantity of waste water daily discharges. Effluent and wastewater from health-care facilities generated by facility wastewater-management system should never be used for agricultural or aquaculture purposes. In addition, effluents from the basic treatment should not be discharged into water bodies that are used nearby to irrigate fruit or vegetable crops or to produce drinking-water or for recreational purposes. Additional information on wastewater management provided in sub section 3.2.8 of this report.

c. Cleaning and Disinfection
The proponent will be responsible for ensuring regular washing and cleaning of the incinerator shelter and compound. Cleaning and disinfection operations will involve the use of substantial amounts of water, appropriate disinfectants, detergents etc. Cleaning operations will involve the use of water, disinfectants, detergents, etc, which should be disposed into the septic tank or the sewer line. The volumes of such waste waters will depend on the cleaning frequencies.

d. Expected Operation Procedures of the Incinerator

The following are the expected operation procedures during the incineration of HCW.

i. Ash Removal
Start-up of the incinerator begins with removal of the ash generated from the previous operating cycle. The following are guidelines for good operating practice:

- In general, allowing the incinerator to cool overnight is sufficient for the operator to remove the ash safely. This cooling can take as long as 8h.
- The operator should open the ash cleanout door slowly both to minimize the possibility of damage to the door stop and seal gasket and to prevent ash from becoming entrained.
- The operator should exercise caution since the refractory may still be hot and the ash may contain local hot spots, as well as sharp objects.
- The ash and combustion chamber should not be sprayed with water to cool the chamber because rapid cooling from water sprays can adversely affect the refractory.
- A flat blunt shovel, not sharp objects that can damage the refractory material, should be used for clean-up.
- Avoid pushing ash into the under-fire air ports.
- Place the ash into a non-combustible heat resistant container, i.e., metal. Dampen the ash with water to cool and minimize fugitive emissions.
- Once the ash has been removed and prior to closing the ash cleanout door, the operator should inspect the door seal gasket for frayed or worn sections. Worn seal gaskets should be replaced.
- To prevent damage to the door seal gasket, the operator should close the ash cleanout door slowly and should not over tighten the door clamps.
- Over tightened door clamps may cause the seal gasket to permanently set and allow infiltration of outside air around the door face.

ii. Waste Charging

The operator has the option of selecting which items are included in a particular charge. Waste properties which should be considered when the waste is segregated into charges include the heating value; the moisture content; the plastics content, and the quantity of pathological wastes. The heating value and moisture content of waste affects the performance of an incinerator. A charge of waste with a very high heating value may exceed the thermal capacity of the incinerator. The result is high combustion temperature, which can damage the refractory of the incinerator and can result in excessive emissions. Similarly, a charge of waste with very high moisture content will not provide sufficient thermal input, and the charge will require the use of more auxiliary fuel than usual. Plastic items are an example of materials with high heating values. Large quantities of plastic, which may contain polyvinyl chloride, should be distributed through many waste charges, not concentrated in one charge, if possible.

When sorting loads of waste to be incinerated, the operator should try to create a mixture of low, medium, and high heating value wastes in each charge, if possible, to match the design heat release rate of the incinerator. In general, lighter bags and boxes will contain high levels of low-density plastics which burn very fast and very hot. Heavier containers may contain liquids (e.g., blood, urine, dialysis fluids) and surgical and operating room materials which will burn slowly. As a general rule for segregating waste into charges, the operator may mix light bags and heavy bags to balance the heating value of each charge. If several different types of waste, (i.e., red-bag, garbage and trash) are being charged to the incinerator, charging the incinerator with some of each waste type is better than charging it with all of one waste type. Special care should be taken to avoid overcharging the incinerator (beyond its intended use) with anatomical wastes. Prior to initiating charging, operation of the combustion air blowers and ignition and secondary burners should be checked following the manufacturers' recommendations. The proper operation of the primary and secondary burners is best achieved.
by observing the burner flame pattern through the view ports in the incinerator wall or in the burner itself as well as the control panel. The incinerator is charged cold and because the waste units generally are small, they are usually loaded manually. The waste is loaded into the ignition/primary chamber, which is filled to the capacity recommended by the manufacturer. Typically, it is recommended to fill the incinerator completely, but not overstuffing the chamber. Overstuffing can result in blockage of the air-port to the combustion chamber and in premature ignition of the waste and poor performance (i.e., excess emissions) during start-up. Overstuffing also can result in blockage of the ignition burner port and damage to the burner. After charging is completed, the charge door seal gasket is visually checked for irregularities. The door is then slowly closed and locked. The charge door seal gasket should then be inspected for any gaps that would allow air infiltration into the primary chamber. Once operation is initiated, no further charges should be made until the next operating cycle is initiated, i.e., after cool down and ash removal.

iii. Waste Ignition
Prior to ignition of the waste, the secondary combustion chamber should be preheated to a predetermined temperature by igniting the secondary burner. A minimum secondary chamber temperature of 1200°C is recommended prior to ignition of the waste. After the secondary chamber is preheated, the secondary combustion air blower is turned on to provide excess air for mixing with the combustion gases from the primary chamber. The primary chamber burner is ignited to initiate waste combustion. When the primary chamber reaches a pre-set temperature, mostly 600°C (i.e., the minimum operating temperature for the primary chamber) and the waste combustion is self-sustaining, the primary burner is shutdown. The primary combustion air and secondary combustion air are adjusted to maintain the desired primary and secondary chamber temperatures. (Typically, this adjustment is automatic and can encompass switching from high to low settings or complete modulation over an operating range.) During operation, the primary burner is reignited if the ignition chamber temperature falls below a pre-set temperature. Similarly, the secondary burner is reduced to its lowest firing level if the secondary chamber rises above a pre-set high temperature setting. Again, control of the burners, like the combustion air, is typically automated.

As per the MOH specifications, the initial and after burn ignition requires that the MWTI shall fully have packaged oil type, complete with electric ignition and flame failure controls, wired with continuous running fan and complete with all valves, fan and motor, if the incinerator is diesel fired type. The ignition burners shall be arranged for on/off operation. The burners will be expected to have a maximum rating of at least 450kW/hour with average and maximum diesel consumption of between 3 to 9 liters per hour. The specifics on the consumption are contained in the MOH incinerator’s specifications.

iv. Burndown
After the waste burns down and all volatiles have been released, the primary chamber combustion air level is increased to facilitate complete combustion of the fixed carbon remaining in the ash. The temperature in the primary chamber will continue to decrease indicating combustion is complete. During the burn down period, the primary burner is used to maintain the primary chamber temperature at the predetermined minimum level of the operating range. The length of time required for the burn down period depends on the incinerator design, waste characteristics, and degree of burnout desired. A typical burn down period is 2 to 4h. When combustion is complete, the primary and secondary burners are shutdown. Shutdown of the secondary burner which initiates the cool down period usually is automatically determined by a pre-set length of time into the cycle. The combustion air blowers are left operating to cool the chambers prior to subsequent ash removal. The blowers are shutdown when the chambers are completely cooled or prior to opening the ash door for ash removal. Cool down typically lasts 5 to 8h.

The final step in the cycle is examination of ash burnout quality. Inspection of the ash is one tool the operator has for evaluating incinerator performance. The operator should look for fine grey ash with the consistency of ash found in the fireplace at home or in the barbeque grill. Ash containing large pieces of unburned material (other than materials which are not combustible, such as cans) shows that incinerator performance is poor. It may be necessary to return these large pieces of material to the incinerator to be re-burned. Ash colour also is an indicator of ash quality. White or grey ash indicates that a low percentage of carbon remains in the ash. Black ash indicates higher carbon percentages remaining. Although carbon remaining in the ash indicates that
available fuel has not been used and combustion has not been complete, the fact that carbon remains in the ash is not in itself an environmental concern or an indicator that the ash is not sterile. Nonetheless, ash colour can be used to assist the operator in evaluating burnout and incinerator performance.

v. Special Considerations
If pathological waste is being burned, the ignition burner should be set to remain on until the waste is completely burned. Further, the volume of waste charged needs to be significantly reduced. The time required to burn an equivalent volume of such waste will be extended, since the waste contains high moisture and low volatile content. To destroy pathological waste efficiently, the waste must be directly exposed to the burner flame; consequently, piling pathological waste in a deep pile (e.g., filling the entire chamber) results in inefficient combustion.

During the operation of the MWTI, the hospital management through the Hospital Public Health office will continue to engage stakeholders as relevant, ensure adequate security arrangements of the MWTI, train and provide adequate PPEs for workers operating the Waste treatment equipment and manage any complaint that may arise from the project operations.

2.4.4 Decommissioning Phase
In case of the incinerator complete breakdown or should the need arise to discontinue operations of the incinerator, it should be decommissioned by either demolishing the facility including dismantling the incinerator machine or carrying out major renovation and redesigning its shelter. Should there be need for decommissioning the facility; the following will have to be considered.

a. Demolition Works
Upon decommissioning, the project will be demolished and this usually produce a lot of solid waste, which could be reused or if not reusable, disposed of appropriately by a licensed waste disposal company.

b. Dismantling of Equipment and Fixtures
If the equipment is completely dismantled and removed from the site on decommissioning of the project, Priority should be given to reuse of these equipment parts. This being an infections management centre, all materials/machines deemed fit for further use MUST be disinfected thoroughly before being put into any other use.

c. Site Restoration
Site restoration is achieved through replenishment of the topsoil and re-vegetation using indigenous plant species and this is usually done once all the waste resulting from demolition and dismantling works is completely removed from the site.
3. ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION

This section describes the existing physical, biological, and socio-economic environment at the proposed project site and its neighborhood. The description provides the baseline information upon which potential impacts of the proposed project were determined including project location, design, operation, or mitigation measures in tandem with the project environment and social aspects of the project. The baseline information for this project was gathered from both secondary sources and the field visits undertaken by the consultancy team.

3.1 Physical Environment

3.1.1 Physical Features

Most parts of Busia County fall within the Lake Victoria Basin. The altitude is undulating and rises from about 1,130 metres (m) above sea level at the shores of Lake Victoria to a maximum of about 1,500 metres (m) in the Samia and North Teso Hills. The central part of the county, especially Butula and Nambale Sub - Counties, are occupied by a peneplain marked by low flat divides of approximately uniform height, often capped by lateritic and a shallowly incised swampy drainage system.

The hospital land is slightly slanting towards the south. Whereas most parts of Busia County have sandy loam soils, dark clay soils cover the Northern and Central parts of the county. Other soil types are sandy clays and clays. The project site is covered by clay-loamy soils which are very deep allowing for adequate water seepage, and allowing a reduction in the amount of storm water run-off.

Since the proposed site has not been paved nor has had considerable disturbance before, it is expected that there will be some soil and vegetation disturbance (mostly grass only) at the proposed site. The area to be disturbed is estimated to be an average of 220 m². Such disturbance includes removal of vegetation with possibility of no trees being cut during foundation in preparation for the erection of the MWTI shed. However, measures have been outlined in the ESMMP that guide how to manage the spoil generated from excavations and also on how to ensure minimal disturbance of the existing green zones.

3.1.2 Ecological and Climatic Conditions

Busia County receives annual rainfall of between 760 millimeters (mm) and 2000 mm. 50% of the rainfall falls in the long rain season which is at its peak between late March and late May, while 25% falls during the short rains between August and October.

The dry season with scattered rains falls from December to February. The temperatures for the whole county are more or less homogeneous. The annual mean maximum temperatures range between 26°Celcius and 30°Celcius while the mean minimum temperature range between 14°Celcius and 22 °Celsius.

3.1.3 Land and Land Use

As indicated in sub section 2.1.1, the land where the MWTI is to be installed is owned by MOH and County Government of Busia.

Most of the land surrounding the project site is idle with only KEMRI Alupe and the Alupe hospital having facilities and other infrastructure developed on it. Less than 10% of the hospital land has been utilised leaving large expanse of land virgin and idle.

3.1.4 Flora and Fauna

The project site is surrounded by a mixture of grown indigenous and exotic tree species with a good grass cover. No large animals inhabit the site or surroundings with an exception of insects and birds.
3.2 Social and Economic Baseline

3.2.1 Demography and Hospital Catchment
Alupe Sub County hospital is situated in Busia County with population of 2,982,965 as per the 2019 national population census and which had been projected to increase to 3,756,213 by 2029. The HCF catchment of Busia border sub county as per 2020/2021 has a population of 405,345 has projections of reaching 10,000 patients monthly and, total number of 3,230 households. Alupe Hospital being within the border area, serves patients from areas of Busia County and patients from the neighbouring country, Uganda.

3.2.2 The Hospital Capacity and Services Offered
The hospital which was started in 1913 has a bed capacity of 130 beds. Before being turned into a COVID 19 center, the hospital attended to an average of 100 patients in a day when all departments are operational, hence an average of 1500 patients per month. Alupe offered diverse healthcare services to the public such as: maternal health care, radiology, youth friendly services focusing on reproductive health and gender-based issues, inpatient and outpatient services for medical and surgical cases and comprehensive care services. The hospital has several departments such as 1 dental unit, 2 labs (the main lab and entomology lab), outpatient building, stores, laundry areas, 1 block entomology, 2 pharmacies (for outpatient and inpatient), COVID 19 vaccination unit, MCH, occupational therapy (not operational), mortuary among others. The hospital is expected to revert back to its normal operations once COVID-19 cases go down.

3.2.3 Health Facility Personnel and staffing
The hospital has a total of 105 staff. The personnel at the hospital are on different form of employment contracts, with a section from national government who are permanent and pensionable, county staff with majority on 3 year contracts and a section permanent and pensionable, while there are those on universal health coverage and casual on 3 months’ contracts. The proportion of female to male is 70% to 30% respectively.

3.2.4 COVID-19 Information and Containment Measures
As of 19th July 2022, Kenya had 336,904 cumulative confirmed cases of COVID-19. The number of fatalities was at 5,668 cases while the recoveries cumulatively stood at 330,105 case. Busia County was accounting for around 6,400 cumulative cases in Kenya (Source; MOH website). As at July 2022, ASCH cumulatively had over 900 positive cases of COVID 19 of which 630 were males and 270 were females. The fatalities reported of confirmed cases were 7. Busia County had 2 COVID 19 centers including Alupe hospital and Busia Agricultural Training Center (ATC). The ATC was closed down due to the cases going down. By the time of fieldwork for the ESIA, the hospital had 2 cases of COVID 19 patients admitted. The hospital was not offering any other services apart from COVID 19 case management, thus having all the wards converted to COVID 19 isolation wards. The hospital had 25 staffs who were dedicated to manage the isolation wards alternating bi weekly. However, as at early July 2022, the hospital had resumed to its normal operation together with the infectious diseases function.
which include the management of COVID-19 among others. The notable containment measures being undertaken by the hospital are that no unauthorized persons are allowed entry within the hospital without a mask and without a deserving need. Hand washing stations have been placed at designated points within the hospital compound, social distancing being observed, fumigation and spraying of the wastes from the isolation wards with 0.5% chlorine solution before being taken to the incineration site, on job training of the hospital staff, vaccination of all hospital staff and temperature check at the main hospital entrance point.

3.2.5 Water Supply
The hospital is dependent on two sources of water supply, its main source being the water connection from the BUWASSCO (Busia Water and Sewerage Company) and a borehole. The hospital has a number of storage tanks of at least 50,000 liters capacity. There is no rain water harvesting at the hospital.

3.2.6 Power Supply and Distribution
The project influence area is well covered with electric power connectivity. The hospital in general and the waste treatment area where the MWTI will be installed are connected to a 3-phase power supply from the national grid. The HCF also has a backup generator of 500KVA, which, according to the Hospital Administrator, is able to run all hospital machinery when electricity power is not available. The generator is also believed to be able to run the MWTI during grid power outage. Despite the hospital management assuring that there is enough, reliable and constant power supply, there is need to have a sub-meter for the MWTI installed for purposes of monitoring its energy consumption.

3.2.7 Fire Safety and Fighting
The hospital has firefighting equipment placed at strategic points within its facilities and compound. The hospital has a fire assembly point; they have fire extinguishers in every building. There has not been any fire incident within the HCF in the last three years.

3.2.8 Drainage and Sewer Networks
It was observed that the gradient and slope of Alupe is slanting and drains to open fields. The hospital does not have storm water drainage channels. The hospital also has a 30,000l septic tank serving the MCH only. The sewer network within the hospital is connected to the main sewer line serving KEMRI Alupe.

3.2.9 Transport and Communication
There is good network of roads serving the project area with major access to the hospital through the tarmac. Communication is highly efficient in Busia County with good coverage of the 4G mobile telephone networks including the hospital. The hospital walkways and drive ways are well paved, but the path to the proposed MWTI is not paved.

3.2.10 Local Land Uses
The hospital, sits on an average of 20acres of land, with approximately 40% of the hospital land estimated to having been put to use through constructed hospital facilities like the wards, mortuary, hospital administration block, maternity wing and roads/walk ways.

3.2.11 Cultural and Historic Sites
There are no sites of cultural or historic importance identified within the project influence area. It is important to note that Alupe Hospital is located in a peri-urban set-up that is fairly developed with little or no space reserved for cultural or historic establishments. However, if during the excavation for construction of the microwave shelter any cultural or historic importance is found, the Chance Find Procedures (CFP) guidance provided (see appendix 11.3) for in the ESMF should be applied diligently as reports are made to the National Museums of Kenya (NMK).

3.2.12 Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities
There were no indigenous historically underserved traditional local communities living within the PIA. This is largely attributed to the fact that the local communities are cosmopolitan in nature and the project area is fairly urbanized.
3.2.13 Health, Safety and Security

The hospital has no standalone health and safety plan. Noted is that issues of occupational health and safety are the responsibility of the public health department and the infection prevention and control committee. This means these responsibilities are supposed to be part of the hospital infection control and waste management planning.

The security of the facility is under the responsibility of the hospital administrator. While appreciating that the HCF does not have standard reporting for OHS accidents and incidents, it was found that there was no serious OHS accidents or worker deaths documented over the last 4 years. The hospital is secured with incomplete perimeter fence and open at most places, anyone can come in and get out of the hospital anytime, animals come to graze on the hospital land. When there was surge in COVID-19 cases, truck drivers who were then in quarantine would use the open access to go to local brew dens and come back to create a lot of disturbance to the hospital populations and making it difficult for the security enforcement. The county has not dedicated security officers to man the hospital. There are no CCTVs within Alupe hospital.

3.2.14 Child protection

The hospital receives cases of lost children or children being abandoned in the hospital by caregivers. Hence, the hospital together with the area administration has a child protection plan to follow in case of such incidents. The hospital has a hotline number to contact in case of notable child abuse and negligence related incidences. Tender age children in wards are taken care by female caregivers.

The hospital has proper way of documenting issues related to children, be it related to violence or sexual abuse. The hospital management ensures that no children are employed within the premises through ensuring all casuals produce copies of the identification cards before being engaged. The hospital management does not allow anybody, especially children to be subjected to any form of suffering within and around the hospital. This is done in collaboration with the local administration (the Chief’s office). The privacy of children is also of paramount importance to the hospital's administration and management and a lot of confidentiality is pursued in handling child cases such as rape, neglect by care givers to HIV positive children, unwanted/teenage pregnancies.

3.2.15 Gender Based Violence/Sexual Exploitation and Abuse

The hospital has a GBV desk and various means of communication for workers and patients in case of a GBV risk. There is clear separation between males and females in the wards and sanitary facilities. Children wards are not marked by gender since its women care givers who are permitted to be with children in the wards. Gender mainstreaming is being implemented by the hospital and the 1/3 gender rule has been met by the hospital management as 70% of staff are women. However, noted was that the hospital has not developed a CoC on GBV to be signed by all workers.

3.2.16 Disability

The hospital has a department orthopaedic which purely deals with disability issues within the hospital but currently not operational, a lot sensitization done through the CHVs to help bring out disabled patients in the community for access of proper and timely health care. The OPD is the only building within the hospital that has ramps and disable friendly and the pit latrine was disability friendly but they filled up

3.2.17 Grievance Redress Mechanism

The hospital does not have a specific documented GRM but have various methods of communication in case of a grievance which are: complainant book at the customer care desk, hotline number which the community is aware of and is commonly used, community health care workers who have helped greatly in reaching out to the community timely through public barazas and meetings, there are walk in complains and use of suggestion box. The facility also has a service charter displayed at the main gate. Complains are handled by the hospital management committee weekly and monthly. For emergency complains are handled by the matron or hospital managers office, for specific departments it is taken to departmental heads for solutions. Some cases are handled hands on as they come and community health workers also give feedback to community members. This seems to be a new area for the hospital and therefore no clear protocols for addressing complains once received.
4. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This section describes the administrative and legal framework relevant to the C-HERP Project in terms of relevant and applicable policies (including World Bank Environment and Social Standards and World Bank Group EHS Guidelines), legal instruments and, stakeholder institutions as summarized in subsections: Policy Framework, Legal Framework, Institutional Framework, Social Statutes and WB ESF (5) and other relevant Good International Industry Practice.

4.1. Policy Framework

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<th>#</th>
<th>Policy</th>
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<th>Relevance</th>
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<tr>
<td>1.</td>
<td>National Environmental Policy, 2013</td>
<td>The policy promotes the use of Environment assessment tools such as ESIA/EA necessary to ensure environmental quality and resource productivity on long term basis. Further it calls for management in use of hazardous and toxic chemicals as well as radiation regulations.</td>
<td>The Policy requires the project which is likely to have significant environmental and social impacts to undergo ESIA in order to establish sound environmental management practices.</td>
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<td>2.</td>
<td>The National Occupational Safety and Health Policy, 2012</td>
<td>The Policy seeks to reduce the number of work-related accidents and diseases, and equitably provide compensation and rehabilitation to those injured at work or who contract occupational diseases.</td>
<td>The policy requires the provision of appropriate and adequate PPE, avail First Aid services on site as well as development of Safety and Health Emergency Contact at the site and workplace registration.</td>
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<td>3.</td>
<td>Kenya Health Policy 2012 – 2030</td>
<td>The Policy aim is to achieve this goal through supporting provision of equitable, affordable and quality health and related services at the highest attainable standards and minimize exposure to health risk factors to all Kenyans.</td>
<td>The Policy calls for the provision and distribution of healthcare services to all people that is commensurate with that of a middle-income country without segregation.</td>
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<td>4.</td>
<td>National Plan on Healthcare Waste Management 2016-2021</td>
<td>Provides a viable technical and management options as well as a roadmap for the domestication of the National HCWM Strategic Plan 2015 -2020. Strategic planning for HCWM covers waste handling, storage, transportation, treatment, and disposal, capacity-building and awareness creation. This prevents, reduces and mitigates the likely risks of transmission of infections.</td>
<td>The hospital having an isolation ward has potential to generate more infectious waste posing danger to the workers and public; thus, the critical need for proper handling and management of waste associated with COVID-19 project.</td>
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<td>5.</td>
<td>National Guidelines for the Management of COVID -19 Wastes, 2020</td>
<td>The Environmental Management and Coordination (Waste Management) Regulations of 2006, has clear provisions on the management of Biomedical waste. The provisions relate to segregation of biomedical waste, securing, packaging, storage and disposal of all generated medical waste within the country, to ensure proper waste disposal the main methods used are incineration, shredding, and chemical disinfection. To help implement the regulations, NEMA developed the guidelines to manage COVID-19 wastes.</td>
<td>The increased use of the safety materials against COVID-19 has led to massive generation of waste that can be considered as infectious waste (15%). These protective and safety materials are used within the hospital especially the single use face masks resulting in increased waste generation which if not well addressed could pose both cross infections and environmental risk.</td>
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<td>6.</td>
<td>Proposed guidelines on Planning and Design of COVID-19 Quarantine and Treatment Centres, and Long-Term Infrastructural Interventions for the Kenyan Context, 2020</td>
<td>The objective is to provide quick and innovative infrastructure guidelines to public and private health care sector players in response to COVID-19. It gives the space consideration, site selections, planning considerations and innovative solutions for the quarantine / isolation areas. It further emphasizes the need to provide housing that meets the minimum public health requirements for habitation in both formal and informal settlements in order to meet social distancing.</td>
<td>The design for will adopt the space consideration, site selections, planning considerations and innovative solutions for the establishment of the quarantine / isolation areas.</td>
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4.2. Regulatory Framework

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<th>Legislation</th>
<th>Provision</th>
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<tbody>
<tr>
<td>1.</td>
<td>The Constitution of Kenya, 2010</td>
<td>Article 42 of the Bill of Rights of the Kenyan Constitution provides that ‘every Kenyan has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures. Part 2 of Chapter 5 is dedicated to Environment and Natural Resources where Article</td>
<td>The project should ensure compliance with the Constitution on issues of environmental protection and safeguard of public health through provision of more comprehensive health services to every citizen. Implementing and operating the proposed MWTI within the proposed ESMP and ESMMP is also one</td>
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<tr>
<td>Regulation</td>
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<td><strong>2. National Infection Prevention and Control Guidelines for Health Care Services, 2015</strong></td>
<td>Provides comprehensive standardized information regarding the prevention and control of transmissible infections. It acts as a central reference for all health care facilities and healthcare workers. The guideline is intended to provide administrators and Health Care Workers with the necessary information and procedures to implement Infection Prevention Control (IPC) core activities.</td>
<td>The guidelines shall be reference for all health care workers with the necessary information and procedures of managing, handling and disposal of HCW to avoid infections. The installation and operationalization of the Incinerator will help reduce the volume of untreated infectious wastes left in the open at Hospital.</td>
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<td><strong>3. Environmental Management and Coordination Act, 1999 (Amendments 2015)</strong></td>
<td>The Act empowers the National Environment Management Authority (NEMA) to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of government in the implementation of all policies related to the environment. The Second Schedule to the Act specifies the projects for which an ESIA or environmental audit must be carried out.</td>
<td>The project shall comply with the provisions of this regulation on issues related to, environmental assessment, solid waste and waste water management, aerial emissions, noise and vibrations among others.</td>
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<td><strong>4. Environmental (EIA and EA) Regulations, 2019</strong></td>
<td>This regulation provides guidelines to govern the conduct of Environmental Assessment and Audits in Kenya. Section 3 indicates that the regulations apply to policies, plans, programs, projects and activities specified in Part IV, Part V and 2nd schedule of the Act</td>
<td>Environmental Assessment is being carried out for the project and appropriate mitigation measures shall be proposed commensurate with the scale of the project E&amp;S aspects.</td>
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<td><strong>5. Environmental Management and Coordination (Waste Management) Regulations, 2006</strong></td>
<td>The regulations provide guidelines on waste management (handling, storage, transportation, treatment and disposal) of various waste streams including: domestic waste, industrial waste, hazardous and toxic waste, pesticides and toxic substances, biomedical wastes; and radioactive wastes.</td>
<td>The project will generate highly infectious waste (15-25%) as a result of management of COVID-19 cases from wards and hence expected to comply with the requirements of this regulation in management of medical wastes. The proponent must observe this law strictly in the management of HCW generated from the COVID -19 designated health facilities as well as in its operation of MWTI by applying for the necessary licenses to operate the waste treatment equipment.</td>
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<td><strong>6. Environmental Management and Coordination (Air quality) Regulations, 2014</strong></td>
<td>Provide for the prevention, control and abatement of air pollution to ensure clean and healthy ambient air. Part II sections 5 to 9 prohibits compromise of the ambient air quality levels specified in the first and third schedules of the regulations. Section 11 of the regulations prohibits offensive emissions into controlled areas (national parks, schools, hospitals, residential areas and populated urban centres) Section 33 prohibits any person from causing/allowing emissions of particulate matter during demolition of structures. Section 34 prohibits any person from allowing stock piling of material to cause effect to ambient air quality, section 35 prohibits operators of the incinerators to cause emission of air pollutants as set out in second schedule in excess of mass emission rates indicated in third schedule of the act.</td>
<td>The Management of the Hospital will apply for the license own and operate MWTI, which is lacking for the currently used method, which cannot be licensed by NEMA. During operational phase of the MWTI, no waste will be left for long at the waste treatment area so as to start producing bad odour. The hospital management will be required to undertake periodic air quality monitoring around the incinerator as well as change scrubbers installed on a periodic basis.</td>
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<td><strong>7. Environmental Management and Coordination (Water Quality) Regulations, 2006</strong></td>
<td>The regulation provides guidelines for the protection of sources of water for domestic use, water for industrial use and effluent discharge as well as water for agricultural use. Part II section 6 prohibits any person from discharging effluent from sewerage works, industry or other point sources into aquatic environment, abstract ground water near lakes, rivers, streams, springs and wells that is likely to have any adverse impact on quality and quantity of the water without an environmental impact assessment license.</td>
<td>The proponent will ensure that the appropriate measures to prevent pollution of underground and surface water sources are implemented in all project phases such as channelling all waste water effluent from the waste treatment area to the sewer system and undertake periodic monitoring of the waste effluent from the health facilities to ensure compliance with the acceptable standards. Necessary water supply or waste water discharge permits, and compliance with such permits shall also be sought.</td>
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<td><strong>8. EMCA (Noise and Excessive Vibration</strong></td>
<td>Part II section 3(I) of these Regulations states that: no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures way of ensuring the right to a clean and healthy environment</td>
<td>The contractor will be required to take into consideration monitoring of the noise and vibrations levels within the hospital during construction period</td>
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<td>No.</td>
<td>Act Description</td>
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<td>1.</td>
<td>Constitution and other laws, and for other connected matters.</td>
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<td>2.</td>
<td>Act to provide for the establishment of a National Council for Disability, its composition, functions and administration for the promotion of the rights of persons with disabilities set out in international conventions and legal instruments, the Constitution and other laws, and for other connected matters.</td>
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<td>3.</td>
<td>Physical Planning Act, Cap 286 (Revised 2012)</td>
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<td>5.</td>
<td>Health Act, 2007</td>
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<td>6.</td>
<td>The County Government Act No. 17 of 2012</td>
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<td>9.</td>
<td>Prevent and control the use and development of land and buildings in the interest of proper and orderly development of an area.</td>
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<td>10.</td>
<td>An Act to provide for the protection of human health through prevention and guarding against introduction of infectious diseases into Kenya from outside, to promote public health and prevention, limitation or suppression of infectious, communicable or preventable disease within Kenya. The Public Health (Prevention, Control and Suppression of Covid-19) Rules, 2020 provides additional regulatory impetus to this part.</td>
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<td>11.</td>
<td>An Act of Parliament to establish a unified health system, to coordinate the inter-relationship between the national government and county government health systems, to provide for regulation of health care service and health care service providers, health products and health technologies and for connected purposes including the provision of emergency and specialized care. The Act requires that the national health system ensures that measures for managing environmental risk factors to curtail occurrence and distribution of diseases are put in place and implemented. The Act also requires the state to ensure access to healthcare services for vulnerable groups by making clear the state’s obligation to provide these for women, the aged, persons with disabilities, children, youth, and members of minority or marginalized communities</td>
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<td>12.</td>
<td>A County Government is required to seek developments approval from the County Physical Planning department for the civil works (construction activities).</td>
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<tr>
<td>13.</td>
<td>An Act of Parliament to provide for the safety, health and welfare of all workers and all persons lawfully present at workplaces. It applies to all workplaces where any person is at work, whether temporarily or permanently</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>During construction/installation phase, the contractor is expected to create awareness to the employees and local community on issues related to HIV/AIDS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Management of the Hospital is required to seek developments approval from the Busia County Physical Planning department for the civil works (construction and installation activities).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>People with disability interest including access to the HCFs will be catered for including the ramp, ablution and WASH facilities, as well as access to employment and healthcare services.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18. The Employment Act 2007

The Act stipulates that no person shall use or assist any other person, in using forced labour. The Act further states that it shall be the duty of the Cabinet Secretary/ Minister, Labour officer, the National Labour Court and the subordinate labour courts to; Promote equality of opportunity in employment in order to eliminate discrimination in employment; Promote and guarantee equality of opportunity for a person who is a migrant worker or a member of the family of the migrant worker lawfully within Kenya. Other clauses include the right and Duties of employment including the basic minimum and condition of contract including the Maternity Leave.

The proponent, contractor and the employees to be engaged in the proposed project stands guided on labour relations that at times have negative and detrimental impacts on project implementation if poorly handled.


The Acts provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purposes.

The MWTI is a technology that helps in reducing on the release of greenhouse gases into the atmosphere in line with the requirements of the Act to achieve low carbon climate development.

4.3. Compliance to Applicable Kenya EHS Regulatory Requirements

While noting that the HCF has not been fully compliant with applicable Kenya EHS regulatory requirements, there is need to ensure that the HCF adheres to the full extent of all applicable EHS regulatory requirements as laid out in the Kenya Occupational Safety and Health Act of 2007 together with the EHS requirements of the subsidiary legislation on Workers Injury and Benefits Act.

Important also to note is that the Proponent will be required to ensure that this ESIA ESMP forms part of the contract document and the main contractor prepares a contractor specific Environment and social management plan and includes adequate measures to promote safety and health of workers and community during the construction phase of the proposed project. The contractor is expected to handle issues of occupational health and safety and community health and safety especially during construction phase of the project.

4.3.1 Specific EHS Permits/Authorizations Needed for the MWTI Construction and Installation Project

- ESIA License from NEMA
- Need to acquire the necessary insurance as per the provisions of the WIBA, 2007
- Development approval/permits from the Busia County Physical planning departments for the civil works (construction activities).
- Provision of appropriate PPE, training of workers, appointing health and safety committees and safety advisor, registering work place with DOSHS and screening off active construction.
- Report any accident that has occurred to the Directorate of Occupational Health and Safety Service within 7 days from the date of occurrence or receiving notice.
- Liaise with NCA to ensure licensed contractors are the ones to be awarded contract to construct the needed amenities

4.3.2 Specific EHS Permits/Authorizations/Reporting Needed for the Operation of the MWTI

- Apply for the licenses to own and operate the MWTI from NEMA
- Carryout periodic stack emission testing & analysis as provided for by the Air Quality Regulations of 2014
- Need to acquire the necessary insurance as per the provisions of the WIBA, 2007
- The hospital management to report any accident to the Directorate of Occupational Health and Safety Service within 7 days from the date of occurrence or receiving notice.

4.4. Institutional Framework

Some of the institutions relevant to the proposed project are presented on Table 4 below:

<table>
<thead>
<tr>
<th>#</th>
<th>Institution</th>
<th>Provision</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>National Environment Management Authority (NEMA)</td>
<td>The responsibility of NEMA is to supervise and co-ordinate all matters relating to the environment and to be principal instrument of government in the implementation of policies relating to the environment.</td>
<td>The construction /installation is a major construction activity and thus it shall undertake the Environment Assessment and the report submitted to NEMA for review and issuance of license. NEMA also has the mandate for solid waste management, including hazardous and medical waste</td>
</tr>
</tbody>
</table>
4.5. Relevant Social Statutes
The key social aspects of this project include inclusion, including the GBV/SHEA prevention, stakeholder engagement and feedback mechanism including GRM.

<table>
<thead>
<tr>
<th>Social element</th>
<th>Legal/Regulatory framework</th>
<th>Institutional framework</th>
<th>Relevance</th>
</tr>
</thead>
</table>
| Gender-based violence and SEA | - Sexual Offences Act, 2006  
- Penal Code  
- Protection Against Domestic Violence Act, 2015  
- Prohibition of Genital Mutilation Act, 2011  
- National Gender and Equality Act, 2011 | - The State Departments of Gender in the Ministry of Public Service and Gender  
- National Gender and Equality Commission (NGEC) | Abuse by workers (both foreign and national), normalization of GBV and lack of interest, stigma leads to non-reporting, poverty forces women/girls to engage in transactional sex  
Lack of access to services to address SEA, stigma, corruption. |
| Public participation and consultations | - CoK, 2010, Article 10(2) a, b  
- County Public Participation Guidelines³ | - Every state actor is required to apply the national values and principles whenever they formulate, implement or interpret laws and policies  
- A complementary right is the right to access information in Article 35⁴ | The project will put measures in place to consult communities on the project. The use of alternative means of consultation such as call-in will to be used to engage communities CoK 2010 confers all the sovereign power to the people of Kenya and it is exercised through delegated power by the State actors⁵ |
| Grievance redress mechanism | - Employment Act in Part XII  
- Employment and Labour Relations Court Act  
- Labour Relations Act | - State Department of Labor (MLSP)  
- National Employment Authority  
- Kenya National Labor Board  
- Wages Council(s)  
- Directorate of Occupational Safety and Health Services  
- National Council for Occupational Safety and Health (NACOSH) | There is need have an elaborate GRM that will allow the PMT to manage grievances related to the project especially for the workers. However, in case the complainant is dissatisfied with the decision made, he/she can make use of any of other institutions with a mandate to address disputes. |

³ County Public Participation Guidelines, pg. (vii)  
⁴ Article 35(1)(a) and (b)  
⁵ Article 1 of the Constitution of Kenya
4.6. World Bank Environmental and Social Standards (ESSs)

The World Bank ESSs will help the Bank to manage the risks and impacts of the projects, and improve their environmental and social performance, through a risk and outcomes-based approach. This will ensure that proposed programs are environmentally and socially sustainable, and thus improve decision-making. The relevant ESSs to the project are outlined below:

Table 5: World Bank ESSs Relevant to the Project

<table>
<thead>
<tr>
<th>#</th>
<th>ESSs</th>
<th>Relevant</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ESS1: Assessment and Management of Environmental and Social Risks and Impacts</td>
<td>X</td>
<td>Environmental Assessment (EA) is used in the WB to identify, avoid, and mitigate the potential and actual negative environmental impacts associated with Bank lending operations. Environmental and Social risk associated with the project was initially classified as “High” risk since Kenya has limited experience in managing the highly infectious medical waste, however, this has since been downgraded to substantial owing to the capacity put in place by the Project Management to manage such risks. The project could also cause significant environment, social, Safety and Health risks due to the dangerous nature of the pathogen (COVID-19) and reagents and other materials to be used in the project-supported laboratories and quarantine facilities. Healthcare associated infections due to inadequate adherence to occupational Safety and Health standards can lead to illness and death among health and laboratory workers. Failure to undertake the necessary precautionary measures will lead to more infections and it is general knowledge that Covid-19 causes irreversible health conditions and deaths in the worst eventuality. It is therefore appropriate for all the potential social and environmental risks and impacts to be identified and the necessary mitigation measures formulated prior to the implementation of the proposed construction/installation of the waste treatment areas because the MWTI is meant to manage infectious and highly infectious wastes from the Covid-19 centre as well as from the entire hospital operations. Environmentally and socially sound healthcare will require adequate provisions for minimization of occupational Safety and Health risks, proper management of hazardous waste and sharps, use of appropriate disinfectants, proper quarantine procedure for COVID-19, appropriate chemical and infectious substance handling.</td>
</tr>
<tr>
<td>2</td>
<td>ESS2: Labor and Working Conditions</td>
<td>X</td>
<td>Most activities supported by the project will be conducted by health workers, i.e. civil servants employed by the Government of Kenya as well as the contracted workers for the Contractor. All workers will have orientation on and sign a code of conduct on expected behaviour and safety standards including GBV/SHEA risks. In line with ESS2 as well as the Kenyan law, the use of child labour and forced labour is prohibited in the project, both for construction and operation of healthcare facilities. The project will also ensure a basic, responsive GRM to allow workers to quickly inform their immediate management of labor issues, such as a lack of PPE and unreasonable overtime as well as to the national grievance hotline to the MoH. OHS risks related to medical waste management including; thermal injuries while operating incinerators, sharps-inflicted injuries and disease infections. The waste handlers and incinerators operators will be provided with adequate and appropriate personal protective equipment, provision of sanitation facilities (toilets and wash areas separate for women and men), provision of fire-suppression equipment guidance on operation and maintenance of the equipment, training and capacity building on OHS measures, infection prevention and control and medical waste management to healthcare workers, waste handlers and MWI operators.</td>
</tr>
<tr>
<td>3</td>
<td>ESS3: Resource Efficiency and Pollution Prevention and Management</td>
<td>X</td>
<td>Medical and chemical waste (including waste water, reagents, infected materials, etc.) from the COVID-19 isolation centre and handling of HCW can have significant impact on environment and human health. Waste that may be generated from the hospital may include liquid contaminated waste, chemicals and other hazardous materials, and other waste from labs including of sharps, used in diagnosis and treatment. This ESIA has been prepared and identified the possible ways to prevent and mitigate the potential...</td>
</tr>
</tbody>
</table>
4. ESS4: Community Health and Safety

X In line with safety provisions in ESS2, it is equally important to ensure the safety of communities from COVID-19 infection. Medical wastes and general waste from the hospital has a high potential of carrying micro-organisms that can infect the community at large if they are is not properly disposed of. The disposal of masks and gloves at the hospital will need to be managed adequately to avoid contamination. The operation of isolation wards needs to be implemented in a way that both, the wider public, as well as the patients are treated in line with international best practice as outlined in WHO guidelines referenced under ESS1. The project will ensure the avoidance of any form of Sexual Exploitation and all forms of Abuse by relying on the WHO Code of Ethics and Professional conduct for all workers in the quarantine facilities as well as the provision of gender-sensitive infrastructure such as segregated toilets and enough light in isolation wards. There will be effort to put women and men in separate isolation rooms and to make special arrangements for children and young people. In as much as possible, measures should be put in place to have separate wash, meal, relaxation areas and sanitary conveniences for men and women. The project will also ensure via the above noted provisions, including stakeholder engagement, that isolation wards at the hospital is operated effectively without aggravating potential conflicts between host communities and patients.

5. ESS10: Stakeholder Engagement and Information Disclosure

√ The project being implemented by the MoH which has established a structured approach to engagement with stakeholders (see Stakeholder Engagement Plan for the C-HERP) that is based upon meaningful consultation and disclosure of appropriate information, considering the specific challenges associated with COVID-19. Stakeholder engagement was done during the preparation of this ESIA that brought together all key stakeholders and the outcome was positive with regard to supporting the improvement of the HCWM at the hospital through the installation of the MWTI (see Chapter 5 Stakeholder Consultation).

### 4.3.3 World Bank Guidelines General Environment Health and Safety Guidelines

The WBG general EHS guidelines contain performance levels and measures for development of projects and are considered to be achievable in facilities at reasonable costs by existing technology. WBG guidelines apply to specified project components of construction and installation of the MWTI. Among the applicable guidelines, the following points provide some summary:

**a) Environmental (EHS Guidelines - Waste Management)**

These guidelines apply to both non-hazardous and hazardous waste. They advocate for waste management planning where waste should be characterized according to: composition, source, types, and generation rates. This is essential for the hospital in relation to operation of the microwave project since there is a need to segregate the different categories of waste generated at the overall hospital level. These guidelines call for implementation of a waste management hierarchy that comprises prevention, recycling/reuse; treatment and disposal. The guidelines require segregation of conventional waste from hazardous waste streams and if generation of hazardous waste cannot be avoided; its management should focus on prevention of harm to health, safety, and environment, according to the following principles:

i. Understanding potential impacts and risks associated with management of any generated hazardous waste during its complete life-cycle;

ii. Ensuring that people handling, treating and disposing of hazardous waste are reputable and legitimate enterprises, licensed by the relevant regulatory agencies and following good international industry practice; and

iii. Ensuring compliance with applicable regulations.

The hospital generates various quantities of hazardous and non-hazardous waste and the guidelines recommend monitoring activities to include:

i. Regular visual inspection of all waste storage, collection and storage areas for evidence of accidental releases and to verify that wastes are properly labelled and stored;

ii. Regular audits of waste segregation and collection practices;

iii. Tracking of waste generation trends by type and amount of waste generated, preferably by facility departments; and

iv. Keeping manifests or other records that document the amount of waste generated and its destination.
b) **EHS guidelines - Air emissions and Ambient air quality**

These guidelines are meant for all types of projects with “significant” emissions, sources of air emissions, and potential for significant impacts to ambient air quality to prevent or minimize impacts by ensuring that emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards. They require the application of national legislated standards, or in their absence, the current WHO Air Quality Guidelines, or other internationally recognised sources. Kenya, currently has Environmental Management and Coordination (Air Quality) Regulations, 2014 applicable to this project. In this project, there will be fugitive air emissions, which are expected especially during construction phases of the project. These guidelines are useful as they give control and monitoring measures.

c) **WBG EHS Guidelines: Noise**

This section addresses impacts of noise beyond the property boundary of the facilities. These guidelines are applicable during construction phase whereby construction equipment and activities are expected to emit noise. Kenyan regulation, EMCA (Noise and Excessive Vibration) Pollution Control Regulations, 2009 give permissible levels during construction works. The proponent therefore has adequate guidance to ensure noise levels are maintained as low as reasonably practicable.

d) **WBG EHS Guidelines: Occupational Health and safety**

These guidelines guide employers and supervisors in fulfilling their obligation to implement all reasonable precautions to protect the health and safety of workers. The guidelines provide guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. Although the focus is placed on the operational phase of projects, much of the guidance also applies to construction and decommissioning activities. The guidelines also describe how facility operation workplace design should be undertaken to prevent occupational health and safety risks and hazards.

e) **EHS Guidelines - Construction and Decommissioning**

These provide additional and specific guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to construction or modification of existing project facilities.

f) **World Bank Group EHS Guidelines - Healthcare Facilities**

The EHS Guidelines for Health Care Facilities include information relevant to the management of EHS issues associated with health care facilities (HCF). It provides guidelines for basic infrastructure elements / activities of healthcare facilities to improve on health of patients, prevent transmission of infections among patients and staff and control impacts of environment health and safety including maintenance of sanitary conditions and use of appropriate disinfection techniques, portable water, clean air and nosocomial infection control.

g) **World Bank Guidance note on COVID-19 and Civil works**

This interim note provides guidance to teams on how to address key issues associated with COVID-19. This note emphasizes the importance of: careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19.

h) **Guidelines on Prevention of GBV/SEA**

The WB Guidance Note on GBV/SEA in civil works describes GBV/SEA as an ‘umbrella term for any harmful act that is perpetrated against a person’s will and that is based on socially ascribed gender differences.’ Consequently, it can occur in a variety of ways, including through the infliction of physical, mental, and sexual harm or suffering threats of such acts, as well as coercion and other deprivations of liberty, such as early or forced marriage, economic abuse and denial of resources, services and opportunities, trafficking and abduction for exploitation, or Intimate Partner Violence (IPV) perpetrated by a former or current partner. Most importantly,

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6 World Bank Group, Good Practice Note. Addressing Gender Based Violence in Investment Project Financing involving Major Civil Works, September 2018, p.5.
the WB applies ‘GBV/SEA’ as an umbrella term that includes sexual exploitation and abuse (SEA). The Bank defines SEA as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another. In Bank financed operations/projects, sexual exploitation occurs when access to or benefit from a Bank financed goods, works, non-consulting services or consulting services is used to extract sexual gain. Sexual abuse is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions. Sexual harassment (SH) is understood as unwelcome sexual advances, requests for sexual favors, and other unwanted verbal or physical conduct of a sexual nature. SH differs from SEA in that it occurs between personnel/staff working on the project, and not between staff and project beneficiaries or communities. The distinction between SEA and SH is important so that agency policies and staff training can include specific instructions on the procedures to report on both. Both women and men can experience SH. The WB Guidance Note defines four key areas of GBV/SEA risks:
1. SEA - exploitation of a vulnerable position, use of differential power for sexual purpose; actual or threatened sexual physical intrusion;
2. Workplace sexual harassment - unwanted sexual advances; requests for sexual favors, sexual physical contact;
3. Human trafficking - sexual slavery, coerced transactional sex, illegal transnational people movement;
4. Non-SEA - physical assault, psychological or physical abuse, denial of resources, opportunities or services and IPV.7
5. Other specific C-HERP ES documents required for all subprojects include the ESMF, ICWMP & LMP

This section provides the highlights of the World Health Organization (WHO) Guidelines for COVID-19 Prevention and Management:

i. WHO Infection prevention and control during health care when COVID-19 is suspected: Intended for health care workers (HCWs), health care managers, and IPC teams at the facility level, national, provincial and district levels. This means that all possible measures should be put in place within the HCF to prevent infection, especially from healthcare waste and in particular, adhering to respiratory etiquette and hand hygiene best practices, contact, droplet and airborne precautions, adequate environmental cleaning and disinfection; ensuring adequate ventilation; isolation facilities of COVID-19 patients; in addition, where possible, maintaining a physical distance among all individuals in health facilities of at least 1 metre (increasing it whenever feasible), especially in indoor settings.

ii. WHO rights, roles & responsibilities of HCWs, including key considerations for OSH in COVID-19 Outbreak: Provides specific measures to maintain rights and responsibilities of HCWs and their OSH including provision of adequate IPC and PPE supplies (masks, gloves, goggles, gowns, hand sanitizer, soap and water, cleaning supplies) in sufficient quantity to healthcare or other staff caring for suspected or confirmed COVID-19 patients, such that workers do not incur expenses for occupational safety and health requirements;

iii. WHO Water, sanitation, hygiene, and waste management for the COVID-19 virus: Intended for water and sanitation practitioners and providers and health care providers to ensure good and consistently applied WASH and waste management at the health care facilities to help prevent human-to-human transmission of the COVID-19 virus.

iv. WHO Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19): Intended for those involved in distributing and managing PPE and its most appropriate use by public health authorities and individuals in health care and community settings.


vi. WHO Infection Prevention and Control for the safe management of a dead body in the context of COVID-19: intended for those, including managers of health care facilities and mortuaries, religious and public health authorities, and families, who tend to the bodies of persons who have died of suspected or confirmed COVID-19.
5 KEY STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION

5.1 Introduction
The World Bank ESF, the Constitution of Kenya (2010), Legal Notice No. 101-the Environmental (Environmental and Social Impact Assessment and Audit) Regulations, 2003 (Revised in 2016 and in 2019), the Legal Notice Number 31 and 32 of 2019 and the EMCA (2015) require that the views of persons who may be affected by a proposed project be sought during the process of conducting an ESIA. The MoH has also developed a SEP, which defines the stakeholder engagement process, including public information disclosure and consultation, throughout the project cycle.

For this particular ESIA, Stakeholder and Public Participation was accomplished via a public meeting held at Alupe Sub-County Hospital on the 13th January 2021. The meeting was attended by stakeholders from the Department of Public Health of Busia County Government, representatives of the surrounding residential and business community, the area administration including the ACC and Chief, a representative of KEMMRI and county administration. (Minutes to the meeting and the attendance list are attached to this report as annex number 10). There were a total of 17 participants plus two of the ESIA Experts. In attendance were 5 women and 12 men.

5.2 Goals of Consultations
The primary goals of the consultation process are to:
- a. Ensure transparency and involvement of stakeholders in assessing and managing the potential environmental and socioeconomic impacts of the project;
- b. Help manage risks, concerns and public expectations through ongoing dialogue with stakeholders;
- c. Improve decision-making and build understanding by actively involving key project stakeholders and PAPs in two-way communication. Through this process, the implementing agencies will better understand the concerns and expectations of stakeholders, beneficiaries and PAPs, and the opportunities to increase project value to the local community.

5.3 Objectives of Stakeholder Consultation
The consultations with stakeholders and communities were carried out to specifically achieve the following objectives:
- a. To provide information about the project and to tap stakeholder information on key environmental and social baseline information in the project area;
- b. To provide opportunities to stakeholders and communities to discuss their opinions and concerns respectively and get a full appreciation of their expectations;
- c. To solicit the stakeholders’ views on the project and discuss their involvement in the various project activities;
- d. To discern the attitudes of the community and their leaders towards the project so that their views and proposals are taken into consideration in the formulation of mitigation and benefit enhancement measures;
- e. To identify specific interests of and to enhance the participation of the poor and vulnerable groups; and
- f. To inform the process of developing appropriate mitigation measures as well as institutional arrangements for effective implementation of the project.

5.4 Summary of Public Consultations Findings
During the stakeholder and public consultation meeting held on the 13th January 2021, the following are the matters that were discussed in brief.

Table 6: Public Consultation Meeting Brief

<table>
<thead>
<tr>
<th>Name of stakeholder</th>
<th>Issue raised</th>
<th>Response given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Nyongesa, PHO</td>
<td>A lot of Smoke produced by the waste burning chamber and the process of open waste burning</td>
<td>The Hospital PHO started by starting that the meeting is good so that members of the public could know that the hospital is doing something about reducing the amount of smoke that emanates from the current waste burning chamber and the process of waste burning. Although there have not been complaints from the surrounding community in relation to the continued use of the two methods, he knew in his mind that</td>
</tr>
<tr>
<td>Name</td>
<td>Statement</td>
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<tr>
<td>Charles Omeny, Deputy Sub-County PHO</td>
<td>He pointed out that the hospital is sometimes forced to take some HCW to Busia County Referral Hospital for proper incineration at a very high cost because not all vehicles can transport HCW. The ESIA Experts urged the stakeholders in the meeting to support the proposed MWTI project so that the hospital will be safe on the money utilized in transporting HCW to Busia County Referral Hospital. The ESIA expert also pointed out the MWTI will also help address the issue of air pollution associated with use of the current HCW burning chamber and open water burning. This is because the proposed MWTI is equipped with an air scrubber that helps filter the smoke form the incineration process.</td>
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<tr>
<td>How are they sure that the proposed MWTI will not be as polluting to the air as the current waste burning chamber</td>
<td>The ESIA Expert responded that the proposed MWTI is designed in a manner that it has two incineration chambers, the primary and the secondary incineration chambers. It is at the primary chamber where the raw solid wastes will be incinerated. The products of combustion from the primary chamber exhaust into the secondary chamber to be located directly above the primary chamber for further treatment. Within the secondary chamber additional heat and air will be added to promote combustion in the gaseous phase, thus ensuring complete combustion of the volatile and solid particulate. There is also the Gas Scrubber/Emission Control Chamber. Treated gases will exit the secondary chamber, directly into the emission control chamber, what is popularly known as scrubber. The gas scrubber/washer is designed to suck all particulate matter from gases emanating from the burning chambers. Particulate matter from combustion process will be entrained within the spray of water which also will cool the gases to approximately below 450°C.</td>
<td></td>
</tr>
<tr>
<td>Dr. Kilimo, the Hospital Medical Superintended</td>
<td>She sought for clarification on the operating capacity needed in operating the proposed MWTI, how tall is its chimney, does it come with provisions for First Aid Kits, connection to electricity and who constructs proper access routes. The ESIA Expert responded that the proposed MWTI is designed in a manner that it has two incineration chambers, the primary and the secondary incineration chambers. It is at the primary chamber where the raw solid wastes will be incinerated. The products of combustion from the primary chamber exhaust into the secondary chamber to be located directly above the primary chamber for further treatment. Within the secondary chamber additional heat and air will be added to promote combustion in the gaseous phase, thus ensuring complete combustion of the volatile and solid particulate. There is also the Gas Scrubber/Emission Control Chamber. Treated gases will exit the secondary chamber, directly into the emission control chamber, what is popularly known as scrubber. The gas scrubber/washer is designed to suck all particulate matter from gases emanating from the burning chambers. Particulate matter from combustion process will be entrained within the spray of water which also will cool the gases to approximately below 450°C.</td>
<td></td>
</tr>
<tr>
<td>Namdy N. Nyongesa, Municipal PHO, Busia Municipality</td>
<td>He said that there was need to have firefighting equipment fitted within the MWTI shelter and that the MWTI shelter should have a concreted floor. The ESIA Expert supported his point by clarifying that Fire extinguishers including sand filled buckets should be provided at the MWTI shelter by the hospital management. He stated that the hospital should retrained as MWTI operator including representative from the Biomedical Engineering and Public Health Department. However, the proposed MWTI project does not including the paths to the proposed MWTI project site. Therefore, it is the hospital’s responsibility to make sure that the paths to the proposed MWTI project site are paved so as to enable easy push of the HCW transportation trolleys.</td>
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<tr>
<td>Leonard Bukeke Ouma, Ward Administrator</td>
<td>He said that he acknowledged the need for the MWTI project for the hospital. However, he wished to know how the incineration ashes will be disposed safely and what could be the lifespan of the MWTI machine. The ESIA Expert explained that the proposed MWTI project included the provision of a standard ash pit, where all incineration should be disposed. He said that the hospital should collect some data in relation to the amount of HCW being generated from the hospital because it is such data that guides on the size of ash pit that should be constructed to serve the MWTI for at least 10years so as to avoid constructing many ash pits within the hospital compound. He explained that the MWTI machine is not more special than other machines, hence its maintenance and use will determine how long it remains operational. He gave an example of the vehicles people whereby their deterioration depends on how they used and how well they maintained.</td>
<td></td>
</tr>
<tr>
<td>Peter O. Nyakundi, Biomedical Engineer</td>
<td>Who should connect the MWTI to water The ESIA Expert pointed out that the construction contractor is the one to make sure that the MWTI site is connected to water. This is because the MWTI machine comes with an air scrubber which makes use of water. The design of the MWTI shelter will also have provision for a bathrooms, toilet and hand washing areas, all which cannot function well without piped water supply.</td>
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</tbody>
</table>
5.5 Conclusion of Stakeholder Engagement

The stakeholders present expressed their full support for the project. The ACC concluded that the proposed project will go a long way in addressing the challenges of HCW treatment not only for Alupe hospital, but also for KEMRI and other HCF in the area and especially the private HCFs. He ended by requesting the ESIA Experts to pass a message to the MoH that they would have wished to have the hospital be supported with 100kg/hour MWTI so as to be able to assist many HCFs in the Sub-County, which currently are disposing their HCWs through crude methods.

Figure 6: The stakeholder meeting attendees
6 ANALYSIS OF PROJECT ALTERNATIVES

This section analyses the projects alternatives in terms of site, technology, scale and waste management options. The proposed project sites have been chosen after consideration of several factors including water supply, sewer line connection and proximity to other facilities that undertake similar or related functions within the hospital. Thus, the proposed sites were best suited for undertaking the development.

6.1 The No Action Alternative

This alternative describes a situation where the proposed project is not allowed to be undertaken. In case this happens, positive impacts associated with the proposed development will not accrue to the stakeholders including the hospital, the environmental and public health advocates, the development consultants, contractors and suppliers of materials. However, from an environmental and social management perspective, the “No action alternative” will be beneficial in the sense that any potential negative impacts associated with the project implementation will be avoided. The “No Action Alternative” should not be adopted, as we need to encourage development of adequate HCWM services to address the current HCW challenges and public related risks on condition that activities are undertaken on an environmentally safe and socially sustainable basis.

6.2 Relocating Option

Relocating the proposed project to an alternative site is not a viable option. This is because the proposed installation of a MWTI is meant to assist in the efficient management of HCW from the operations at Alupe hospital which is a designated COVID-19, treatment facility. Relocation would also require acquisition of an alternative parcel of land. Such a scenario would mean going through the tedious budgeting and procurement processes. If the MWTI is constructed away from the HCF, it will also mean that the hospital would need to acquire a vehicle fully licensed by NEMA for transportation of the medical waste it will be generating, making the whole process expensive, inconvenient and may become inefficient at some point. The siting of the MWTI will be near to the existing HCWM area, which is well isolated from the rest of the hospital facilities hence it can easily and properly be fenced off from the other hospital activities, hence being the most appropriate. The space within the site is also enough for the equipment housing including the ash pit, and so will not require decommissioning of the existing structures within the area nor require relocation because of inadequate space.

6.3 Analysis of Alternatives to Incineration

6.3.1 Sanitary landfill

Properly constructed and operated landfill sites offer a relatively safe disposal route for most wastes including HCW. The priority is protection of the water aquifers and each day’s waste is compacted and covered with soil to maintain sanitary conditions. Nevertheless, this method could not also be considered because it requires a large space as well as specialized machines for compaction of each day’s waste.

6.3.2 Incineration

Incineration is a high-temperature dry oxidation process that reduces organic and combustible waste to inorganic, noncombustible matter and result in very significant reduction of waste volume and weight. This process is usually selected to treat waste that cannot be recycled, reused or directly disposed off in sanitary landfill. All types of incinerators if operated properly eliminate pathogens from the waste and reduce waste to ashes. As is the case most modern incinerators, the high temperatures and cleaning of exhaust gases (fixing scrubbers in the incinerators as is the case with the proposed incinerator and having tall chimney heights of about 10 M from the ground to encourage dilution of air after combustion) limit the atmospheric pollution and odours produced by the incineration process.

a) Advantages of incineration include:
- Accept the greatest variety of waste,
- Treated waste is unrecognizable as ash,
- Significant volume reduction,
- Energy recovery,
- Waste totally sterilized.
- Trained personnel readily available,
Existing guidelines in place,
Cheaper to install and maintain compared to other methods like autoclaves.

b) Disadvantages include:
- Acid gases in air emissions,
- Heavy metals in ash residues,
- Convert biological problem into potential air quality emission problems,
- Major source of dioxin and furan emissions.

Because of the many advantages of incinerators including that they accept the greatest variety of waste, significant volume is reduced, trained personnel are readily available and that they are cheaper to install and maintain, this method is considered as a viable option provided the mitigation measures provided in this ESIA report are fully exercised.

6.3.3 Open Burning of HCW
Burning HCW at low temperatures in the open should be discouraged because this may release toxic pollutants into the air. Although it is being practiced at the Alupe Sub-County Hospital, this method is totally discouraged and should be avoided at all costs just the same as is the case of open dumping.

6.3.4 Microwaving
Microwave technology of managing HCW is considered an alternative technology of the incinerator. This is a steam-based process, and electromagnetic waves with frequencies between radio and infrared waves that use steam inside the wastes or by additional steam to sterilize wastes and destroy infectious agents and pathogenic organisms in the waste. So, it includes the use of high-intensity radiation to heat the moisture inside the waste.

a) Advantages of Microwaving include:
- Technology is easy to install and operate,
- Reduces HCW volume by up to 80%,
- Environmentally friendly due to lack of release of smoke and other pollutants such as dioxins, hence its emissions, if any are minimal
- No liquid effluents,
- No danger of explosion as is the case with autoclaves as it does not make use of pressure

b) Disadvantages include:
- Its operating cost is very high (high electricity bills),
- Offensive produces odours within the sheds
- It produces waste material that will need further disposal; hence need to invest in other items such as dedicated specialized waste transportation vehicles. In some cases, the public may not accept the disposal of HCW into the municipal dumpsites regardless of whether it is treated hence leading to conflicts

This method could not be considered given that it will need further investment in items such as specialized waste transportation vehicles. The Alupe Sub County Hospital is also located in an area bordering sparsely populated area; hence issues of air pollution may not be experienced by members of the surrounding community.

6.3.5 Autoclaves
An autoclave consists of a metal chamber sealed by a charging door and surrounded by a steam jacket. Steam is introduced into both the outside jacket and the inside chamber which is designed to withstand elevated pressures. Heating the outside jacket reduces condensation in the inside chamber wall and allows the use of steam at lower temperatures. Because air is an effective insulator, the removal of air from the chamber is essential to ensure penetration of heat into the waste. This is done in two general ways: gravity displacement or pre-vacuuming. A gravity-displacement (or downward-displacement) autoclave takes advantage of the fact that
steam is lighter than air; steam is introduced under pressure into the chamber, forcing the air downward into an outlet port or drain line in the lower part of the chamber.

a. Advantages of Autoclaves:
- Steam treatment is a proven technology with a long and successful track record,
- The technology is easily understood and readily accepted by hospital staff and communities,
- It is approved or accepted as an alternative technology in all states,
- The time-temperature parameters needed to achieve high levels of disinfection are well-established,
- Autoclaves are available in a wide range of sizes, capable of treating from a few pounds to several tons per hour,
- If proper precautions are taken to exclude hazardous materials, the emissions from autoclaves are minimal.
- Many autoclave manufacturers offer many features and options such as programmable computer control, tracks and lifts for carts, permanent recording of treatment parameters, autoclavable carts and cart washers, and shredders.

b. The disadvantages include the following:
- They are too expensive to install and maintain.
- The technology does not render waste unrecognizable and does not reduce the volume of treated waste unless a shredder or grinder is added,
- Any large, hard metal object in the waste can damage any shredder or grinder,
- Offensive odours can be generated but are minimized by proper air handling equipment,
- If hazardous chemicals such as formaldehyde, phenol, cytotoxic agents, or mercury are in the waste, these toxic contaminants are released into the air, wastewater, or remain in the waste to contaminate the landfill,
- If the technology does not include a way of drying the waste, the resulting treated waste will be heavier that when it was first put in because of condensed steam,
- Barriers to direct steam exposure or heat transfer (such as inefficient air evacuation; excessive waste mass; bulky waste materials with low thermal conductivities; or waste loads with multiple bags, air pockets, sealed heat-resistant containers, etc.) may compromise the effectiveness of the system to decontaminate waste.
- They require highly trained personnel to implement.
- There is danger of explosion

Though modern, this method was found to be too expensive to install and maintain; they are not common, and that they require highly trained personnel to implement who are hard to find. This, in addition to the above disadvantages rendered the technology not a viable option for consideration.

6.4 Comparison Of Alternatives
The proposed project is the best alternative since it will provide a modern health care waste treatment facility within the hospital leading to improved environment and reduced public health risks. According to many studies, incineration methods are most used among the technologies for health care waste treatment in most countries including Kenya. Therefore, opting for incineration against the other waste treatment options is well within the standards for HCWM.
7 POTENTIAL ENVIRONMENT AND SOCIAL IMPACTS IDENTIFICATION AND MITIGATION MEASURES

7.1 Introduction

The activities to be undertaken during implementation process and operation of the MWTI are associated with several potential impacts. The potential impacts are examined under two categories:

- Negative environmental and social impacts and
- Positive environmental and social impacts.

The various impacts in these two categories are then examined in their time of occurrence (pre-construction/design, demolition/construction, operational or decommissioning phase).

7.2 Potential Impacts During Planning and Design Phase

7.2.1 Potential Positive Impacts During Planning and Design Phase

a) Employment Opportunities

The proposed project at this stage is likely to generate employment opportunities especially for professionals such as engineers, surveyors, environmentalists, hydro-geologists and social scientists among others.

b) Creation of Awareness

Awareness improves civility in project planning, implementation and operations. This is a sure formula for ensuring there is social acceptability that leads to sustainability of the project. Awareness was done through consultations on different aspects of the project to the key stakeholders.

7.2.2 Potential Negative Impacts During Planning and Design Phase

It is envisaged that there will be minimal to no negative impacts during the planning and design stage. However, there can be poor designing and siting of especially the MWTI shelter.

Proposed Mitigation Measures

As noted from above, impacts during this phase of the project are not significant. However, the Design Team and key stakeholders shall take necessary measures to document any concerns and incorporate appropriate measures to mitigate the impacts in the final designs and implementation process. The design of the MWTI should provide for amenities such as sanitary conveniences, office space, store for materials and equipment, temporary HCW storage area well aerated but free from access by scavenging animals and birds, perimeter fencing, adequate ash pit, emergency alarm system and fire fidgeting equipment.

The design team, Environment and Social experts shall take the necessary measures to mitigate risks through:

- liaising with the relevant technical government departments in development of the designs;
- proper siting of the waste treatment facility and ensuring harmony with the hospital layout and planning;
- Ensure all the legally required permits such as getting the designs approved, acquiring the ESIA License prior to undertaking the construction activities;
- The contractor bidding documents should contain clauses on Environmental Social Health and Safety (ESHS) requirements to guide the contractor on the key requirements;
- Project Management Team (PMT) specifically the Environmental and Social Experts should ensure the design requirements are adhered to in the planning stage; and
- Ensure the stakeholders are aware of the initiation of the project and the plans under way.

7.3 Potential Impacts during Construction Phase

7.3.1 Potential Positive Impacts during Construction Phase

a) Creation of a Market for Construction materials

The contractor will utilize locally available materials for building and construction of the project. This will in turn provide a ready market for suppliers within and around the project area.

Proposed Enhancement Measures

Supply of construction materials should be given to the local suppliers on a first priority.
b) Creation of Employment Opportunities
The construction works will be a source of short-term employment opportunities to the surrounding community, either as skilled or as unskilled labourers.

Proposed Enhancement Measures
The contractor in conjunction with the local administration should give first priority to local community members so enable the community experience a direct benefit of the proposed project.

7.3.2 Potential Negative Impacts during Project Construction
The following negative impacts are associated with the construction of the proposed incinerator shed.

a) Interference with the Physical Setting
Some of the activities for shed construction will include site clearance and excavation works that will interfere with the physical setting of the project site.

Proposed Mitigation Measures:
✓ It is recommended that the excavated spoil should be disposed-off in the correct manner such as reuse in landscaping, backfilling or in road construction.
✓ It is advisable that any excavated sites be well secured before they could be refilled or before construction could be carried out to make them safe.
✓ The project designs should be such that they do not interfere with local drainage or change the topography or introduce physical changes that are not in harmony with the physical setting of the project area. Any topographical change needed should be done to avoid soil erosion or storm water drainage issues.
✓ The proponent shall as much as possible complete the works in such a way that natural aesthetics shall be retained at the locations, hence the project as a whole should be aesthetically acceptable to blend in with the surrounding environment;
✓ Restoration shall be undertaken to ensure that the original setting is as much as possible retained;
✓ Construction of the waste storage area should have adequate capacity to accommodate peak waste generated due to increased patient intake as a result of COVID-19 compared to normal average daily medical waste generated. Such a waste storage area should be constructed in a manner that does not allow leachate from the waste to find its way to the outside in cases of prolonged storage or access of the waste by scavengers with proper signage placed, and
✓ The proponent should observe measures stipulated in the ESMP for sustainable project implementation.
✓ The selected site should have three phase electricity connection and piped water within proximity in order to avoid long trenching distances.

b) Noise Generation
Any machines used for the construction activities of the project such as excavation equipment and construction vehicles delivering materials to site are likely to emit noise. The same applies to labourers to be engaged for executing the construction process.

Proposed Mitigation measures
Both the proponent and the contractor of the project shall put in place several measures that will mitigate noise pollution during the construction phase such as the following:
✓ Install portable barriers to shield compressors and other small stationary equipment where necessary;
✓ Equipment’s designed with noise control elements such as those that utilize electricity as opposed to those which utilize diesel or petrol shall be widely utilized;
✓ Limit pickup trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use, as well as encouraging workers to shut off vehicle engines whenever possible;
✓ The workers and any other person visiting the construction site shall be provided with the appropriate PPE;
✓ The contractor is encouraged to work during the day time as much as possible i.e., from 8am to 5pm. Contractor to coordinate with HF administration on acceptable days and times for work, and in particular related to any specific works that may cause more significant noise and/or for extended periods within a
day;
✓ Consider manual labour-based construction methodologies and skills as opposed to the use of heavy machinery; and
✓ Avoiding verbal noise from the workers at the site or be kept at minimal levels possible.

c) Air Pollution through Dust Emissions
Excavation and related earthworks are likely to generate dust which could potentially lead to air-borne particulate matter pollution. This is likely to affect site workers, staff in the hospital and the neighboring community members, in extreme situations leading to respiratory problems.

Proposed Mitigation measures
To ameliorate these, the following mitigations measures are proposed:
✓ The number of motorized vehicles shall be minimized as well as limit the speed to a maximum of 10km/hr;
✓ Make use of pre-marked routes to and from the project sites;
✓ Cover the stock piled construction materials and spoil generated from any excavations; and
✓ Wet all active construction areas as and when necessary to reduce dust
✓ When transporting construction material, ensure vehicles are covered with tarpaulins in order to decrease dust emissions; and
✓ Do not burn solid waste at project site

d) Disposal of Spoil
Construction works will involve earthworks and excavation which will generate some spoil. The waste spoil requires to be adequately disposed to protect the surrounding environment from being affected adversely. This can be ameliorated by observing the following measures:
✓ Re-use the excavated materials for works at the site as far as feasible to ensure that no permanent spoil dumps are created;
✓ The hospital management be consulted where loads of murram are to be used to make good of any worn-out sections of the walkways/ driveways within the hospital
✓ Properly disposing off the spoil in an area identified by the contractor team and approved by the confirmed land owners, hospital management as well as by NEMA. Care should be taken to avoid spoiling/ degrading land that could otherwise be used for productive purposes, and
✓ Spoil dumping should be away from any water resources to avoid possible water pollution from siltation.

e) Vegetation Loss
The significance of vegetation loss during the site clearance can be minimized if care is taken to site the construction away from trees. To contain the potential negative impacts related to vegetation loss, the following mitigation measures are recommended:
✓ Properly demarcate the project area likely to be affected by the construction works by the contractor;
✓ Strict control of construction vehicles to ensure that they operate only within the area to be disturbed by access routes and other works;
✓ Avoid clearance of indigenous herbaceous plants, shrubs and trees, where possible on the potential sites for screening of the visual impact;
✓ Re-plant vegetation in the disturbed surfaces.

f) Accidental Spills and Leakages
The principal chemicals to be held on the site during the construction site are likely to be paints and pest control substances to be applied on the wooden structures and foundations. Spillage of such compounds are likely to have an immediate impact upon the local water resources (through storm water) and consequently on the terrestrial and aquatic flora and fauna. This can be checked by observing the following measures:
✓ Temporal storage on site of all hazardous/toxic substance will be in safe containers, labelled with details of composition, properties and handling information including safety data sheets;
✓ Ensure proper storage of chemicals/materials, and if possible, in secondary containers just in case of accidental puncturing and away from storm water runways or exposure to weather elements such rains;
✓ Ensure proper handling, storage and disposal of waste oil, lubricants, oil filters and fuel from vehicles.
Hazardous waste would be contained and properly disposed by licensed hazardous waste handler,

- The contractor should provide appropriate PPE (medical mask, gowns, heavy duty gloves, eye protection and boots) to workers on site; and
- During the course of the construction works, temporary drainage channels should be constructed to encourage dispersal of meteoric waters.
- Contractor to have spill prevention and response procedure including all necessary equipment and that of workers are trained.
- Contractor to immediately report to HCF and Project PIU any spills or accidental releases

**g) Increased Water Demand**

Demand for water is expected to rise during the construction phase of the proposed project for use by both the construction workers and the construction works in addition to the existing demand given that the water is to be sourced from the hospital supply. To check on its sustainable use, the following mitigation measures have been proposed:

- All project stakeholders and especially proponent and contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water use; and
- The contractor water intake point should be metered so that the contractor is made to pay for water consumed or for the water wasted. Alternatively, the contractor should source water from licensed water vendors who can supply by use of water bowsers.
- Encourage prompt maintenance of water pipeline leaks.

**h) Archaeological and Other Cultural Properties**

The field studies did not identify any known archaeologically protected monuments and cultural properties in the proposed project area and therefore, there will be no impacts on them.

**Proposed Mitigation Measures**

- Should any archaeological or culturally important artifact be discovered during the construction/excavation process, the contractor should implement the **Chance Find Procedure** attached as Appendix 3 to this report.

**i) Occupation/Public Health and Safety Impacts**

Construction works unavoidably expose workers to occupational health and safety (OSH) risks such as potential accidents and injuries resulting from unintentional falls, burns from welding, electrocution and use of faulty hand tools and construction equipment. In relation to public safety, the most serious threats will be on the areas with heavy plant and equipment moving in and out of the construction site. Although there are additional measures listed in ESMF, ICWMP, LMP, and WG EHS General Guidelines, this can be mitigated through observing the following:

- The proponent to develop and commit the contractors to Site Occupational Health and Safety rules and regulations as stipulated in the Occupational Safety and Health Act (OSHA), 2007 so as to reduce on the worker's accidents and hazards;
- The contractor shall prepare an OSH plan as part of their C-ESMP for the construction works and should include input from the HCF management on potential health and safety risks associated with the construction activities and meet all OHS requirements in Kenya laws and regulations, WB ESS2, and C-HERP ESMF and LMP;
- Workers on site should be sensitized on the dangers associated with construction work;
- Contractor to provide workers with PPEs;
- Sanitary facilities to be adequately provided for workers;
- Train all workers on Safety, Health & Environment (SHE) with an aim of improving awareness;
- Barricade the active work sites to limit entry of unauthorized people. Use of screens and nets to avoid flying debris and ensure good housekeeping in the construction site is also recommended;
- All trenches or wherever soil conditions dictate should be secured against accidental entry by workers and the public;
- Have safety signage installed along the work areas;
- A safety officer shall be designated at each site and shall maintain a log of incidents (safety register) on site
✓ Task based risk assessment should be done on daily basis to assess the risks and hazards thereby prescribing the appropriate prevention measures;
✓ The contractor to ensure compliance with the provisions of WIBA 2007 for all the workers engaged
✓ Contractor shall report immediately to the HCF and C-HERP PIU any worker death or serious accident

j) Community and construction workers exposure to construction and existing burning chamber-related hazards
When the construction of the shed and installation of the WTE begins, it is strongly recommended that the hospital management with support from the county government put a complete ban on the practice of open waste burning or use of the existing burning chamber. A planned temporary engagement of a waste service provider to help treat the waste off site until construction of the shed and the MWTI has been installed.

Proposed Mitigation Measures
To mitigate this impact, the WBG EHS guidelines recommend measures to protect healthcare workers, patients and communities from general site hazards associated with site under construction through the use of both institutional and administrative controls with a focus of high-risk areas including:
   o Restricting access to active renovation sites, including screening off or fencing the entire site to limit public access that is appropriate to the site;
   o Use institutional and administrative controls with a focus of high risk areas including:
      • Provision of adequate signage and communication of risks to workers, patients, the health community and the neighbours;
      • The public shall be notified of the works through appropriate publicly accessible sites such as the main entrance to the health facility;
      • Contractors shall ensure measures on Safety and Health are enhanced such as; barricading the work areas to prevent entry of health staff and patients in the work sites, ensure safe access to the health facility if the building will be open to public;
      • The contractor shall place adequate signboards to divert staff and passengers away from the work sites;
      • Use of screens/nets to avoid flying debris, ensure good housekeeping in the construction sites;
      • All workers shall be adequately trained on the use of PPEs which they should wear at all times while at the work site;
      • Only authorized visitors shall access the site and wear basic PPE all the time;
      • Construction workers shall be aware of the sensitive nature of workplace they are operating in and advised to limit verbal noise; and
      • Contractor shall work closely with the hospital administrators to find practical ways to minimize temporal services disruption at the hospital including finding alternative off site treatment of waste

k) Potential Spread of Communicable Diseases and Other Infections
Due to increased human traffic at the site during the construction phase there is a risk of spread of infectious communicable diseases such as tuberculosis, HIV/AIDS and pulmonary infections like COVID-19. Aspects of the physical environment that promote transmission of diseases include: disposal of wastes, dust emission and inadequate ventilation which are likely to occur during the construction phase of the project. Proposed mitigation measures include the following:
   ✓ Immunize and treat affected local and migrant workers for Covid-19;
   ✓ Controlling the movement of disease carrying vectors (such as contaminated water and between people);
   ✓ Ensure personal hygiene facilities are supplied in good condition with adequate water supply; and
   ✓ Ensure awareness rising on proper sanitation and personal hygiene to promote proper health.

a) Management of COVID-19 on Site
Guidelines will be put in place for protecting workers against the risks associated with COVID-19. The procedures should cover all the people operating from the project site including before arriving on site. The hospital management and the contractor will ensure all staffs have been made aware of COVID-19 pandemic and to its mitigation measures in accordance to the MoH guidelines directives. In order to keep the workers
healthy and safe against COVID-19, the following general measures will be implemented on site:

- Observation of the recommended 1.5m social distancing
- Use of face masks by all workers
- Sanitization of all project vehicles and equipment.
- Maintenance of basic hand hygiene by regularly washing hands with soap.
- Taking of body temperature of all workers and any other personnel visiting the site. The temperature should not be above 38°C.
- Any individual with cough and have flu like symptoms of chest infections, illness such as fever, difficulty in breathing and sneezing with history of travel will be advised to go for assessment and prompt management.
- Any worker who has a history of travel or come in to contact with a person who is infected should isolate and be made to self-quarantine for 14days.
- All working areas will always be kept clean and well ventilated.
- There will be provision of hand sanitizers in all offices and other entry points.
- Train staff on signs and symptoms of COVID-19 such as respiratory hygiene, cough etiquette, hand hygiene and use of PPE.
- Place signs and posters in areas around the project site to create awareness to project workers on COVID-19;
- Regularly assess work force characteristics and adjust work practices such as avoiding concentration of more than 15 workers per site when more than one person is gathered maintain social distance of at least 2 meters;
- Provide an easily accessible GRM to raise work place concerns relating to COVID-19; such as encouraging reporting of co-workers if they show outward symptoms.

Some of the recommended weekly routine practices at the site are as follows:

- Unless there is any update from the MoH or from the government COVID-19 related posters and signs are displayed on notice boards and entry points of the site offices, reminding people on signs and symptoms of COVID-19, proper hand washing techniques, social distancing and generally on how to protect themselves and others.
- Sensitization meetings to the employees—where the staff continue to receive and communicate to them, the latest updates, requirements, and educational information meant to prevent the spread of COVID-19.

I) Increase in HIV/AIDS Prevalence and other STIs

The increase in numbers of people is likely to cause new infections around and within the construction area. This is due to the fact that the contractors, traders and workers will have money to attract women/men from the project area in a bid to solicit for sex, thereby creating avenues for spread of HIV/AIDS and other STIs. The most vulnerable members of the community are women as they don’t have access to resources necessary for production and wealth creation. This will further predispose them to sex pests and consequently to HIV/AIDS. It is recommended that the project proponent and the contractor should ensure that prevention and management of STIs occurrence as a result of social is conducted through:

- Avoiding workforce importation.
- Creating awareness and sensitization of workers and the local communities on STIs including provision of condoms to the project team and the public;
- The contractor to carry out regular HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g., erect and maintain HIV/AIDS information posters at prominent locations as specified by the PWE;
- The contractor has to ensure that staff is made aware of the risks of contracting or spreading sexually transmitted diseases.

m) Labour influx

The project is going to attract an average of 20 workers to the hospital following employment opportunities during the construction phase. To prevent COVID-19 infections and potential conflicts from local community regarding job opportunities, it is important that the contractor and the facility put mechanism in place to limit labourers from other counties (especially unskilled labour) by ensuring that:
✓ The employees are hired from within the locality hence limited movement or very short distances from their homes;
✓ The skilled labour force from far to reside in hotels in close proximity to the project area;
✓ The contractor to ensure that the hiring process is done with fairness and gender sensitivity;
✓ Effective contractual obligations for the contractor will be done with workers to adhere to the mitigation of risks against labour influx;
✓ The contractor to keep proper and updated records of the labourers on site while avoiding child and forced labour;
✓ Fair treatment, non-discrimination and equal opportunity of all labourers.
✓ All contractors and contractor workers to sign a CoC that will have provisions on individual responsibilities; and
✓ The contractor to ensure that the workers have access to a GRM.

n) Human Rights and Gender Inequalities
Women are highly vulnerable as their labour participation is often highly informal. Low-income women and women migrant workers are especially vulnerable. The COVID-19 pandemic worsened the already high prevalence of gender-based violence (GBV) due to greater economic stress in households coupled with increased social isolation. It is recommended that:
✓ Contractor to ensure no discrimination against one gender either by design or oversight during recruitment
✓ Ensure overtime is recorded and compensated.
✓ Contractor to engage an expert to conduct a training on GBV
✓ The contractor to ensure provision of the necessary basic sanitary facilities according to gender –separate for men and women.
✓ Contractor to put in place mechanisms for reporting and addressing GBV/SEA and other human rights violations.
✓ Treat women, children and men with respect regardless of race, colour, language, religion, or other status;
✓ Report any violations of the CoC to workers’ representative, HR or grievance redress committee and ensure that no employee who reports a violation to the code of conduct in good faith will be punished in any way
✓ Comply with the National Gender and Equality Act, 2011.
✓ The contractor to ensure that the workers have access and are informed about the GRM, and
✓ The contractor to develop a way of collaborating with the hospital management in handling any GBV/SEA cases that may arise.

o) Conflict and Insecurity
There is likelihood of conflict between construction workers and hospital workers, conflict between the contractor and the surrounding communities due to: labour recruitment, shared resources (road, etc.) and behaviour of workers.

Propose Mitigation Measures
▪ The contractor should explore on the possibilities of having a different access to be able to enhance security and differentiate between patients, visitors and workers accessing the site.
▪ The contractor, in conjunction with the hospital management, should hire more security personnel and ensure they are well inducted to address security related issues as they arise.
▪ Prepare labour management plan (LMP) to guide recruitment of the workers in conjunction with local leaders,
▪ Limit worker’s interaction where possible with community members, and
▪ Proper management of shared resources e.g. water.
▪ It is also recommended that the construction workers be provided with easily identifiable uniforms
▪ Raise awareness on the GRM mechanisms
▪ Adequate consultation with surrounding communities and workers regarding the construction works
▪ Contractor security personnel should sign the Code of Conduct that discourages the use of force unless for defensive purposes.
p) Sexual Exploitation and Abuse
During the construction phase, the interaction between construction workers and other project stakeholders such as hospital staff and community could lead to sexual exploitation and sexual harassment as senior workers may seek sexual favors from the juniors. It is recommended that:

▪ The contractor should adhere to projects CoC which encompasses clear warning to workers on any kind of SEA and to be signed by every worker on site;
▪ The contractor provides a mechanism where workers are free to report any sexual advances and abuse to the senior management without fear of intimidation;
▪ Share information with the community on the GRM;
▪ Share information on GBV/SEA referral support services.
▪ Contractor to ensure that staff is sensitized on GBV/SEA risk management.
▪ Ensuring that the GBV/SEA one pager is placed on strategic points of the facility
▪ Develop an Action plan of all GBV/SEA incidences to avoid recurrence

q) Grievance arising from construction activities
This is the procedure and mechanism through which relevant stakeholders specifically the project affected persons (PAPs) and hospital community members express their concerns against the project and the implementing staff. Grievances will be expressed through completion of the grievance redress form while others will be expressed verbally or through letters brought to the attention of the project PWE and the representatives through the contractor. The following measures should be undertaken to manage complaints arising from the project construction activities.

▪ Put in place grievance mechanisms e.g.,
  ○ Assigning a contractor based GRM Focal Person
  ○ Putting in place channels to allow people complaint- e.g., Telephone, Email, registers, What’s up platform for workers, suggestion box among others
  ○ Ensuring documentation of complaints- Complaints registers
▪ Raise awareness to all stakeholders including project workers on the existing GRM and sensitizing them on the need to register their dissatisfaction with the contractor or the facility
▪ Resolve complaints within the project timeline (acknowledging within 7 days and resolving within 21 days or as soon as possible (within 24 hours for GBV/SEA complaints)
▪ Ensure complaints reporting to the PMT on a monthly basis - using the guidance provided in appendix 5.

r) Labor Disputes
The contractor and suppliers for the MWTI will have workers who will be involved in the installation of the incinerator. The potential labour disputes may arise due to breach of contract regarding conditions of employment, fringe benefits, hours of work, and wages negotiated or of already agreed terms. Labor disputes may also arise due to disagreements amongst the workers and between workers and the contractors and SMP service providers.

Proposed Mitigation measures
The project shall adhere to the requirements proposed in the project LMP including:

▪ Fair terms and conditions shall be applied for project workers (guided by relevant labour laws);
▪ The project shall also have GRMs for project workers (direct workers and contracted workers) to promptly address their workplace grievances;
▪ Project shall abide by the provision of the projects LMP, and
▪ The project shall respect the workers’ right of labor unions and freedom of association;
▪ Ensure overtime is recorded and compensated.

i. Child labour risks in the sub-project
Incidence of child workers may occur during construction especially in light of the rising livelihood needs at the households' level as a result of the impacts of COVID-19 or other causes. It will be useful for the contractor management to protect the project from such incidence by ensuring that recruitment complies with the national laws and that continuous monitoring is done within the phase to ensure non-occurrence of such incidences.
Proposed Mitigation Measures

- The contractor will develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated by the Project including on SEA.
- All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behavior.
- Children under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.
- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not to invite unaccompanied children to workers' home, unless they are at immediate risk of injury or in physical danger.
- Project workers must refrain from hiring children for domestic or other labor.
- Ensure that recruitment inventory indicates the ages of employment applicants and age verification is done using the national identification cards.

7.4 Potential Impacts during the Operational Phase

7.4.1 Improper Healthcare Waste Management

During its operation, the MWTI will be treating health care waste generated from several hospital activities including sample collection from COVID-19 suspected patients, laboratory practices and procedures (performing and handling of specimen and chemicals) from activities in isolation area; which need to be disposed of in an appropriate medical waste disposal facility. Improper disposal of medical waste would have environmental and public health impacts. For example, open burning of medical wastes can result in emission of dioxins, furans and particulate matter, and result in unacceptable cancer risks.

Proposed Impact Mitigation Measures

In addition to WHO guidelines and recommendation in operation of MWTI and the specific measures to be identified in the Operation Manual for the MWTI equipment to be purchased for this project (which is yet to be identified), the following are some of the recommended impact mitigation measures:

- The hospital shall prepare, operate and maintain a Health Care Waste Management Plan (HWMP) adequate for the scale and type of activities and identified hazards consistent with the National regulations, ICWMP and the WBG EHS guidelines.
- Waste should be identified and segregated at the point of generation. The segregated waste should not be lumped together during its collection and transportation to the MWTI. Non-hazardous waste, such as paper and cardboard, glass, aluminium and plastic, should be collected separately and recycled. Food waste should be segregated and composted. Infectious and / or hazardous wastes should be identified and segregated according to its category using the colour-coded system.
- Prevention and minimization of the production of waste (integrating systems and practices to avoid the creation of waste into facility design and management and equipment and consumables purchasing).
- Reuse or recycling of wastes to the degree feasible, employing:
  - Source reduction measures such as purchasing restrictions to ensure the selection of methods or supplies that are less wasteful or generate less health care waste;
  - Recyclable products (use of materials that may be recycled either on- or off-site);
  - Good management practices rigorously applied that fosters environmentally preferable purchasing and control of chemicals and pharmaceuticals; and
  - Segregation of wastes into different categories—for control of quantities and disposal methods.
- Seal and replace waste bags and containers when they are approximately three quarters full. Full bags and containers should be replaced immediately.
- Packaging containers for sharps (safety boxes) should be puncture-proof.
- Identify and label waste bags and containers properly prior to removal.
- Transport waste to storage areas on designated trolleys /carts, which should be cleaned and disinfected.

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regularly, and never transport infectious and no-infectious waste together.

- Waste storage areas should be located within the hospital and sized to the quantities of waste generated, with the following design considerations:
  - Hard, impermeable floor with drainage, and designed for cleaning / disinfection with available water supply;
  - Secured by locks with restricted access;
  - Designed for access and regular cleaning by authorized cleaning staff and vehicles;
  - Protected from sun, and inaccessible to animals / rodents;
  - Equipped with appropriate lighting and ventilation;
  - Segregated from food supplies and preparation areas; and
  - Equipped with supplies of protective clothing, and spare bags / containers.
  - Labeled/marked with proper designation of risks

- Unless refrigerated storage is possible, storage times between generation and treatment of waste should not exceed 48 hours during cool season, 24 hours during hot season.

- All healthcare waste generated during care of COVID-19 patients should be treated as infectious waste and managed in accordance to WHO guidelines on Water Sanitation, Hygiene and Waste Management for COVID-19.

- Instructions on how to handle the infectious waste from isolation and treatment centres should be made available to the waste handlers.

- Ensure safety and health of the HCW handlers through provision of appropriate PPEs, vaccination against Hepatitis B and tetanus as well as provision of post-exposure prophylaxis (PEP).

- Customized training for the staff handling and management health care wastes contaminated with COVID-19, just to state but a few points, should include:
  - The use of appropriate / full PPEs (N95 respirators, apron, heavy duty gloves, eye protection, boots and long-sleeved gown);
  - Hand hygiene practices;
  - Waste segregation strategies and clean up procedures;
  - On-site Handling, Collection, Transport and Storage;
  - Exposure to COVID-19 infections and diseases transmission;
  - Exposure to radiation;
  - Air emission control; and
  - Fire safety measures.

- Seek operational licence from NEMA of the waste treatment incinerator to ensure compliance with the Waste Management Regulations, 2006.

### 7.4.2 Fire Risk

Without provisions for fire safety, there is a risk of fire outbreak at the hospital and at the waste treatment area with disastrous life and financial impact. Fires can start from the high voltage electricity and ignitable materials within the hospital, cigarette smoking in non-designated places or old electrical connections.

**Proposed Mitigation Measures**

- Provide sand buckets, fire extinguishers at strategic positions within the MWTI and ensure servicing is done.
- The MWTI operators shall have basic training in fire control.
- Fire emergency telephone numbers should be well displayed at the WMTI.
- The MWTI operators and management shall prepare a fire emergency management plan.
- Undertake regular fire drills targeting the MWTI operators to test on emergency preparedness and use the results to improve on the response mechanism.

### 7.4.3 Occupational Safety and Health Risks for Healthcare Workers including Health care waste workers

OHS hazards associated with handling and transport: needle-sticks injuries; injuries due to other sharps such as broken glass; ergonomic issues especially related to lifting; blood splatter during waste handling; aerosolized pathogens (disease-causing microorganisms released as aerosols or tiny droplets suspended in air) during
loading, compaction, or break up of untreated waste; breakage and spills of infectious waste bags; chemical exposure. COVID-19 is highly infectious and the risk of contraction by healthcare workers and the general public is high, if requisite training, sensitization and protective gear are not provided. The hospital environment is a potential source of infectious waste and these could pose unsafe conditions for healthcare staff. Of particular concern are health workers handling infectious waste (including sharps) without adequate protective gear, storage of sharps in containers that are not puncture-proof and operators of the MWTI. While some OSH risks will be new borne by the equipment or services introduced, most other effects are existing (hence cumulative) and would only be exacerbated by increased use of healthcare services as a result of COVID-19 cases. Some of these health and safety risk sources typical for health care staff are as listed below:

- Electrical hazard /Loose electrical installations;
- Lack of adequate lighting in workplaces;
- Lack of safe access particularly for disabled employees;
- Inadequate ventilation in rooms;
- Lack of adequate training (or neglect of safety precautions/ guidelines) in use of medical equipment;
- Dust emission;
- Handling and transportation of contaminated wastes (biological hazards);
- Malfunctioning machine controls; and
- Loose mechanical fixes;
- Misuse of equipment and materials for functions they are not designed;

These hazards have the potential to cause injury or fatalities to the healthcare workers involved in handling HCW and plant maintenance. In this regard, the MWTI operators should be trained on OSH and expected to implement the prevailing National Health Care Waste Management Plan (2016-2021) applicable to HCW treatment to avoid and minimize injuries or fatalities on their premises.

**Proposed Mitigation Measures**

- Ensure the implementation of standard precautions and transmission based precautions in line with national guidelines for IPC in healthcare facilities, the MOH waste Management plan (2016 – 2021), the Project Infection Control and Waste Management Plan and the Operational Manual and Procedures for the MWTI equipment as provided by Equipment Company. These shall be customized through the development of the health facility specific instruments, among this include facility level infection control and waste management plan that incorporate among others health and safety aspects which must contain appropriate safety measures,

- Ensure identification of risks (Job Risk Assessment) and instituting proactive measures such training the healthcare workers on the potential OSH risks in relation to COVID-19, of particular interest are the operators of the MWTI, who must be trained on the contents of the health and safety plan including on the general functioning of the treatment facility, including heat recovery and flue-gas cleaning technologies, where appropriate; Health, safety and environmental implications of treatment operations; Technical procedures for operation of the plant; Recognition of abnormal or unusual conditions; Emergency response, in case of equipment failures and alarms; Maintenance of the plant and record keeping; Surveillance of the final waste treated product

- Implementation of systemic risk management plan comprising risk prevention, evacuation of accident victims, evaluation and improvement measures.

- Provision of adequate and required PPE to health workers and enforce on use. This includes: single use medical mask, gown, Apron, eye protection, boots or closed shoes. The MWTI staff should be provided with appropriate PPE and trained on their proper use. Each of the MWTI operators should be provided and equipped with:
  - An approved unused disposable overall;
  - Safety gumboots;
  - Right grade hand gloves;
  - The recommended goggles;
  - Helmet;
  - Right grade respirators; and
  - Ear Plugs.
- Limit access to the waste treatment area only to authorised persons;
- Warning and safety signage to be placed at the areas within the MWITI site;
- All personnel involved with the HCWM process should be subjected to medical surveillance;
- Regular cleaning and disinfection at the waste treatment area;
- The waste holding area/chambers should be well sheltered from direct rainfall, sunlight and strong winds but should be adequately aired;
- All machinery and equipment involved in the waste treatment and disposal process should be washed and disinfected prior to leaving site;
- Thorough, complete and up to date records should be kept of:
  - Medical surveillance of operators for a minimum period of 5 years;
  - Maintenance of control measures for a period of 3 years;
  - Daily HCW inventory, to include documentation and inventory on waste received and treated;
  - Training given to employees in terms of HCWM and machine maintenance for as long as the employee remains at the workplace in which he is being exposed to HCW.
  - Maintenance of an accident incident log book on site.
- Provide adequately stocked first aid kit to be placed at strategic locations to allow ease of access by workers on-site, and
- Temporal waste holding area should be well sheltered from direct rainfall and strong winds but should be adequately aired and ensure regular cleaning and disinfection of the waste treatment area.

7.4.4 Environment Pollution

Waste to be generated during operation phase of the MWITI is mainly from the contaminated incineration ash. If not disposed in a properly constructed ash pit, it can be blown by wind to litter the surrounding hence interfere with the aesthetic status and has a direct effect on the surrounding community. If not well stored, the HCW awaiting treatment can lead to environmental pollution as well as public health risks if not well stored and disposed.

Proposed Mitigation Measures
- The management of Alupe Hospital shall prepare waste management plan to be implemented at the site (storage, provision of bins, site clean-up, bin clean-out schedule, etc.) to promote waste minimization and recycling.
- The hospital management shall be responsible for handling and disposal of all waste originating from the MWITI area,
- Encourage efficient use of materials to as much as possible avoid and minimize waste production.
- Ensure waste are recycled / reused before opting to dispose of.
- Designate temporal waste / garbage holding areas at site.
- Use of waste receptacles that encourage segregation to hold waste on site before its collection.
- Use of durable, long-lasting materials that shall not need to be replaced often.
- Engage NEMA registered waste contractor to dispose of hazardous waste and have waste destruction certificate and waste transfer notes.
- Waste disposal by burning shall not be permitted and signage should be erected.
- In the case of contaminated ash generated from the existing burning practice, it should be disposed off in ash pits constructed according to the MoH design specifications to avoid possible soil/water contamination.
- Depending on the service level and tasks of the health-care facility, the wastewater might contain chemicals, pharmaceuticals and contagious biological agents, and might even contain radioisotopes. A major part of liquid chemical waste is disposed of via the sink. The most important chemicals in hospital wastewater are anaesthetics, disinfectants, chemicals from laboratory activities, developer and fixer solutions from photographic film processing, and iodinated X-ray contrast media. Note that sludge and sewage from health-care facilities generated by a basic wastewater-management system should never be used for agricultural or aquaculture purposes. Effluents from the basic treatment should not be discharged into water bodies that are used nearby to irrigate fruit or vegetable crops or to produce drinking-water or for recreational purposes.
7.4.5 Community Health Risk
Improper waste disposal can cause public health risks due to environmental pollution. This could be from diminished air quality from open air burning of HCW, storm water contamination or when people rummage through raw waste stockpiles or when livestock is exposed to contaminated water. Unless mitigation recommendations are implemented, the likelihood of the impact occurring is high and if practices of open air burning of all waste types continues.

Proposed Impact Management Measures
- Targeted procurement of only required pharmaceutical, equipment, and other medical supplies in small quantities;
- Ensure regular monitoring of solid, liquid waste management practices and waste treatment;
- Ensure proper management of pharmaceutical waste by engaging a consultant to develop measures and guidelines for each facility in accordance with the National Healthcare Waste Management Plan;
- Ensure proper sewage management by constructing a toilet to serve the MWTI;
- Install appropriate drainage channels within the health facility, and specifically the around the MWTI;
- The hospital administrator should undertake regular assessment of waste generation quantities and categories to facilitate waste management planning, and investigate opportunities for waste minimization on a continuous basis;
- Separate residual chemicals from containers and dispose of the containers to reduce generation of secondary contamination especially waste water;
- Seek NEMA license for the MWTI,
- The MWTI should be secured and out of reach from any unauthorised persons;

7.4.6 Increased Water Use and Liquid Waste Generation
Once the MWTI is completed, there will be an increased demand for use in the air scrubber and for cleaning purposes. There will also be an increased liquid waste water generation that could contaminate the environment if not well managed.

Proposed Mitigation Measures
- The MWTI shelter construction should provide for a human waste/sewage and cleaning water management facility such as connecting to the existing sewage system.
- Designs have to provide for the facilities to be fitted with easy to clean tiles on their walls as well.
- Put roof gutters to collect rainwater from the facility roof during the rainy season for use in cleaning and the air scrubber,
- Encourage prompt maintenance of water pipeline leaks,
- Install water conserving taps that turn-off automatically when water is not being used,

7.4.7 Increased Energy Use
The Installation of the MWTI will lead to the increased demand for electricity energy to run as well as provision of lighting. The MWTI will also require diesel, which maybe from a minimum of 3 to a maximum of 9 liters per hour during operation. The diesel is to be used in facilitating the ignition of the incinerator’s burners. The diesel used for the startup of the incinerator, may increase the CO2 emissions or if the combustion is incomplete as a result of inefficient and ineffective burning practice may result to production of dioxins and furans from the MWTI.

Proposed Mitigation Measures
- Use load shedding on lighting system and other equipment to avoid creating peaks in demand,
- Turn lights off using automated sensors or a building automation system,
- Install a sub-meter at the MWTI to monitor power usage
- Install solar energy resources to provide for security lighting within the waste management area, and
- Health facility during the operation of the MWTI should practice effective health-care waste management through source reduction, segregation, resource recovery and recycling and training of personnel in order to aid in reduction of waste quantities requiring incineration, and so may lead to reduced emissions.
- Ensure the complete combustion of the waste to reduce production of polluting emissions, like dioxins or
furans.

- Use of best available emissions controls in order to substantially reduce the emission of carbon dioxide and other GHG.

### 7.4.8 Security concerns and conflict

Lack of proper security arrangements may predispose the HCW facility and accessories to theft, vandalism and pilferage among other security risks. Therefore, there is need to ensure adequate security arrangements as provided for under CHERP SMP.

**Mitigation measures**

- Ensuring that security personnel undertake adequate surveillance
- Ensuring that MWTI shed is locked all the time when not in use
- Stock taking of the equipment and accessories to ensure there is no loss
- Ensuring proper fencing and lighting arrangement.
- Consider public police reinforcement in incidences of escalated insecurity.
- Liaise with the national security forces especially during the transportation of equipment and materials;
- Transport of equipment and materials to the sites should be done during the day.
- Engage drivers who are appropriately trained in defensive driving.

### 7.4.9 Grievances arising from the project activities

Complaints can increase especially where there is lack of proper arrangement to dispose incineration ash spreading to the neighbourhood. Similarly, there could be increased dissatisfaction of workers over terms and working conditions of operating the MWTI and therefore the need to continuously operationalize the facility GRM mechanisms. Other complaints could be related to the location and services rendered at the hospital and other general complaints related to the management of COVID-19 by the facility.

**Mitigation measures**

- Ensuring that there is an operational GRM that is responsive to stakeholders’ concerns
- Continues stakeholder engagement to raise awareness of the project and clarify any outstanding issues
- The hospital should continue to create awareness about the GRM mechanism in place to all workers and patients
- Ensure appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants
- Ensuring that there is a workable mechanism of opening complaints reported through suggestion boxes

### 7.4.10 Gender Based Violence/Sexual Exploitation and abuse

During the C-HERP implementation period, the project will continue to monitor SEA risks in the supported healthcare sites including Alupe Hospital. The hospitals will be required to report any SEA cases affecting sub-project workers to the PMT within 24-hour of the incidence.

**Proposed mitigation measures**

- Continues sensitization of staff on SEA risk management
- Provision of GRM channels for reporting SEA cases
- Ensuring that the GBV/SEA one pager is placed on strategic points of the facility
- Document available GBV/SEA referral pathways for victims’ information and support
- Develop an Action plan of all GBV/SEA incidences to avoid recurrence
- Ensure the facility is well lid to avoid hiding places for SEA perpetrators
- Provision of separate helping places for men and women
- The hospital will continue to mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 Gender Rule.
- To include prohibition of GBV/SEA in Employees Code of conduct e.g. discouraging the use of inappropriate language or behavior, harassing, abusive, sexually provocative, demeaning or culturally inappropriate language towards women or children.
- Prohibiting sexual activity with children below 18 years—including through digital media and promoting
respect to the rule of law in respect to children’s rights.

7.5 Potential Impacts during Decommissioning Phase
At the end of the life of the proposed project as will be recommended by the PWE, the proponent may require vacating the site. The decommissioning exercise will have both positive and negative impacts.

During the decommissioning stage, demolition or renovations will be done, creating job opportunities for the youth and women. As well, rehabilitation works will be undertaken for the proposed project site to restore it to its original state. This will include replacement of the topsoil and re-vegetation, which will enhance the aesthetic value of the area. There will be need to employ people who will be involved in the reclamation of the site to near its original state.

The earth moving works during top soil replacement will lead to significant deterioration of the acoustic environment within the area and the surrounding areas. This will be as a result of the noise and vibration that will be experienced from machines and workforce being utilized. Dust will also be emitted affecting the surrounding environment. The proponent will put in place mitigation measures for noise and dust pollution during the decommissioning phase. Further complaints and feedback mechanisms should be strengthened to ensure that stakeholders can register any concerns regarding the decommissioning activities.
8. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

8.1 Introduction
The operational activities of the proposed project will have some impacts on the biophysical environment, health and safety of its staff, clients and members of the public, and socio-economic wellbeing of the local community as discussed in Chapter 7. Environmental and social management and monitoring plans (ESMMP) are important tools in aiding the management of identified and potential environmental and social risks and impacts of a project such as the one under assessment. The MoH has developed an ESMF to guide the management of the COVID-19 response projects. The project ESMF forms the basis of the ESMMP formulated through the ESIA for the proposed project of installing a MWTI. 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 ESMP will be subject to a regular regime of periodic review. Thus, it is imperative that the project proponent focuses on reducing the negative impacts and maximizing the positive impacts associated with its activities through a program of continuous improvement.

8.2 Project Preparation
- Collection of baseline data in relation to vegetation type, ambient noise or air quality for monitoring purposes;
- Training of the relevant project staff in environmental and social safeguards management;
- Verification of design details.
- Inclusion of environmental health and safety specifications in Tender Documents, and development of Code of Conduct (CoC) for the Contractor.
- The contractor should prepare an occupational/community safety and health plan and a C-ESMP for use during project construction, operation and decommissioning to be reviewed and approved by the PIU and HCF prior to start of any construction works.
- Project awareness, stakeholder consultations and feedback.

8.3 Construction Phase
- Implementation of mitigation measures through development of contractors’ E&S Management Plan (C-ESMP) that shall include elaborate approach on how to handle the following aspects: Occupational Safety and Health, HIV/ AIDS management, Infection Control and Waste Management, labour management, update of health facility Emergency Preparedness and Response, COVID-19 management, among others.
- Enforcement of Environmental and OHS requirements (conditions at the contractor’s yard, materials storage, condition of equipment, use of PPE, etc.) by the ESH Expert; as provided in the ESMP and C-ESMP;
- Environmental monitoring on air quality, noise and vibration levels by hired Air Quality Specialist as per the provision of the Air Quality Regulations of 2014 and noise and vibration levels consultant as per the Noise and Excessive Vibration Pollution (Control) Regulations, 2009;
- Collection of data on noise and vibration levels;
- Disposal of construction solid, liquid and sanitary wastes in an acceptable manner and in conformance with regulations;
- Ensuring that the Contractor is following the CoC and environmental health and safety specifications in the Tender Documents;
- Training the Contractor’s workforce in environmental and social awareness and responsibility (including COVID-19, STD/HIV/AIDS, awareness); and
- Liaison with local administration and community leaders in matters of disturbance to the public, security issues, and other matters arising from the project.
- Ensure engagement with the key stakeholders as identified in the SEP including an operational and responsive GRM system.

8.4 Operation
- Maintenance, calibration and checking of all equipment as specified in respective manuals or regulations;
- Undertaking air quality monitoring as well as monitoring any leakages and spills;
- Collection of data on water (surface and ground), noise and vibration levels, to be used for analysis and remediation where necessary;
- Disposal of incineration ash and sanitary wastes in an acceptable manner and in conformance with regulations;
- Compliance with OSH manual to be prepared by the hospital management during the project preparation phase;
- Environmental and social performance reporting (based on evaluation of data collected, investigations especially the air quality monitoring etc.);
- Observing SOP designed for the proposed MWTI; and
- Observing and implementing all the guidelines in HCWM and COVID-19 guidelines on infections spread control and other facets of human interactions vis-à-vis environmental and social bearing of these interactions.

Table 8 and 9 have been provided with detailed suggestions on how each of the main mitigation measures proposed should be implemented, the frequency, and the responsible parties during the construction and operation phases. The ESMMP table includes also the monitoring indicators and means of monitoring. It’s the experts’ proposal that this ESMMP is made available to the contractor at the tendering stage so that they can appreciate what will be involved in implementing the proposed mitigation measures and will be able to include mitigation measures in the bills of quantities.

Prior to mobilization, the Contractor should also prepare his own contractor - ESMP for review by the PWE. In his schedule of works, the Contractor must include all proposed mitigation measures, and the PWE should ensure that the schedule and ESMMPs are complied with. This also is expected to lend a sense of ownership to the Contractor, in addition to instilling in him/ her, a thorough understanding of the pertinent issues.

### 8.5 Decommissioning
Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the end of the project lifespan.

During this phase the proponent will be required to prepare a decommissioning management plan that will guide the decommissioning process and seek approvals/ permits from all the relevant government agencies such as NEMA, DOSHS, MoH, among others. Any concerns that may emanate from the decommissioning activities must be addressed appropriately.

### 8.6 Monitoring Team
The primary role of monitoring and supervision of project environmental and social compliance will fall squarely in County Government of Busia framework since they have the mandate and institutional framework enshrined in the County Government Act of 2012. Key players in the monitoring of compliance in the project will comprise MoH environmental and social specialists; the contractor; Supervising Consultant/Resident Engineer; County Administration staff which include County Director for Environment; County director for Physical Planning, Labour Officer, Community Development Officer, Physical Planner, Public Health Inspector and PWE. This expertise is to be brought on board to oversee specific aspects of the project during its implementation to ensure compliance.

In addition, the contractor will be required to have an ESMP to facilitate self-monitoring of impacts and implement recommended mitigation measures, during the construction and the defects liability phase. Under these phases, the contractor shall hire/employ an Environmental, Health Safety (EHS) Specialist as part of his employees. During the operation phase MoH Supervising Consultant, County Engineer/Public Works Engineer, County Director for Environmental and Lands Officer will play a greater role to ensure the mitigation measures are implemented.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Roles and Responsibilities</th>
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| MOH Environment and Social Specialists     | ➢ Ensure the project is screened including coordinating the impact assessment and audit.  
➢ Preparation of the E & S instruments, review of the instruments and ensure they are cleared by World Bank and disclosed prior to implementation of the project,  
➢ Ensure the environmental and social requirements are prescribed in contractors bidding documents  
➢ Periodic monitoring and surveillance of all project’s investment to ensure compliance with the mitigation measures as set out in the ESMP.  
➢ Required to provide monthly, quarterly environmental & social status of the project progress to feed into the overall project progress reports  
➢ Report immediately to the WB upon occurrence of any significant environmental, social, or health and safety incident  
➢ Advice on implementation of corrective actions wherever necessary.                                                                                                                                                                                                                                                                                                                                                                           |
| Busia County Government Public health, Housing, Lands urban Renewal, urban Planning and Projects Management | Mainly to ensure that respective activities are being done in compliance with the relevant laws, regulations and guidelines. The Hospital Administration with assistance from Busia County Technical Team will ensure that;  
➢ Contractors use good quality construction materials according to the contract specifications,  
➢ Monitoring of the project works with regard to the technical issues,  
➢ Monitoring project’s compliance implementation with the mitigation measures set out in the ESMP and other contractual requirements  
➢ Advice on implementation of corrective actions where required, and  
➢ Recruit employees according to the Employment & Labour Act.  
➢ Develop and fully implement, including all necessary resources, all operational phase EHS plans.                                                                                                                                                                                                                                                                                                                                 |
| Hospital Administration with assistance from BCG Technical Team Labour / Public health officer, Probation Officer, Labour Officer, Engineer, others | ➢ Mainly to ensure that respective activities are being done in compliance with the relevant laws, regulations and guidelines;  
➢ The Hospital Administration with assistance from County Technical Team will ensure that Contractor use the specified construction materials as specified in the bidding documents;  
➢ Mobilisation of the relevant stakeholders to keep project on track,  
➢ Monitoring of the project works with regard to the technical issues,  
➢ Monitoring project’s compliance implementation with the mitigation measures set out in the ESMP  
➢ Advice on implementation of corrective actions where required, and  
➢ Recruit employees according to the Employment & Labour Act.                                                                                                                                                                                                                                                                                                                                 |
| Contractor’s Community Liaison Officer/Sociologist. | ➢ Develop the Contractor ESMP focusing on social Issues with reference to the relevant documents i.e., client ESMP, NEMA certificate etc.  
➢ Display and educate the workers on the workers’ CoC,  
➢ Work with the Clerk of Works to address worker's and community concerns in a timely manner,  
➢ Liaise with the HIV/AIDS service provider, undertake HIV/AIDS sensitization and organize Special clinic days for the workers and the community adjacent to the site.  
➢ Create awareness on importance of child protection and GBV in relation to the project; and as appropriate organize counselling sessions for any victims, workers and the adjacent community.  
➢ Develop a Social, Gender and HIV/AIDS/ Child protection Checklist, CoC, stakeholder engagement/ communication plan and report regularly on progress  
➢ Educate the communities on the site operations and the Grievance Redress System,  
➢ Make available the telephone to facilitate community liaison.  
➢ Establish a grievance handling committee; create awareness on mechanism/committee/process.  
➢ Manage the complaints log and act as a secretary to the Grievance Committee, and  
➢ Manage the environmental and social impacts and implement mitigation measures as stipulated in the ESMP.                                                                                                                                                                                                                                                                                                                                 |
| Contractor’s HSE personnel                  | ➢ Develop the Contractor ESMP based on the Client ESMP, NEMA certificate and any contractual conditions  
➢ Develop traffic management plan,  
➢ Ensure safe storage of the materials on site,  
➢ Prepare a waste management Plan for the site and ensure its implementation  
➢ Prepare safety management plan for the site and ensure safety on site  
➢ Ensure staff regular orientation on environment management and safety drills, and  
➢ Display of the ESMP and Safety information.  
➢ Ensure availability and access of drinking water at the work site by all workers.  
➢ Develop an HSE Checklist, and report regularly on progress.  
➢ Take responsibility for mitigation and management of potential environmental and social issues on site;  
➢ Organize and maintain briefing session records and mitigation and monitoring documentation on all matters of HSE;  
➢ Respond to site inspection findings;  
➢ Receive and respond to any complaints from external parties on project issues on HSE  
➢ Institute management of accidents (if they occur), keep a log book/ sheet  
➢ Follow up on the health insurance requirements including compensation of workers related to accidents (in case of any occurrence) and report on the same appropriately.  
➢ Provide information to PIU and HCF related to HSE performance, and immediately report any significant environmental incident or worker accident.                                                                                                                                                                                                                                                                 |
| Public Works Engineer                       | Supervision and manage all the sites with regard to the administration of the Construction Contracts including E&S                                                                                                                                                                                                                                                                                                                                                                                                  |
management compliance
- Review and approve contractor ESMP and other plans
- Ensure compliance with the ESMP etc. and other laws
- Ensure that payment certificate includes environment and social costs duly endorsed,
- Responsible for approvals of the construction materials to be used in the project,
- Undertake supervision and monitoring of environmental and social issues and report to the Hospital Administrator and MoH project management team
- Clear contractors’ compliance with managing environmental and social risks before hand over of site to the hospital management.

**Directorate of Occupational Safety and Health Services (DOSHS)**
- Ensure compliance with the provisions of the OSHA of 2007 and promote safety and health of workers, and
- Issue the Certificate of Workplace for the construction site and supervise the implantation of the conditions in the certificate.

**The National Construction Authority (NCA)**
- Issuing of the construction permit for the construction site and advising the Hospital over the construction related activities on value for money.
- Ensure that the contractor is an accredited by NCA,

**National Environment Management Authority (NEMA)**
- Issuance of the EIA license, supervise and co-ordinate all matters relating to the environment and to be principal instrument of government in the implementation of policies relating to the environment.
- Carry out site inspection to ensure compliance with the ESIA conditions of approval.

**World Bank**
- Carry out the Implementation Support Mission periodically to ascertain the level of implementation in line with the Environment and Social Commitment Plan and other environment and social instruments prepared for the project namely: ESMF, LMP and SEP.

### 8.7 Key Monitoring Indicators

Key monitoring indicators proposed include:
- i. Vegetation loss and remedial restoration measures instituted;
- ii. Air quality and noise pollution control measures in place and how they operate;
- iii. Erosion control measures
- iv. Control measures for traffic accidents
- v. OHS measures for workers and the hospital staff
- vi. Community health and safety measures;
- vii. Public health observance
- viii. Waste management measures and performance
- ix. Water supply and waste water
- x. Energy Use
- xi. Material storage
- xii. Employment opportunities
- xiii. HIV/AIDS interventions and related sexual behaviors among workers, and
- xiv. Labour recruitment and management.
- xv. Grievance Redress Mechanisms
- xvi. Number and type of Stakeholder Engagement
- xvii. GBV/SEA, child labour and labour influx incidences reported on the project
- xviii. Security management
### Table 8: Environmental and Social Risks and Mitigation Measures During Planning and Designing, Construction and Operation Phases

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Potential Environment &amp; Social Risks and Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning and Designing Phase</strong></td>
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</tbody>
</table>
| Designs for the MWTI shelter | Improper designs of the MWTI shelter that lacks basic provisions, poor ventilation, inadequate capacity for waste storage area may result to health and safety risks | • Design layouts on the construction, installations and operations of the MWTI should follow the MoH approved specifications,  
• The shelter should provide for a temporary waste storage area, washrooms, hand washing basins, office, store, fire exit route, fire suppression system and emergency alarm system. The incinerator shelter should have adequate ventilation provided  
• Liaising with the relevant technical government departments in development of the designs;  
• Proper siting of the waste treatment facility and ensuring harmony with the hospital layout and planning;  
• Ensure all the legally required permits such as getting the designs approved, acquiring the ESIA License prior to undertaking the construction activities;  
• The contractor bidding documents should contain clauses on Environmental Social Health and Safety (ESHS) requirements to guide the contractor on the key requirements;  
• Project Management Team (PMT) specifically the Environmental and Social Experts should ensure the design requirements are adhered to in the planning stage; and  
• Ensure the stakeholders are aware of the initiation of the project and the plans under way. | MoH E&S Expert, CPHO, PWE, County Government |
| **Construction Phase** | | | |
| Environmental Issues | Interference with the Physical Setting | • The contractor should ensure that there is minimal disturbance to the project site area;  
• The excavation activities should not interfere with local drainage or introduce physical changes that are not in harmony with the physical setting of the project area;  
• The MWTI and associated structures should be aesthetically acceptable to blend in with the surrounding environment;  
• Construction of the waste storage area should have adequate capacity to accommodate peak waste generated due to increased patient intake as a result of COVID-19 compared to normal average monthly medical waste generated,  
• The proponent shall as much as possible complete the works in such a manner that natural aesthetics shall be retained at the locations;  
• Re-vegetation shall be undertaken to ensure that the original setting is as much as possible retained;  
• All workers participating in the construction of the MWTI shelter and associated structures should be provided with appropriate PPE and enforce use.  
• The proponent should observe measures stipulated in the ESMP for sustainable project implementation.  
• The selected site should have three phase electricity connection and piped water within proximity in order to avoid long trenching distances. | MoH E&S Expert, CPHO, PWE, County Government, Contractor |
| Vegetation Loss | | • The contractor will ensure proper demarcation of the project area to be affected by the construction works to limit vegetation removal to project site;  
• Strict control of construction vehicles to ensure that they operate only within the area to be disturbed and designated access routes;  
• Retention of grass, herbaceous plants, shrubs and trees, to the extent possible on the project site;  
• Restoration of vegetation in the disturbed surfaces should be done after completion of works. | MoH E&S Expert, CPHO, PWE, County Government, Contractor |

MoH E&S Expert, CPHO, PWE, County Government, Contractor
| Noise and vibration Generation                          | • Inform the health facility administration when constructions activities are likely to generate excessive noise,  
• Noise suppression measures must be applied to all construction equipment such as; install portable barriers to shield compressors and other small stationary equipment, cover engine of generators where necessary;  
• Use of quiet equipment (i.e., equipment designed with noise control elements and ensure the equipment used on site are well maintained, and in good working condition.  
• Limit pick-up trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use, and encourage drivers to switch off vehicle engines when off-loading materials whenever possible;  
• Provision of appropriate PPE (hearing protection ear muff) to the workers & any other person visiting the construction site especially in work areas with heightened noise levels;  
• Limit construction activities during day time i.e., between 8am and 5pm;  
• Construction workers should be made aware of the sensitive nature of the work place and advised to limit verbal and other forms of noise.  
| MoH E&S Expert, CPHO, PWE, County Government, Contractor |
| Air pollution (Dust and Emissions)                     | • Contractor to use dust screens/nets when dusty construction activities are occurring,  
• Minimizing the number of motorized vehicles on use and vehicle speeds shall be limited to a maximum of 10Km/Hr;  
• Make use of predetermined routes;  
• Periodically service all the equipment and machinery and ensure in good working condition to minimize emissions  
• Wet all active construction areas as and when necessary to reduce dust,  
• Cover the stock piled construction materials and spoil generated from the excavations,  
• Provide appropriate PPE (dust mask) to workers and enforce on use,  
• When transporting construction material, ensure vehicles are covered with tarpaulins in order to decrease dust emissions; and  
• No burning of materials should be permitted at project site.  
• Fine earth materials (sand and murrum) should be covered using tarpaulins during haulage to prevent spillage, dust and particulate matter emission.  
| MoH E&S Expert, CPHO, PWE, County Government, Contractor |
| Management and Disposal of Spoil Material Generated    | • Maximizing the re-use of excavated materials in the works as far as feasible to ensure that no permanent spoil dumps are created,  
• Spoil dumping should be away from any water resources to avoid possible water pollution from siltation,  
• Extra loads of murram should be used to make good of any worn-out sections of the walkways/ driveways within the hospital; this should be done in conjunction with the hospital management,  
• Properly disposing off the spoil in an area identified by the contractor team and approved by the land owners, hospital management as well as by NEMA; care should be taken to avoid spoiling/ degrading land that could otherwise be used for productive purposes.  
| MoH E&S Expert, CPHO, PWE, County Government, Contractor |
| Accidental Spills and Leakages                         | • Temporal storage on site of all hazardous/toxic substance will be in safe containers, labelled with details of composition, properties and handling information including safety data sheets  
• Ensure proper storage of chemicals / materials, and if possible, in secondary containers just in case of accidental puncturing; and  
• During the course of the construction works, temporary drainage channels should be constructed to  
<p>| MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor |</p>
<table>
<thead>
<tr>
<th>Occupation/Public Health and Safety</th>
<th>Occupation/Public Health and Safety Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Contractor is expected to comply with OSH rules and regulations as stipulated in the OSHA, 2007. Ensure the work place is registered by the DOSHS;</td>
<td></td>
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<tr>
<td>• The contractor shall prepare an OSH plan for the construction works management on potential health and safety risks associated with the construction activities;</td>
<td></td>
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<tr>
<td>• All construction workers should be sensitized on the health and safety requirements while at the project sites and risks associated with construction work;</td>
<td></td>
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<tr>
<td>• Workers should be provided with suitable PPE;</td>
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<tr>
<td>• Provision of clean and accessible sanitary facilities and drinking water to workers;</td>
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<tr>
<td>• Barricade the active work sites to limit entry of unauthorized people such as health staff and patients. Use of screens and nets to avoid flying debris and ensure good housekeeping at the construction site;</td>
<td></td>
</tr>
<tr>
<td>• Trenches over 0.5m deep or wherever soil conditions dictate should be secured against accidental fall by workers and the public;</td>
<td></td>
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</tbody>
</table>
| • Install information and safety signage along the work areas; |}

<table>
<thead>
<tr>
<th>Extraction and Use of Construction Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Contractor should source construction materials such as sand and ballast from registered and NEMA licensed quarry and sand mining firms and/or from suppliers, of such firms are expected to apply acceptable environmentally friendly processes in their operations;</td>
</tr>
</tbody>
</table>
| • The Contractor should adhere to the procurement plan and only order for what will be required through accurate budgeting and estimation of actual construction material requirements; |}

<table>
<thead>
<tr>
<th>Increased Water Demand</th>
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<tbody>
<tr>
<td>• The contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid water wastage; and</td>
</tr>
<tr>
<td>• Install a discharge meter at water outlets to determine and monitor total water usage and enable the contractor to pay for the water he utilizes or wastes. Alternatively, the contractor should source water from licensed water vendors who can supply by use of water browsers.</td>
</tr>
<tr>
<td>• Encourage prompt maintenance of water pipeline leaks,</td>
</tr>
<tr>
<td>• Install water conserving taps that turn-off automatically when water is not being used</td>
</tr>
</tbody>
</table>
| • Upon commissioning of the MWTI, the hospital management will be required to supply water to the facility at their cost for normal operations. The hospital is already connected to piped water supply and has large water reservoir tanks. |}

<table>
<thead>
<tr>
<th>Archaeological and Other Cultural Properties</th>
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| • Prepare and implement a Chance Finds Procedure attached as appendix 3. |}

<table>
<thead>
<tr>
<th>MoH E&amp;S Expert, CPHO, PWE, Contractor, County Government</th>
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<tbody>
<tr>
<td>MoH E&amp;S Expert, CPHO, PWE, Contractor</td>
<td>MoH E&amp;S Expert, DASM Officer, CPHO, CDE, PWE, Contractor</td>
</tr>
</tbody>
</table>
- Site should have an accessible GRM to allow workers/community to raise safety issues and propose improvements of project sites
- Electrical works and installations of the MWTI should be done by a trained and certified experienced personnel,
- Task based risk assessment should be done on daily basis to assess the risks and hazards thereby prescribing the appropriate prevention measures; and
- A safety officer shall be designated at the construction site and shall maintain a log of incidents (safety register) on site and report on any fatalities related to the project within 24 Hrs.
- All workers participating in the construction of the MWTI shelter and associated structures should be provided with adequate and appropriate PPE and enforce on use,
- The contractor complies with provisions of WIBA, 2007 for all the workers engaged;

| Community and Construction Workers Exposure to Construction and Existing Incinerator Related Hazards | Site should have an accessible GRM to allow workers/community to raise safety issues and propose improvements of project sites Electrical works and installations of the MWTI should be done by a trained and certified experienced personnel, Task based risk assessment should be done on daily basis to assess the risks and hazards thereby prescribing the appropriate prevention measures; and A safety officer shall be designated at the construction site and shall maintain a log of incidents (safety register) on site and report on any fatalities related to the project within 24 Hrs. All workers participating in the construction of the MWTI shelter and associated structures should be provided with adequate and appropriate PPE and enforce on use, The contractor complies with provisions of WIBA, 2007 for all the workers engaged; |

| Spread of communicable diseases and other infections like COVID-19 cases | Spread of Communicable Diseases and Other Infections | • Treat affected local and migrant workers which will control the spread of disease vectors (through contaminated water and between people); • Provision of adequate and accessible sanitation facilities in good condition with adequate water supply; and • Create awareness to workers on proper sanitation and personal hygiene to promote proper health Mitigation measures against COVID-19 on sites: • Wearing prescribed and appropriate PPE (masks) on site at all times. • Regularly washing hands, sanitizing and observing social distancing at all times as well as following WHO and GOK updated guidelines. |

MoH E&S Expert, CPHO, CDE, PWE, County Government, Contractor

MoH E&S Expert, CPHO, County Government, Contractor
<table>
<thead>
<tr>
<th>Increased in HIV/AIDS Prevalence and other STIs</th>
<th>Increase in HIV/AIDS Prevalence and other STIs</th>
</tr>
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<tbody>
<tr>
<td>• Hiring workers from the local community to prevent social challenges associated with labour camps;</td>
<td></td>
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<tr>
<td>• Education and sensitization of workers and the local communities on STIs, HIV/AIDS and risks of contracting or spreading of sexually transmitted diseases;</td>
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<tr>
<td>• Provision of condoms to the project team and the public;</td>
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<tr>
<td>• The contractor has to institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g., erect and maintain HIV/AIDS information posters at prominent locations;</td>
<td></td>
</tr>
<tr>
<td>• Contractor should sign CoC to guide on promoting behaviour change among the workers</td>
<td>MoH E&amp;S Expert, CPHO, Contractor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Risk Management</th>
<th>Labour influx</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The workers should be hired from within the locality hence limited movement or very short distances from their homes;</td>
<td></td>
</tr>
<tr>
<td>• The skilled labour force from far to reside in hotels in close proximity to the project area;</td>
<td></td>
</tr>
<tr>
<td>• The contractor to ensure that the hiring process is done with fairness and gender sensitivity;</td>
<td></td>
</tr>
<tr>
<td>• Effective contractual obligations for the contractor will be done with workers to adhere to the mitigation of risks against labour influx.</td>
<td></td>
</tr>
<tr>
<td>• The contractor to keep proper and updated records of the labourers on site while avoiding child and forced labour;</td>
<td></td>
</tr>
<tr>
<td>• Fair treatment, non-discrimination and equal opportunity of all labourers.</td>
<td></td>
</tr>
<tr>
<td>• Contractors and contractor worker to sign Code of Conduct with provisions of individual responsibility</td>
<td>MoH E&amp;S Expert, County Labour Officer, Contractor</td>
</tr>
</tbody>
</table>

| Human Rights and Gender Inequalities | During recruitment of workers there will be no discrimination against one gender either by design or oversight; | |
|--------------------------------------|--------------------------------------------------------|
| • There will be equal compensation for excess working hours; | |
| • Contractors will ensure there is appropriate sanitary, health and safety facilities measures, such as PPE; | |
| • Contractor to engage an expert to conduct a training on GBV/SEA; | |
| • The contractor to ensure provision of the necessary basic sanitary facilities according to the gender (separate for men and women) | |
| • Contractor to put in place mechanisms for reporting and addressing GBV/SEA and other human rights violations. | |
| • Contractor to ensure that workers have an access to a GRM for workers | MoH E&S Expert, County Gender Officer, NGEC, Contractor |

| Conflict and Insecurity | The contractor should explore on the possibilities of having a different access to be able to enhance security and differentiate between patients, visitors and workers accessing the site. | |
|-------------------------|-------------------------------------------------------------------------------------|
| • The contractor, in conjunction with the hospital management, should hire more security personnel and | |
| • MoH E&S Expert, PMT & PWE Project managers Contractor |
| **Gender based Violence/Sexual Exploitation and Abuse** | • Prepare labour management plan to guide recruitment of the workers in conjunction with local leaders,  
• Limit worker’s interaction where possible with community members, and  
• Provide water to the workers especially if it is a community water point.  
  |  
|  | • The contractor should develop a code of conduct which should encompass clear warning to workers on any kind of sexual exploitation and abuse.  
• The contractor should provide a mechanism where workers are free to report any sexual advances and abuse to the senior management without fear of intimidation.  
• The contractor should communicate to the workers that there should be no or minimal interaction with the patients.  
• Contractor to ensure that workers are sensitized on GBV/SEA management  
• Document GBV/SEA referral pathways for victim information and support  
• Ensuring that the GBV/SEA one pager is placed on strategic points of the facility  
• Develop an Action plan of all GBV/SEA incidences to avoid recurrence | MoH E&S Expert,  
County Gender Officer,  
NGEC, Contractor  
|  
| **Grievance arising from construction activities** | • A verbal or written complaint from a complainant will be received by the site supervising engineer/site agent and recorded in a complaints log that is kept on site. The log will indicate grievances, date lodged, action taken to address complaint or reasons the grievance was not acted on; information provided to complainant and date the grievance was closed.  
• Put in place grievance mechanisms e.g.,  
  - Assigning a contractor based GRM Focal Person  
  - Putting in place channels to allow people complaint- e.g., Telephone, Email, registers, What’s up platform for workers, suggestion box among others  
  - Ensuring documentation of complaints- Complaints registers  
• Raise awareness to all stakeholders including project workers on the existing GRM and sensitizing them on the need to register their dissatisfaction with the contractor or the facility  
• Resolve complaints within the project timeline (acknowledging within 7 days and resolving within 21 days or as soon as possible (within 24 hours for GBV/SEA complaints)  
• Ensure complaints reporting to the PMT on a monthly basis - using the annexed formats | MoH E&S Expert, CLO,  
County Children’s Officer, Contractor,  
PWE, Hospital Management,  
|  
| **Child labour** | • The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project including on SEA...  
• All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behaviour  
• Children under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.  
• Wherever possible, ensure that another adult is present when working in the proximity of children.  
• Not invite unaccompanied children to workers home, unless they are at immediate risk of injury or in physical danger.  
• Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.  
• Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya’s Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation | MoH E&S Expert, CLO,  
County Children’s Officer, Contractor,  
PWE, Hospital Management, |
### Conflict and insecurity
- The contractor should explore on the possibility of having a different access to be able to enhance security and differentiate between patients, visitors and workers accessing the site.
- The contractor, in conjunction with the hospital management, should hire more security personnel and ensure they are well inducted to address security related issues as they arise.
- Prepare labour management plan (LMP) to guide recruitment of the workers in conjunction with local leaders.
- Limit worker’s interaction where possible with community members, and
- Proper management of shared resources e.g water.
- It is also recommended that the construction workers be provided with easily identifiable uniforms
- Raise awareness on the GRM mechanisms
- Adequate consultation with surrounding communities and workers regarding the construction works
- Contractor security personnel should sign the Code of Conduct that discourages the use of force unless for defensive purposes.

### Labor disputes
- Fair terms and conditions shall be applied for project workers (guided by relevant labour laws);
- The project shall also have GRMs for project workers (direct workers and contracted workers) to promptly address their workplace grievances;
- Project shall abide by the provision of the projects LMP, and
- The project shall respect the workers’ right of labor unions and freedom of association;
- Ensure overtime is recorded and compensated
- Register contractor workers with WIBA

### Potential impacts during Operational phase

<table>
<thead>
<tr>
<th>Operating activities of the MWTI</th>
<th>Improper Healthcare Waste Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The hospital shall prepare operate and maintain a HWMP adequate for the scale and type of activities and identified hazards consistent with the National regulations, ICWMP and the WBG EHS guidelines.</td>
<td></td>
</tr>
<tr>
<td>- Waste should be identified and segregated at the point of generation. Non-hazardous waste, such as paper and cardboard, glass, aluminium and plastic, should be collected separately and recycled. Food waste should be segregated and composted. Infectious and / or hazardous wastes should be identified and segregated according to its category using the colour-coded system.</td>
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</tr>
<tr>
<td>- Prevention and minimization of the production of waste (integrating systems and practices to avoid the creation of waste into facility management and equipment and consumables purchasing).</td>
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<tr>
<td>- Reuse or recycling of wastes to the degree feasible,</td>
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<tr>
<td>- Seal and replace waste bags and containers when they are approximately three quarters full. Full bags and containers should be replaced immediately.</td>
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<tr>
<td>- Identify and label waste bags and containers properly prior to removal.</td>
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<tr>
<td>- Transport waste to storage areas on designated trolleys / carts, which should be cleaned and disinfected regularly.</td>
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<tr>
<td>- All HCW generated during care of COVID-19 patients should be treated as infectious waste and managed in accordance to WHO guidelines on Water Sanitation, Hygiene and Waste Management for COVID-19.</td>
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<tr>
<td>- Instructions on how to handle the infectious waste from isolation and treatment centres should be made available to the waste handlers.</td>
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<tr>
<td>- Ensure safety and health of the health care waste handlers through provision of appropriate PPEs, vaccination against Hepatitis B and tetanus as well as provision of post-exposure prophylaxis (PEP).</td>
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</tr>
<tr>
<td>- Waste storage areas should be located within the hospital and sized to the quantities of waste</td>
<td></td>
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<tr>
<td>Generated</td>
<td>• The waste holding area/chambers should be well sheltered from direct rainfall, sunlight and strong winds but should be adequately aired; and</td>
</tr>
<tr>
<td>Fire risk</td>
<td>• Seek operational licence from NEMA of the waste treatment incinerator to ensure compliance with the Waste Management Regulations, 2006.</td>
</tr>
<tr>
<td>Fire risk</td>
<td>• Provide fire extinguishers and sand buckets at strategic positions within the MWTI and ensure servicing is done.</td>
</tr>
<tr>
<td>Fire risk</td>
<td>• Key healthcare staff shall have basic training in fire control.</td>
</tr>
<tr>
<td>Fire risk</td>
<td>• Fire emergency telephone numbers should be displayed in communal areas.</td>
</tr>
<tr>
<td>Fire risk</td>
<td>• Undertake regular fire drills at to test on emergency response and use the results to improve on the response mechanism.</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• The MoH waste management strategic plan, guidelines and infection control and waste management plan should be applied, observed and customized through the development of the facility specific instruments. This should be augmented by IPC guidelines taking into account guidance from WHO and/or CDC on COVID19 infection control, sanitation and waste management;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Update and implement HCF emergency response plan.</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Ensure identification of risks (Job Risk Assessment) and instituting proactive measures</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Train the healthcare workers on the potential OSH risks in relation to COVID-19, healthcare waste management and basic maintenance of the incinerator;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Provision of adequate and required PPE to health workers and enforce on use. This includes: single use medical mask, gown, Apron, eye protection, boots or closed shoes. All the operators during operations of the MWTI shall be in the appropriate PPE such as overalls, gum boots, hand gloves and face masks and trained on their proper use,</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Provision of a system for disinfection of the multi-use PPE if not available.</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Implementation of systemic risk management plan comprising risk prevention, evacuation of accident victims, evaluation and improvement measures.</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Limit access to the waste treatment area only to authorised persons;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Warning and safety signage to be placed at the areas within the MWTI site;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• All personnel involved with the HCWM process should be subjected to medical surveillance;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Regularly cleaning and disinfection at the waste treatment area and the COVID-19 centre should;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• All machinery and equipment involved in the waste treatment and disposal process should be washed and disinfected prior to leaving site;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Air quality monitoring should be done regularly by qualified experts within 100m of the project influence area;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Provide adequately stocked first aid kit and ensure placed at strategic locations to allow ease access by workers on-site;</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Ensure good documentation and inventory on waste received and treated,</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Maintenance of an accident incident log book on site.</td>
</tr>
<tr>
<td>Occupational Safety and Health Risks for Healthcare Workers Including health workers handling waste and operating MWTI</td>
<td>• Temporal waste holding area should be well sheltered from direct rainfall and strong winds but should be adequately aired and ensure regular cleaning and disinfection of the waste treatment area</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Ensure regular monitoring of solid, liquid waste management practices and waste treatment;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Install appropriate drainage channels within the hospital;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• The hospital administrator should undertake regular assessment of waste generation quantities and</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Ensure routine monitoring and evaluation of solid, liquid waste management practices and waste treatment;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Install appropriate drainage channels within the hospital;</td>
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<tr>
<td>Community Health Risk</td>
<td>• The hospital administrator should undertake regular assessment of waste generation quantities and</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Implement systems for disinfection of the multi-use PPE if not available.</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Implementation of systemic risk management plan comprising risk prevention, evacuation of accident victims, evaluation and improvement measures.</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Limit access to the waste treatment area only to authorised persons;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Warning and safety signage to be placed at the areas within the MWTI site;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• All personnel involved with the HCWM process should be subjected to medical surveillance;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Regularly cleaning and disinfection at the waste treatment area and the COVID-19 centre should;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• All machinery and equipment involved in the waste treatment and disposal process should be washed and disinfected prior to leaving site;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Air quality monitoring should be done regularly by qualified experts within 100m of the project influence area;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Provide adequately stocked first aid kit and ensure placed at strategic locations to allow ease access by workers on-site;</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Ensure good documentation and inventory on waste received and treated,</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Maintenance of an accident incident log book on site.</td>
</tr>
<tr>
<td>Community Health Risk</td>
<td>• Temporal waste holding area should be well sheltered from direct rainfall and strong winds but should be adequately aired and ensure regular cleaning and disinfection of the waste treatment area</td>
</tr>
<tr>
<td>Categories</td>
<td>Actions</td>
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</tr>
<tr>
<td>Waste Management Planning</td>
<td>▪ Separate residual chemicals from containers and dispose of the containers to reduce generation of secondary contamination especially waste water; ▪ Seek NEMA license for the MWTI ▪ The MWTI should be secured to keep it out of reach from scavengers; ▪ Ensure the HCW generated in the hospital facilities are well disinfected, treated and safely disposed of; ▪ Community should be sensitized on infection prevention and control measures related to COVID-19.</td>
</tr>
<tr>
<td>Increased Water Use and Liquid Waste Generation</td>
<td>▪ The facility once constructed will be connected to the sewerage line. ▪ Designs have to provide for the MWTI to be fitted with easy to clean surfaces as well. ▪ Encourage prompt maintenance of water pipeline leaks, ▪ Install water conserving taps that turn-off automatically when water is not being used; The hospital is already connected to piped water supply and has a large water reservoir tank.</td>
</tr>
<tr>
<td>Increased Energy Use</td>
<td>▪ Use load shedding on lighting system and other equipment to avoid creating peaks in demand, ▪ Turn lights off using automated sensors or a building automation system, ▪ Install Sub-meter at the MWTI to monitor power usage, ▪ Health facility during the operation of the MWTI should practice effective health-care waste management through source reduction, segregation, resource recovery and recycling and training of personnel in order to aid in reduction of waste quantities requiring incineration, and so may lead to reduced energy use and so lead to reduction of levels of emissions. ▪ Ensure the complete combustion of the waste to reduce production of polluting emissions, like dioxins or furans. ▪ Use of best available emissions controls in order to substantially reduce the emission of carbon dioxide and other GHG.</td>
</tr>
<tr>
<td>Security and Conflict</td>
<td>▪ The hospital will install CCTV cameras at strategic point to enhance security ▪ The security guards should ensure proper surveillance of the facility ▪ Security guards should be sensitized on the CoC and the provision of the Security management plan</td>
</tr>
<tr>
<td>Social Risk Management</td>
<td>▪ The hospital will mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 Gender Rule. ▪ The existing community structures headed by location chiefs should be involved in local labour hire, emphasize the requirement of hiring women, youth and people with disability. ▪ Protecting Human Risk Areas Associated with, Disadvantaged Groups, interfering with Participation Rights and interfering with Labour Rights. ▪ To include promotion of human rights, including gender equality and equity in Employees Code of conduct ▪ Ensure safe employment for women, including training for all staff on SH COC, sex-disaggregated latrines, regular consultation with female employees and other measures§ to ensure physical safety and dignity of female employees ▪ GBV constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV including grooming are unacceptable be it on the work site, the work site surrounding, or at worker’s camps. Prosecution of those who commit to be pursued.</td>
</tr>
</tbody>
</table>
• Treat women and children (persons under the age of 18) with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
• Do not use language or behaviour towards women or children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
• Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.

Child welfare and protection

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

Increased grievances

• The hospital should create awareness about the GRM mechanism in place to all workers and patients.
• Ensure appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants.
• Avoid the need to resort to judicial proceeding, unless the complainant decides that the process provided has failed.
• Ensure those providing services the health care workers, uniformed services providers etc. can lodge a complaint securely and confidentially.

Decommissioning phase

| Equipment/ Machine decommissioning | Soils Degradation | • All machinery, equipment, structures and partitions that will not be used for other purposes must be removed, fumigated, containerized for disposal by NEMA licensed waste handler.
• All machinery, equipment, structures and partitions that will be used for other purposes must be removed, fumigated, packaged and containerized for relocation.
• Where recycling/ reuse of the, equipment, implements, structures, partitions and other demolition waste is not possible, the materials should be taken to a licensed waste disposal site. | MoH, DOSH, MoH E&S Expert, CDE, CPHO, PWE |

| Decommissioning of Structures | Degradation of soils / Pollution of water resources / air pollution | • All foundations must be removed and recycled, reused or disposed of at a licensed disposal site.
• All anchorages plinths must be removed, recycled, reused or disposed by NEMA licensed waste handler.
• Use dust screens and nets to mitigate on dust/particulate matter. | MoH E&S Expert, CDE, CPHO, PWE |

| Demolition Wastes | Pollution of soils / air pollution / water resources pollution | • Use an integrated solid waste management system, i.e., through hierarchy of options 1. Source reduction 2. Recycling, 3 Composting and reuse 4. Combustion. 5 Sanitary land-filling. | MoH E&S Expert, CDE, and NMS CPHO, PWE |
**Project Decommissioning**

- Provide appropriate waste skips that encourage waste segregation
- Ensure proper waste collection, storage and disposal of waste generated
- Donate reusable demolition waste
- Properly dispose of the demolition debris when no longer considered useful

**OHS/ Public Safety**

- The decommissioning Contractor should have a well-developed EHS plan for the decommissioning exercise certified by a Qualified EHS Officer.
- A qualified EHS officer should be stationed at the decommissioning site during the entire decommissioning period to ensure compliance to Health and safety plan.
- Ensure the workers are provided with adequate and appropriate PPE (dust mask, ear plugs, helmets, gloves) on site and enforce on use
- While working at height provide safety harnesses and scaffolding equipment
- Fence off/ barricade the site prior to demolition to minimize health and safety risks
- Restrict demolition activities during day time between 0080hrs to 1700 hrs.
- Provide adequately well stocked first aid kit and ensure one of the workers can administer first aid.

**MoH E&S Expert, CDE, and CPHO, PWE**

**Site Rehabilitation**

- Pollution of soils /water resources pollution/ Air pollution
- Backfilling excavation sites

- Proper treatment of the site should be carried out (Decontamination)
- Ensure the contractors backfill and rehabilitate excavated sites before final payment

**MoH E&S Expert, CDE, and NMS CPHO, PWE**

**Re-vegetation**

- Degradation of soils / water resources pollution/ air pollution

- Implement an appropriate re-vegetation programme to restore the site to its original status
- Consider use of indigenous plant species in re-vegetation
- Trees should be planted at suitable locations so as to interrupt slight lines (screen planting), between the adjacent residential area and the development.

**Social risk management**

- Grievances arising from project decommission

- Ensure there is an operational GRM that is responsive to stakeholders’ concerns
- Inclusive stakeholder engagement to raise awareness of the project decommissioning and clarify issues and consider the input of the affected and interested parties in the process
- The hospital should continue to create awareness about the GRM mechanism in place to all workers and patients
- Ensure appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants
- Ensuring that there is a workable mechanism of opening complaints reported through suggestion boxes
- Document and report on all sub-project related grievances

**Gender Officer, MoH, Project Manager, Hospital Management, Hospital, GRMFP**

**Note:** This is a partial table covering the E&S risks, impacts and mitigation measures. Reference could be made to other CHERP project documents (including the LMP, ICWMP and ESMF) for additional mitigation measures.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure(s)</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Estimated cost of implementation (KShs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Phase</strong></td>
<td></td>
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<tr>
<td>Soil resources</td>
<td>Soil erosion</td>
<td>Re-vegetation through grassing</td>
<td>After construction</td>
<td>Contractor, MoH E&amp;S Expert and ASCH management, CPHO, PWE</td>
<td>100,000.00</td>
</tr>
<tr>
<td></td>
<td>Soil compaction by equipment and machinery</td>
<td>Restrict construction vehicle movements to defined tracks/paths</td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH management, CPHO, PWE</td>
<td></td>
</tr>
<tr>
<td><strong>Water Quality and Resource use efficiency</strong></td>
<td>Contamination of local water resources from inappropriate wastewater discharges</td>
<td>Direct wastewater from site activities to a sump from where suspended solids can be deposited before discharge to local drainage systems</td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH management, CPHO, PWE</td>
<td>90,000.00</td>
</tr>
<tr>
<td></td>
<td>Contamination of water resources from spillages and leakages</td>
<td>Institute spill prevention and response procedures</td>
<td>Continuous</td>
<td>Contractor</td>
<td>60,000</td>
</tr>
<tr>
<td></td>
<td>Increased demand on local water resources</td>
<td>Ensure efficient use of water in construction activities</td>
<td>Monthly</td>
<td>Contractor</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Construction materials usage</strong></td>
<td>Depletion of natural resources</td>
<td>Ensure efficient use of building materials</td>
<td>Continuous</td>
<td>Contractor</td>
<td>0.00</td>
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<tr>
<td></td>
<td></td>
<td>Optimize materials through reuse</td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH management, CPHO, PWE</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Building materials</strong></td>
<td></td>
<td>Efficient use of building materials</td>
<td>Monthly</td>
<td>Contractor, MoH E&amp;S Expert and ASCH management, CPHO, PWE</td>
<td>100,000.00</td>
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<tr>
<td></td>
<td></td>
<td>Optimize materials reuse</td>
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<tr>
<td><strong>Air Quality (Dust and Emissions)</strong></td>
<td>Nuisance and adverse health due to dust emission</td>
<td></td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</td>
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<td></td>
<td>Adverse health impacts as a result of emissions of fumes from vehicles,</td>
<td></td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</td>
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<td></td>
<td></td>
<td>Use of low emission machinery that use electricity as source of power or use manual labour;</td>
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<td></td>
<td>Periodically Service all the equipment and machinery used during construction phase</td>
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<tr>
<td><strong>Noise and Vibration</strong></td>
<td>Nuisance and adverse health impacts from high noise and vibration levels</td>
<td></td>
<td>While at site and during operation of heavy machines</td>
<td>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</td>
<td>50,000.00</td>
</tr>
<tr>
<td><strong>Waste Management</strong></td>
<td>Health and safety hazards and environmental pollution from poor management of wastes</td>
<td></td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</td>
<td>50,000.00</td>
</tr>
<tr>
<td>Social Concerns during construction and operational phases</td>
<td>Insecurity / public safety</td>
<td>Continuous</td>
<td>The proponent ASCH /MoH, PWE</td>
<td>30,000.00</td>
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<tr>
<td>Exclusion (ethnicity, gender, age, location and disability</td>
<td>• Having guards dedicated to the project sites and fencing off the project sites</td>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH PHO/CLO</td>
<td>30,000.00</td>
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<tr>
<td></td>
<td>• Public awareness of the project requirements,</td>
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<td></td>
<td>• Stakeholder engagement and collective reasoning,</td>
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<td></td>
<td>• Implementation of the requirements of the LMP, and the GBV</td>
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<td></td>
<td>Action Plan.</td>
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<tr>
<td>Gender based Violence/Sexual Exploitation and Abuse</td>
<td>• The contractor should develop a code of conduct which should encompass clear warning to workers on any kind of sexual exploitation and abuse.</td>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH PHO/CLO</td>
<td>30,000.00</td>
<td></td>
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<td></td>
<td>• The contractor should provide a mechanism where workers are free to report any sexual advances and abuse to the senior management without fear of intimidation.</td>
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<td></td>
<td>• The contractor should communicate to the workers that there should be no or minimal interaction with the patients.</td>
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<tr>
<td>Lack of access to grievance redress mechanism</td>
<td>• A verbal or written complaint from a complainant will be received by the site supervising engineer/site agent and recorded in a complaints log that is kept on site. The log will indicate grievances, date lodged, action taken to address complaint or reasons the grievance was not acted on; information provided to complainant and date the grievance was closed.</td>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH CLO, PHO, PWE Contractor</td>
<td>30,000.00</td>
<td></td>
</tr>
<tr>
<td>Labour influx</td>
<td>• Effective community engagement and strong grievance mechanisms on matters related to labour, including sexual exploitation and abuse</td>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH CLO, PHO, PWE Contractor</td>
<td>30,000.00</td>
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</tr>
<tr>
<td>Child labour</td>
<td>• Ensure no child of below 18 years is seen on site</td>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH CLO, PHO, PWE Contractor</td>
<td>30,000.00</td>
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<td></td>
<td>• Ensure contractor sign a CoC for child protection</td>
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<tr>
<td>Public health and safety hazards which may be potential risk to contract communicable diseases and infectious diseases like COVID-19 at the site</td>
<td>• Treat affected local and migrant workers to control the spread of disease vectors (through contaminated water and between people); Provision of adequate and accessible sanitation facilities in good condition with adequate water supply; Create awareness to workers on proper sanitation and personal hygiene to promote proper health; and To mitigate risk from food related contamination amongst construction workers, food supplies will be from the vendors with public health certificate.</td>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH CLO, PHO, PWE Contractor</td>
<td>30,000.00</td>
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<td>• Put in place all infectious diseases including COVID-19 prevention and containment measures.</td>
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<td>• Publish health and safety information including site rules at the site</td>
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<td>• Ensure observance of public and community health and safety.</td>
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</tbody>
</table>
| General Health and Safety | Accidents, incidents causing harm or sickness due to existence of health and safety hazards on site | Provision and use of proper personal protective equipment  
• Provision of first aid kits  
• Undertake first aid training and awareness creation on OHS  
• OHS policy strategically displayed  
• Erecting hazards warning signs on site | Continuous | MoH E&S Expert, ASCH CLO, PHO, PWE, Contractor | 250,000 once |
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<tbody>
<tr>
<td><strong>Operational Phase</strong></td>
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</tbody>
</table>
| Efficient use of resources | Surface run-off and waste water management | • Embankment, re-vegetation, proper drainage systems  
• Efficient use of water resources  
• Spill prevention procedures and response plan | Continuous | ASCH management, PHO | 150,000.00 |
| Polluton of surface and ground water | • All liquid waste from the MWTI should be directed to the hospital septic/sewerage system  
• Installation of pre-treatment chambers before discharge to hospital septic system | Continuous | ASCH management, hospital PHO | |
| Increased use of Energy and indoor air pollution | • Efficient energy use and use of clean energy as back up source of power  
• Install a meter to monitor power consumption  
• Switch of lights when not in use | Continuous | ASCH management, hospital PHO | |
| Air Quality (Dust and Emissions) | Emissions arising from MWTI combustion | • Use of air pollution control devices through installation of scrubbers/filters to the incinerator to remove particulate matter and other gases  
• Train the MWTI operators on best operational practices  
• Periodic operation and maintenance of the MWTI  
• Conduct periodic air quality monitoring of the MWTI area | Continuous | ASCH management  
Hospital, hospital PHO & Biomedical Engineer | 50,000 |
| Waste Management | Healthcare Waste generated from the health facility | • Ensure appropriate and adequate segregation of HCW waste at source  
• Ensure appropriate on-site transportation of HCW to Waste treatment area,  
• Ensure proper records of waste received from the immediate health facility and other health facilities,  
• Appropriate healthcare waste storage area free from vermins  
• Ensure efficient treatment of healthcare waste  
• Appropriate transportation of ash to disposal site that is if ash pit not within the hospital. | Continuous | Health facility manager, ASCH PHO & Biomedical engineer | 200,000 |
| General Health and Safety | Occupational and public health hazards | • Ensure provision of and appropriate use personal protective equipment  
• Erecting warning signs on site  
• Regular medical check-up for healthcare waste handlers and vaccination such as against Hepatitis A, B and tetanus and COVID-19 | Continuous | Proponent, ASCH PHO, CLO & biomedical engineer | 1,500,000 |
• Provision of appropriate sanitary facilities,
• Provision of first aid kits
• Undertake awareness creation on OHS to the healthcare workers and the MWTI operators in relation to COVID-19 and first aid training
• OHS policy strategically displayed
• SOPs for MWTI operation displayed
• Ensure observance of public and community health and safety
• Ensure thorough general cleanliness and disinfection of the facility among other appropriate housekeeping and ventilation practices.
• Train MWTI operators on operation and maintenance

Fire preparedness
Operation of health facilities and MWTI plant
• Conduct regular drills on fire emergency response and evacuation.
• Conduct regular inspection of fire-fighting equipment.
• Install an adequate number of fire-fighting equipment and systems including portable fire extinguishers and hose reels

Continuous
ASCH PHO, CLO & biomedical -engineer

Total cost
2,780,000

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Potential Impact</th>
<th>Mitigation Measure (s)</th>
<th>Monitoring Indicators</th>
<th>Frequency of Monitoring</th>
<th>Responsibility</th>
<th>Estimated cost of implementation (KShs)</th>
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<td></td>
<td>Construction Phase</td>
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<tr>
<td>Soil resources</td>
<td>Soil erosion</td>
<td>Re-vegetation through grassing</td>
<td>Extent of vegetation cover; % of bare ground around the project site</td>
<td>After construction</td>
<td>Contractor, MoH E&amp;S Expert and ASCH management, CPHO, PWE</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provision of silt traps during construction as necessary</td>
<td>Presence of silt traps</td>
<td>Continuous</td>
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<td>0.00</td>
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<tr>
<td></td>
<td>Soil compaction by equipment and machinery</td>
<td>Restrict construction vehicle movements to defined tracks/paths</td>
<td>Percentage of actual compacted area vis-à-vis the proportion that would inevitably be compacted even when caution is applied</td>
<td>Continuous</td>
<td></td>
<td>0.00</td>
</tr>
</tbody>
</table>
| Water Quality and Resource use efficiency | Contamination of local water resources from inappropriate wastewater discharges | Direct wastewater from site activities to a sump from where suspended solids can be deposited before discharge to local drainage systems | • Existence and operation of a wastewater sump at the site  
  • Size and type of drainage system | Continuous | Contractor, MoH E&S Expert and ASCH management, CPHO, PWE | 50,000.00 |
|        | Contamination of water resources from spillages and leakages | Institute spill prevention and response procedures | Established procedures for identified hazardous materials | Continuous | Contractor | 0,000 |
|        | Increased demand on local water resources | Ensure efficient use of water in construction activities | • Records of amount of water used monthly. | Monthly |               | 0.00 |

Table 10: Environmental and Social Monitoring Plan
<table>
<thead>
<tr>
<th>Construction materials usage</th>
<th>Depletion of natural resources</th>
<th>Ensure efficient use of building materials</th>
<th>Continuous</th>
<th>Contractor</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Optimize materials through reuse</td>
<td>• Records of building materials tracking</td>
<td>Continuous</td>
<td>Contractor</td>
<td>0.00</td>
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<tr>
<td></td>
<td></td>
<td>• Financial savings in subsequent bills</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Quality (Dust and Emissions)</th>
<th>Nuisance and adverse health due to dust emission</th>
<th>• Wetting of project site to reduce dust</th>
<th>Continuous</th>
<th>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</th>
<th>100,000.00</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>• Put up dust screen/nets around the construction and renovation sites,</td>
<td>• Air quality measurement to determine amounts of dust at site</td>
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<td></td>
<td>• Provision of PPE (dust masks) for the workers,</td>
<td>• Visual observation</td>
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<td></td>
<td>• Covering all trucks delivering construction material</td>
<td>• Complains received from staff</td>
<td></td>
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<td></td>
<td>• Covering of stock piled construction material</td>
<td>• Air quality measurements to determine air borne particulate matter.</td>
<td></td>
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<tr>
<td>Adverse health impacts as a result of emissions of fumes from vehicles,</td>
<td>• Use of low emission machinery that use electricity as source of power or use manual labour;</td>
<td>• Records of serviced construction vehicles</td>
<td></td>
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<td></td>
<td>• Periodically Service all the equipment and machinery used during construction phase</td>
<td>• Type of machinery being used,</td>
<td></td>
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<tr>
<td></td>
<td>• Air quality measurements to determine amounts of dust at site</td>
<td>• Visual observation of emissions</td>
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<td></td>
<td>• Air quality measurements to determine air borne particulate matter.</td>
<td>• Complains received from staff</td>
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<tr>
<td></td>
<td>• Records of serviced construction vehicles</td>
<td>• Periodically Service all the equipment and machinery used during construction phase</td>
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<td></td>
<td>• Type of machinery being used,</td>
<td>• Visual observation</td>
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<td></td>
<td>• Air quality measurements to determine amounts of dust at site</td>
<td>• Complains received from staff</td>
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<tr>
<td></td>
<td>• Air quality measurements to determine air borne particulate matter.</td>
<td>• Records of serviced construction vehicles</td>
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</table>

<table>
<thead>
<tr>
<th>Noise and Vibration</th>
<th>Nuisance and adverse health impacts from high noise and vibration levels</th>
<th>• Planned schedules for Construction during day time;</th>
<th>Continuous</th>
<th>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</th>
<th>30,000.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Using silencers in heavy machines,</td>
<td>• schedules of activities</td>
<td></td>
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<tr>
<td></td>
<td>• Use of PPE such as ear muffs</td>
<td>• Noise and vibrations measurement in Decibels</td>
<td></td>
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<tr>
<td></td>
<td>• Operation and maintenance of equipment used on site</td>
<td>• Complains from workers and staff</td>
<td></td>
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<tr>
<td></td>
<td>• Air quality measurements to determine amounts of dust at site</td>
<td>• Records of machine operation and maintenance</td>
<td></td>
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</tr>
<tr>
<td>Waste Management</td>
<td>Health and safety hazards and environmental pollution from poor management of wastes</td>
<td>• Provide appropriate solid waste receptacles on site</td>
<td>Continuous</td>
<td>Contractor, MoH E&amp;S Expert and ASCH PHO, PWE</td>
<td>30,000.00</td>
</tr>
<tr>
<td></td>
<td>• Sensitize workers on appropriate solid waste management</td>
<td>• Availability of waste receptacles</td>
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<tr>
<td></td>
<td>• Engagement of a NEMA licensed contractor to collect and dispose the waste</td>
<td>• Waste streams and volumes generated on site including hazardous waste - used oil, waste paints</td>
<td></td>
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<tr>
<td>Social Concerns during construction and operational phases</td>
<td>Insecurity/public safety</td>
<td>• Having guards dedicated to the project sites and fencing off the project sites</td>
<td>Continuous</td>
<td>The proponent ASCH/MoH, PWE</td>
<td>30,000.00</td>
</tr>
<tr>
<td>Exclusion (ethnicity, gender, age, location and disability</td>
<td>Public awareness of the project requirements,</td>
<td>Presence of a security Personnel. Fence around the project site;</td>
<td></td>
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<tr>
<td>Gender based</td>
<td>Stakeholder engagement and collective reasoning,</td>
<td>Minutes of public awareness/stakeholder engagements carried out</td>
<td></td>
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<tr>
<td></td>
<td>Implementation of the requirements of the LMP, and the GBV Action Plan.</td>
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<td></td>
<td></td>
<td>Continuous</td>
<td></td>
<td>MoH E&amp;S Expert, ASCH PHO/CLO</td>
<td>30,000.00</td>
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<td></td>
<td>Continuous</td>
<td></td>
<td>MoH E&amp;S Expert,</td>
<td>30,000.00</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
<td>Person/Entity Responsible</td>
<td>Cost</td>
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</tbody>
</table>
| Violence/Sexual Exploitation and Abuse                               | which should encompass clear warning to workers on any kind of sexual exploitation and abuse.  
• The contractor should provide a mechanism where workers are free to report any sexual advances and abuse to the senior management without fear of intimidation.  
• The contractor should communicate to the workers that there should be no or minimal interaction with the patients. | ASCH PHO/CLO                                                                             |        |
| Lack of access to grievance redress mechanism                        | • A verbal or written complaint from a complainant will be received by the site supervising engineer/site agent and recorded in a complaints log that is kept on site. The log will indicate grievances, date lodged, action taken to address complaint or reasons the grievance was not acted on; information provided to complainant and date the grievance was closed.  
• Grievance logs  
• No of resolved cases  
• No of escalated cases | Continuous MoH E&S Expert, ASCH, CLO, PHO, PWE Contractor | 30,000.00 |
| Labour influx                                                        | • effective community engagement and strong grievance mechanisms on matters related to labour, including sexual exploitation and abuse  
• Copies of employment contract segregated by gender | Continuous MoH E&S Expert, ASCH, CLO, PHO, PWE Contractor | 30,000.00 |
| Child labour                                                         | • Ensure no child of below 18 years is seen on site  
• Ensure contractor sign a CoC for child protection  
• The work force registry with details of age | Continuous MoH E&S Expert, ASCH, CLO, PHO, PWE Contractor | 30,000.00 |
| General Health and Safety during construction & operation            | Public health and safety hazards which may be potential risk to contract communicable diseases and infectious diseases like COVID-19 at the site  
• Treat affected local and migrant workers to control the spread of disease vectors (through contaminated water and between people);  
• Provision of adequate and accessible sanitation facilities in good condition with adequate water supply;  
• Create awareness to workers on proper sanitation and personal hygiene to promote proper health; and  
• To mitigate risk from food related contamination amongst construction workers, food supplies will be from the vendors with public health certificate.  
• Put in place all infectious diseases including COVID-19 prevention and containment measures.  
• Publish health and safety information including site rules at the site  
• Ensure observance of public and community health and safety  
• Visual inspection and observation of functionality of sanitary facilities | Continuous MoH E&S Expert, ASCH, CLO, PHO, PWE, Contractor | 50,000  |
- Ensure thorough general cleanliness and disinfection of the facility among other appropriate housekeeping and ventilation practices.

**Accidents, incidents causing harm or sickness due to existence of health and safety hazards on site**
- Provision and use of proper personal protective equipment
- Provision of first aid kits
- Undertake first aid training and awareness creation on OHS
- OHS policy strategically displayed
- Erecting hazards warning signs on site
- Undertake awareness creation on OHS to the healthcare workers and the MWTI operators in relation to COVID-19 and first aid training
- SOPs for MWTI operation displayed
- Train MWTI operators on operation and maintenance and general health and safety
- Display of OHS policy First aid training records, list of first aiders and those of health and safety committee members.
- Well stocked first aid kit

**Fire preparedness Operation of health facilities and MWTI plant**
- Conduct regular drills on fire emergency response and evacuation.
- Conduct regular inspection of fire-fighting equipment.
- Install an adequate number of fire-fighting equipment and systems including portable fire extinguishers and hose reels
- Presence of fire fighting equipment
- Statistical records and safety reports
- Serviced fire extinguishers.

**Operational Phase**

**Efficient use of resources Surface run-off and waste water management**
- Embankment, re-vegetation, proper drainage systems
- Efficient use of water resources
- Spill prevention procedures and response plan
- Extent of vegetation cover; % of bare ground
- Amount of water used monthly; water saving measures instituted at the site
- Presence of silt traps

**Pollution of surface and ground water**
- All liquid waste from the MWTI should be directed to the hospital septic system
- Installation of pre-treatment chambers before discharge to hospital septic system
- Established procedures for identified hazardous materials

**Increased use of Energy and indoor air pollution**
- Efficient energy use and use of clean energy as back up source of power
- Install a meter to monitor power consumption
- Switch of lights when not in use
- Power usage bills monthly; energy saving measures instituted, presence of a meter

**Air Quality (Dust and Emissions)**
- Use of air pollution control devices through installation of scrubbers/filters to the incinerator
- Air quality measurement to determine amounts of dust at

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<table>
<thead>
<tr>
<th>Period</th>
<th>Activity</th>
<th>Responsible Party</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Continuous</td>
<td>MoH E&amp;S Expert, ASCH, CLO, PHO, PWE, Contractor</td>
<td>50,000 once</td>
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<tr>
<td>Continuous</td>
<td>ASCH PHO, CLO &amp; biomedical -engineer</td>
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<tr>
<td>Continuous</td>
<td>ASCH management, PHO</td>
<td>50,000.00</td>
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<tr>
<td>Construction</td>
<td>ASCH management, hospital PHO</td>
<td></td>
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<tr>
<td>Continuous</td>
<td>ASCH management, hospital PHO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous</td>
<td>ASCH management Hospital, hospital</td>
<td>50,000</td>
<td></td>
</tr>
</tbody>
</table>
| Waste Management | Healthcare Waste generated from the health facility | to remove particulate matter and other gases  
- Train the MWTI operators on best operational practices  
- Periodic operation and maintenance of the MWTI  
- Conduct periodic air quality monitoring of the MWTI site  
- Visual observation  
- Complains received from staff | PHO & Biomedical Engineer |
|-----------------|--------------------------------------------------|----------------------------------|
|                 | Ensure appropriate and adequate segregation of HCW waste at source  
- Ensure appropriate on-site transportation of HCW to Waste treatment area,  
- Ensure proper records of waste received from the immediate health facility and other health facilities,  
- Appropriate healthcare waste storage area free from vermins  
- Ensure efficient treatment of healthcare waste  
- Appropriate disposal of ash to ash pit or transportation to disposal site. | Availability of waste receptacles  
- Waste streams and volumes generated on site including hazardous waste - used oil, waste paints  
- Waste tracking documents | Continuous  
PHO & Biomedical Engineer |
| Total cost | | 200,000 |
| | | **790,000** |
9.0 CONCLUSION AND RECOMMENDATION

9.1 Conclusion
The identified potential negative impacts of the proposed project could be mitigated with the suggested environmental and social mitigation measures provided. Having considered the data collected, analyzed and collated information that is available, it is the experts’ considered opinion that there are no significant negative impacts that could pose adverse effects to the extent of barring the proposed project from being implemented, assuming the project is designed, constructed, monitored and operated in compliance with all applicable design and ESHS requirements.

Having considered the data collected, analyzed and collated information that is available, it is the experts' considered opinion that:

i. The project does not pose any serious environmental concerns, other than those of a moderate scale that accompany similar projects;

ii. The positive impacts of the project outweigh the negative ones, which will be adequately contained by following the prescribed environmental and social impact management and monitoring plans;

iii. The project is needed to address the gaps in medical waste management,

iv. MoH has put appropriate measures for the management of medical waste in most of HCFs. There is need for a robust monitoring and supervisory framework for its service providers. There should be routine monitoring of medical waste collection, transportation and validation of functionality / operations of disposal sites, and

v. As such, the project could be allowed to commence, and activities carried out in compliance with the ESMP and sound environmental management practices that are locally and internationally recognized.

The proponent and the contractor shall ensure that they implement and adhere to the statutory provisions of the statutes mentioned in Chapter 4 of this report and any other relevant ones provided for in Kenya especially the Government of Kenya COVID-19 management regulations, frameworks and guidelines.

9.2 Recommendations
The following are recommended going-forward with the project:

i. Though the anticipated negative environmental impacts of the project are considered moderate, localized and can be mitigated, the ESMP needs to be operationalized to ensure sustainable delivery of this project.

ii. In addition, the institutional framework for the delivery of the project needs to operationalize to effectively follow up compliance as per their mandates.

iii. The proponent and the contractor shall ensure that they implement and adhere to the statutory provisions of the statutes mentioned in Chapter three of this report and any other relevant ones provided for in Kenya especially the Government of Kenya COVID-19 management regulations, frameworks and guidelines.

iv. The project should earmark some resources for MWTI staff to continue benefiting from continuous capacity building especially on aspects of safety and emergency preparedness.
REFERENCES
iii. CIEH (1999) Health and safety: First principles. Chartered Institute of environmental health, UK
 xii. Kenya gazette supplement Acts Land Planning Act (Cap. 303) government printer, Nairobi
 xiii. Kenya gazette supplement Acts Local Authority Act (Cap. 265) government printer, Nairobi
 xiv. Kenya gazette supplement Acts Penal Code Act (Cap.63) government printer, Nairobi
 xv. Kenya gazette supplement Acts Physical Planning Act, 1999 government printer, Nairobi
 xvi. Kenya gazette supplement Acts Public Health Act (Cap. 242) government printer, Nairobi
 xx. Ministry of Health Kenya, 2020, Environmental and Social Screening Report
xxvii. Nairobi County Integrated Development Plan, 2018- 2022
xxix. National Health Care Waste Management Plan (2016 – 2021), MoH (K)
11 APPENDICES
Appendix 1: Copy of NEMA Practicing Certificate for the Consulting Firm
Appendix 2: The eight components of C-HERP
Appendix 3: Chance Find Procedure
Appendix 4: Alupe Sub County Hospital Environmental and Social screening checklist
Appendix 5: Grievance Redress Management Plan and Sample of GRM register at the hospital
Appendix 6: Code of Conduct for All Staff and Project Workers on Kenya C-HERP Project
Appendix 7: Terms and Conditions for Employment
Appendix 8: HCWM Unit Layout/Design Specifications
Appendix 9: Documents Related to Land Ownership and Site Map
Appendix 10: Minutes of Public Participation Meeting and List of Attendance
Appendix I: Copy of NEMA Practising Certificate for the Consulting Firm
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EAs) PRACTICING LICENSE

License No: NEMA/EIA/ERPL/18293
Application Reference No: NEMA/EIA/EL/23979

M/S PATRICK KYALO KITUTA
(individual or firm) of address
P.O. Box 76065 - 00508 NAIROBI

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

General
registration number 1275

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

Issued Date: 12/30/2022
Expiry Date: 12/31/2023

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.
Appendix 2: The Eight Components of C-HERP

The C-HERP project entails eight components as highlighted below:

i. **Component 1: Medical Supplies and equipment:** This component aims to improve the availability of supplies and equipment needed to respond to COVID-19 and other public health emergencies and strengthen the capacity of the Ministry of Health (MoH) to provide timely medical diagnosis for COVID-19 patients;

ii. **Component 2. Response, Capacity Building and Training:** This component aims to strengthen response and build capacity of key stakeholders including health workers and communities;

iii. **Component 3. Quarantine, Isolation and Treatment Centres:** This component will strengthen the health systems capacity to effectively provide Infection Prevention and Control (IPC) and case management of COVID-19 cases;

iv. **Component 4. Medical Waste Management:** This component will ensure the safe management of waste generated by laboratory and medical activities.

v. **Component 5. Community Discussions and Information Outreach:** Advocacy, communication and social mobilization is an integral component of strengthening surveillance and response to health emergencies. GoK has developed a risk communication and community engagement strategy to keep the public informed on expected behaviors, how best to avoid infection and advise how to mitigate social and economic impacts due to the COVID-19.

vi. **Component 6. Availability of Safe Blood and Blood Products:** This support will go towards strengthening the capacity of the Kenya National Blood Transfusion Service (KNBTS) to provide safe blood and blood products. Blood is core to all clinical aspects of health systems. As patients fall ill with COVID-19, many of whom will have co-morbidities, transfusions will be needed. Anaemic mothers who deliver in this period will also continue to be at risk, etc. Further, at this time when people are less likely to go out, donations will fall which endangers the whole system.

vii. **Component 7: Project Implementation and Monitoring:** Institutional and implementation arrangement are detailed under Section III. To support implementation, the project shall finance costs associated with the project coordination, activities for program implementation and monitoring and to strengthen management capacity.

viii. **Component 8: Improving Quality and Capacity for Gender Based Violence Response (GBV):** This component aims to improve the capacity and quality of GBV response services for survivors in targeted counties with a focus on health systems strengthening. This will be achieved through a comprehensive, multi-sectoral interventions in order to reduce incidents and to respond to a range of needs of survivors. The health sector presents an immediate critical entry point for engaging in GBV mitigation and first line response, through the provision of medical and psychosocial care and referral to additional services beyond health.
Appendix 3: Chance Find Procedure

Chance find procedures will be used as follows:

a. Encounter or detection of a PCR.
b. Stop the construction activities in the area of the chance find;
c. Delineate the discovered site or area;
d. Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Directorate of Antiquities Sites and Monuments, National Museums of Kenya, take over;
e. Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Directorate of Antiquities Sites and Monuments (within 24 hours or less);
f. The Directorate of Antiquities Sites and Monuments (DASM) would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archeologists of the Directorate of Antiquities Sites and Monuments (within 24 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
g. Decisions on how to handle the finding shall be taken by the Directorate of Antiquities Sites and Monuments. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;
h. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Directorate of Antiquities Sites and Monuments;
i. These procedures must be referred to as standard provisions in construction contracts, when applicable. During project supervision, the Site Engineer / Public Works Engineer (PWE) shall monitor the above regulations relating to the treatment of any chance find encountered are observed;
j. Construction work will resume only after authorization is given by the responsible local authorities and the National Museum concerning the safeguard of the heritage; and
k. Relevant findings will be recorded in World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project’s cultural property mitigation, management, and activities, as appropriate.
Appendix 4: Alupe Sub County Hospital Environmental and Social Screening Checklist

ENVELOPMENTAL AND SOCIAL SCREENING FORM FOR POTENTIAL ENVIRONMENTAL AND SOCIAL ISSUES

FOR
KENYA COVID-19 EMERGENCY RESPONSE PROJECT (P173820)

UNDER THE
COVID-19 STRATEGIC PREPAREDNESS AND RESPONSE PROGRAM

Screening Form for Potential Environmental and Social Issues

E&S Screening Form: This form will be completed during identification of project activities by the Environment and Social Specialists in Project Implementation Unit (PMT) to screen for the potential environmental and social risks and impacts of a proposed sub-project. It will help the PMT in: (i) identifying the relevant Environmental and Social Standards (ESS); (ii) establishing an appropriate E&S risk rating for these sub-projects; and (iii) specifying the type of environmental and social assessment required, including specific instruments/plans. The completed forms will be signed and the record stored.

This form will allow the PMT to form an initial view of the potential risks and impacts of a sub-project. It is not a substitute for project-specific E&S assessments or specific mitigation plans.

A note on Considerations and Tools for E&S Screening and Risk Rating is included in this Annex I to assist the process.

<table>
<thead>
<tr>
<th>Sub-project Name</th>
<th>ALUPE SUB-COUNTY HOSPITAL</th>
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<tbody>
<tr>
<td>Sub-project Location</td>
<td>BUSIA COUNTY</td>
</tr>
<tr>
<td>Sub-project Proponent</td>
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<tr>
<td>Estimated Investment</td>
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<tr>
<td>Start/Completion Date</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answer</th>
<th>ESS relevance</th>
<th>Due diligence / Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the sub-project involve civil works including new construction, expansion, upgrading or rehabilitation of healthcare facilities and/or waste management facilities?</td>
<td>Yes</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Does the sub-project involve long-term, permanent and/or irreversible adverse impacts (e.g. loss of major natural habitat);</td>
<td>No</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Questions</td>
<td>Answer</td>
<td>ESS relevance</td>
<td>Due diligence / Actions</td>
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<tr>
<td>Does the sub-project involve acquisition of assets for quarantine, isolation or medical treatment purposes?</td>
<td>Yes</td>
<td>ESS5</td>
<td></td>
</tr>
<tr>
<td>Is the sub-project associated with any external waste management facilities such as a sanitary landfill, incinerator, or waste water treatment plant/ healthcare waste disposal?</td>
<td>Yes</td>
<td>ESS3</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Is there a sound regulatory framework and institutional capacity in place for healthcare facility infection control and healthcare waste management?</td>
<td>Yes</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Does the sub-project have an adequate system in place (capacity, processes and management) to address waste?</td>
<td>Yes</td>
<td></td>
<td>HASP (Health and Safety Plan)</td>
</tr>
<tr>
<td>Does the sub-project have appropriate OSH procedures in place, and an adequate supply of PPE (where necessary)?</td>
<td>Yes</td>
<td></td>
<td>HASP (Health and Safety Plan)</td>
</tr>
<tr>
<td>Will the activities have high probability of causing serious adverse effects to human health and/or the environment not related to treatment of COVID19 cases;</td>
<td>Yes</td>
<td>ESS4</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Is the sub-project located within or in the vicinity of any ecologically sensitive areas?</td>
<td>Yes</td>
<td>ESS6</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Does the sub-project involve transboundary transportation (including Potentially infected specimens may be transported from healthcare facilities to testing laboratories, and trans boundary) of specimen, samples, infectious and hazardous materials?</td>
<td>Yes</td>
<td>ESS3</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Does the sub-project involve land acquisition and/or restrictions on land use?</td>
<td>Yes</td>
<td>ESS5</td>
<td>RAP/ARAP, SEP</td>
</tr>
<tr>
<td>Will the activities affect lands or rights of VMGs or other vulnerable minorities;</td>
<td>Yes</td>
<td>ESS5</td>
<td>RAP/ARAP, SEP</td>
</tr>
<tr>
<td>Does the sub-project involve permanent resettlement or land acquisition?</td>
<td>Yes</td>
<td>ESS5</td>
<td>RAP/ARAP, SEP</td>
</tr>
<tr>
<td>Questions</td>
<td>Answer</td>
<td>ESS relevance</td>
<td>Due diligence / Actions</td>
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<tr>
<td>Does the sub-project involve recruitment of workers including direct,</td>
<td></td>
<td>ESS2</td>
<td>LMP, SEP</td>
</tr>
<tr>
<td>contracted, primary supply, and/or community workers?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the sub-project have a GRM in place, to which all workers have</td>
<td>✓</td>
<td></td>
<td>SEP/LMP</td>
</tr>
<tr>
<td>access, designed to respond quickly and effectively?</td>
<td></td>
<td></td>
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<tr>
<td>Does the sub-project involve significant adverse social impacts and may</td>
<td>✓</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>give rise to significant social conflict?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the sub-project involve use of security or military personnel</td>
<td>✓</td>
<td>ESS4</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>during construction and/or operation of healthcare facilities and related</td>
<td></td>
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<tr>
<td>activities?</td>
<td></td>
<td></td>
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<tr>
<td>Are there any indigenous groups (meeting specified ESS7 criteria) present</td>
<td>✓</td>
<td>ESS7</td>
<td>Indigenous Peoples Plan/other plan reflecting agreed terminology</td>
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<td>in the sub-project area and are they likely to be affected by the</td>
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<td>proposed sub-project negatively or positively?</td>
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<tr>
<td>Does the sub-project require Free Prior Informed Consent (FPIC)?</td>
<td>✓</td>
<td>ESS7</td>
<td>Indigenous Peoples Plan/other plan reflecting agreed terminology</td>
</tr>
<tr>
<td>Is the sub-project located within or in the vicinity of any known</td>
<td>✓</td>
<td>ESS8</td>
<td>ESIA/ESMP, SEP</td>
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<td>cultural heritage sites?</td>
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<tr>
<td>Does the project area present considerable Gender-Based Violence (GBV)</td>
<td>✓</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
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<td>and Sexual Exploitation and Abuse (SEA) risk?</td>
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<td>Is there any territorial dispute between two or more countries in the</td>
<td>✓</td>
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<td>Governments concerned agree</td>
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<td>sub-project and its ancillary aspects and related activities?</td>
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</tr>
<tr>
<td>Will the sub-project and related activities involve the use or potential</td>
<td>✓</td>
<td>OP7.50 Projects on International Waterways</td>
<td>Notification (or exceptions)</td>
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<tr>
<td>pollution of, or be located in international waterways?</td>
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</table>

1 International waterways include any river, canal, lake or similar body of water that forms a boundary between, or any river or surface water that flows through two or more states.
* The exclusion list of the sub-projects. If any of these parameters are “Yes”, the sub-project is excluded from financing under the program.

The Environmental and Social Commitment Plan (ESCP) prepared for the project has clearly outlined the activities considered as ineligible for financing under the project. The following is a negative/exclusion list of activities that will not be financed under the project and that will be screen out:

- Activities that may cause long-term, permanent and/or irreversible adverse impacts (e.g. loss of major natural habitat);
- Activities that have high probability of causing serious adverse effects to human health and/or the environment not related to treatment of COVID-19;
- Activities that may have significant adverse social impacts and may give rise to significant social conflict;
- Activities which would require Free Prior Informed Consent (FPIC);
- Activities that may affect lands or rights of VMGs or other vulnerable minorities; and
- Activities that may involve permanent resettlement or land acquisition or adverse impacts on cultural heritage.

Conclusions:

1. Proposed sub-project is eligible for financing under the project criteria:

2. Proposed Environmental and Social Risk Ratings (High, Substantial, Moderate or Low), Provide Justification:

3. Proposed E&S Management Plans/ Instruments:
Appendix 5: Grievance Redress Management Plan

This ESIA provides for a GRM which includes tools methods, and processes by which a resolution to a grievance is sought and provided. The processes are as shown below.

The project will have several channels for complaints and grievances including email, phone calls, texts, blogs, toll free number and letter writing that will also be accessible to all workers. Information on the project GRM will be made available to workers at all facilities, government offices (both national and county) and community level (chief’s office, for instance) to ensure that all workers, including CHVs have adequate information on how to lodge a complaint and who to direct it to. Anonymity will be assured when handling workers’ grievances. Although ‘suggestion boxes’ exist in many worksites and appear to be a preferred form of reporting complaints, the experience has been that these boxes are hardly opened. If these have to be used as part of the GRM, a structure needs to be put in place for opening, reviewing, responding and providing feedback on the issues raised.

The following actions will be used for managing complaints for this project:

a. Complaints will be sent to the GRM focal point at the workplace by email, text, phone, letter or in person. The complaints will be collated onto a complaints form and logged into the register (and reported. The email address and phone number will be made available to the workers at signing the contract/recruitment.

b. Complaints will be reviewed by the PMT weekly upon receipt. The grievance committee at the workplace will comprise of the in-charge (health superintendent or contractors (who will be the chair), GRM focal point will act as the secretary, and departmental heads. The team will review the complaints and provide guidance on the course of action and ensure follow-up on previous complaints. Any preliminary investigation should take place within 5 working days of the committee meeting. Feedback will be given to the complainant within 10 working days.

c. For informal complaints i.e., those raised through social media, print media or not formally lodged, the committee will be deliberate upon them to decide whether to investigate based on the substance and potential impact/reputational risk.

d. If the complaint is referred to the main project GRM and government’s legal complaints structures (EACC, CAJ, etc.), the World Bank will be notified.

e. Complaints regarding SEA will be kept confidential, the name of the complainant will not be recorded, only the age and gender of the complainant, and whether a project worker was involved and should be sent directly to the PM who should immediately inform the World Bank.

f. No disciplinary or legal action will be taken against anyone raising a complaint in good faith.

g. A monthly report of complaints resolution should be provided to the PMT and the World Bank.
Appendix 6: Code of Conduct for All Staff and Project Workers on Kenya C-HERP Project

DOs
1. Wear prescribed and appropriate personal protective equipment on site at all times.
2. Wash hands, sanitize and observe social distancing at all times and follow WHO and GOK updated guidelines.
3. Seek healthcare if you experience any of the following symptoms (while at home or work): cough, fever and shortness of breath.
4. Prevent avoidable accidents and report conditions or practices that pose a safety hazard or threaten the environment.
5. Treat women, children and men with respect regardless of race, color, language, religion, or other status.
6. Report any violations of this code of conduct to workers’ representative, HR or grievance redress committee. No employee who reports a violation of this code of conduct in good faith will be punished in any way.
7. Comply with all Kenya laws.

DON’Ts
1. Expose other people to the risk of infection in any form.
2. Leave personal protective equipment lying around.
3. Come to work if you or any of your family members has any symptoms of COVID-19 (cough, fever and shortness of breath). Report immediately to your supervisor if you or family member has any of these signs.
4. Make unwelcome sexual advances to any person in any form.
5. Have sexual interactions unless full and equivocal consent is given and there is no form of material or other coercion
6. Use alcohol or narcotics during working hours.

* Employees, associates, and representatives, including sub-contractors and suppliers, without exception.
Appendix 7: Terms and Conditions for Employment
Below is the list of relevant provisions of the Employment Act, 2007 mainstreamed to MoH Human Resources Manual with regard to terms and conditions of work.

a. **Content of individual contract in-line with Employment Act 2007 (Section 10)**
Subject to the provision of this Act or regulations made hereunder, a written individual contract of employment shall specify the following: (a) name and father's name of workers; (b) address, occupation, age and sex of workers; (c) employer's name and address; (d) nature and duration of contract; (e) hours and place of work; (f) remuneration payable to the worker; (g) procedure for suspension or termination of contract.

b. **Notice for termination of contract in-line with Employment Act, 2007 (Part VI; Sections 35 - 51)**
Either of the contracting parties may terminate a contract of employment by giving written notice in-line with the provisions of employment Act, 2007, i.e., (a) Not less than ten days in the case of manual workers; (b) Not less than 30 days in the case of non-manual workers. Provided that no notice need be given in case the duration of contract does not exceed one month.

c. **Protection of wages in-line with Employment Act, 2007 (Part IV; Sections 17 - 25)**
Taking into consideration the economic and social conditions of the country (and in consistence with the provisions of Employment Act, 2007 and NEMA Human Resources Manual), the minimum wages for any category of workers may be determined by the salary’s remuneration commission.

d. **Hours of work – Employment Act, 2007 (Article 85, 86)**
The normal hours of work of a worker shall not exceed eight a day or 48 a week. Hours worked in excess of the normal hours of work shall not exceed 12 a week and shall entitle a worker to a proportionate overtime payment in-line with the provisions of NEMA Human Resources Manual on allowances.

e. **Weekly Rest**
Every worker shall be entitled to one day’s rest each week, which should normally fall on Friday. It shall consist of at least 24 consecutive hours each week. Workers shall also be entitled to a rest day on public holidays recognized as such by the State.

f. **Annual leave (Employment Act, 2007)**
Workers shall be entitled to 30 days' leave with pay for every year of continuous service. An entitlement to leave with pay shall normally be acquired after a full year of continuous service.

g. **Fringe benefits (Employment Act 2007)**
Any employer shall provide (a) accommodation when a worker is required to be away from his normal residence; (b) free food to workers, or subsistence allowance in place thereof; (c) free transport to and from the place of work, when a worker is required to work in a town or locality away from his normal residence.

h. **Deductions from remuneration (Employment Act 2007)**
No deductions other than those prescribed by the Code or regulations made hereunder or any other law or collective labor agreement shall be made from a worker’s remuneration, except for repayment of advances received from the employer and evidenced in writing.

i. **Death benefit (Employment Act 2007)**
In case of death of a worker during his contract of employment, the employer shall pay to his heirs an amount not less than 15 days’ remuneration as death benefit for funeral services.

j. **Maternity and Paternity Leaves (Employment Act, 2007)**
A woman worker shall be entitled for maternity leave with pay for 90 days and male workers 14 days in-line with the provisions of the employment Act, 2007 and NEMA Human Resources manual.
DEPARTMENT OF HEALTH AND SANITATION
OFFICE OF THE MEDICAL SUPERINTENDENT

Telegram:"MEDICAL", ALUPE
Telephone: 254717208601
e-mail: alupecountyhospital@gmail.com

OFFICE OF THE MEDICAL SUPERINTENDENT
ALUPE SUB COUNTY REFERRAL HOSPITAL
P.O BOX 38,
BUSIA K

Date; 30th August, 2021

MINISTRY OF HEALTH,
COVID HEALTH EMERGENCY, RESPONSE PROJECT,
P.O BOX 30016,
NAIROBI

Dear Sir/Madam

RE: TITLE DEED ALUPE SUB COUNTY HOSPITAL

The Hospital is located at Teso South/Angorom Ward.

The Facility was converted to an Isolation & Treatment Centre for Covid - 19 via letter, RE: CG/BSA/H/HRM/4/24(25) dated 3rd April, 2020, from the Chief Officers department of Health and Sanitation.

The hospital sits on the land registration under South Teso/Angorom/14511 of size 50.78 hectares but the surveyed and allocated size is approximately 32.2 hectares.

Thanks,

Yours sincerely

PHILIS OMUSE
HEALTH ADMINISTRATIVE OFFICER
ALUPE SUB COUNTY REFERRAL HOSPITAL
Cc
THE DIRECTOR,
DEPARTMENT OF HEALTH & SANITATION,
P.O BOX 1040,
BUSIA COUNTY
Appendix 10: Minutes of Public Participation Meeting and List of Attendance

MINUTES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) MEETING HELD AT ALUPE SUB-COUNTY HOSPITAL ON 13TH JANUARY 2021 FOR THE PROPOSED INSTALLATION OF A MODERN HEALTH CARE WASTE INCINERATOR AT ALUPE SUB-COUNTY HOSPITAL UNDER THE COVID-19 HEALTH EMERGENCE RESPONSE PROJECT (C-HERP)

ATTENDANCE LIST
Attached

AGENDA
1. Welcome and Introduction
2. Purpose of the meeting
3. Presentation: Project description
4. Presentation: Environmental and Social Impact Assessment
5. Discussion
6. Support for the project
7. Closing Remarks

MINUTE 01/13/01/2021/C-HERP: WELCOME AND INTRODUCTION
The meeting was called to order at 1100hours by the medical superintendent (Dr. Nelson Kilimo) who requested one of the attendants to lead in a word of prayer. Introduction session followed thereafter. A site visit for the proposed project was done to ensure that all in attendance were familiar with the site for the proposed project.

MINUTE 02/13/01/2021/C-HERP: PURPOSE OF THE MEETING
The deputy sub-county PHO took over and briefly introduced the project and the purpose of the meeting. He informed the meeting that the hospital was to benefit with a modern medical waste incinerator under the C-HERP project. He thereafter called upon Mr. George Muthoka (ESIA Team coordinator) to introduce the agenda of the day. Mr. Muthoka introduced the proposed project noting that the ESIA process was meant to make sure there are adequate environmental and social safeguards that will ensure the proposed project is sustainable. Mr. Muthoka invited the ESIA experts to carry over the agenda of the day.

The lead expert (Mr. Kituta) informed the meeting that Regulation 17 of the Environmental (Impact Assessment and Audit Regulations, 2003) requires the project proponent in consultation with the authority (NEMA) ensures that views from the persons or entities likely to be directly or indirectly affected by a proposed project are sought and considered during the project planning stage. There are several reasons for undertaking public and stakeholders consultations, they include but not limited to:

i. Provide information regarding the proposed project- Installation and commissioning of modern medical waste incinerator;
ii. Provide an overview of the ESIA and Public Participation Process (PPP) being followed for the proposed project;
iii. Provide an opportunity for affected people, key stakeholders and Interested persons to seek clarity and provide input into the project; and
iv. Record and document the comments raised and include them in the final report; and
v. To enable the authority (NEMA) make informed decision based on input from the project affected persons and all those living within the project influence area.

MINUTE 03/13/01/2021/C-HERP: PROJECT DESCRIPTION
The lead expert introduced the proposed project detailing the technology applied by modern day incinerator. He described the major parts of the incinerator and their roles in the process of burning the HCW. He described the roles of both the primary and secondary burners, the primary and secondary chambers, the air filter (scrubber), thermal couple, control panel and the need for the fuel tank. He noted that the incinerator uses electric for ignition purposes and diesel is used to burn HCW at high temperatures. In addition, he informed the meeting that the incinerator must be sheltered in a safe house to ensure that it is secure and the house must also guarantee occupation, health and safety of the operators. He therefore said that the incinerator house must contain the following components:

- Incinerator chamber;
- Ash pit;
- Waste storage chamber (temporary storage);
- Office, changing rooms, sanitary convenience (toilet) and material/supplies store;
- Fire suppression system;
- Emergency alert system;
- Site landscaping;
- Adequate Signage;
- Permanent perimeter fence;
- Hiring and training of an incinerator operator;
- Acquiring of requisite operating licences and permits; and
- Undertaking requisite managerial strategies (Air quality monitoring, environmental auditing, Safety audits)

MINUTE 04/13/01/2021/C-HERP: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
ESIA Process was explained in details by the lead expert. The lead expert informed the meeting that ESIA was meant to identify all potential negative and positive impacts that are bound to occur during the implementation of the proposed project. He elaborated that the impacts are based on the major phases of the project that entails: planning and design, construction, operation and decommissioning phase. The main objective of identifying the impacts is to help in coming up with the respective, actionable mitigative measures. The impacts are always site specific and the ESIA process is regulated by the respective laws and regulations. The following regulatory frameworks were applicable to the proposed project.

- Environmental Management Principles and Guidelines
  - Sustainability
  - Principle of Intergenerational Equity
  - Principle of Prevention
  - Precautionary Principle
  - Polluter Pays Principle
  - Principle of Public Participation
  - The Cultural and Social Principle
  - Principle of International Co-Operation

- Policy Framework
  - Environmental Policy Framework
  - National Water Policy, 2000
  - Water Catchment Management Policies

- Legal Framework
  - Environmental Management and Coordination (Amendment) Act 2015.
  - Environmental Impact Assessment and Audit Regulations of 2003 (revised 2019)
The attendants were engaged on the discussion on issues they felt were central to the proposed project. The issues were diverse and the necessary response was given by the ESIA experts, representatives from the hospital management and the county public health team.

During the stakeholder and public consultation meeting, the following are the matters that were discussed in brief.

<table>
<thead>
<tr>
<th>Name of stakeholder</th>
<th>Issue raised</th>
<th>Response given</th>
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<tbody>
<tr>
<td>Mr. Nyongesa, PHO</td>
<td>A lot of Smoke produced by the waste burning chamber and the process of open waste burning</td>
<td>The Hospital PHO started by starting that the meeting is good so that members of the public could know that the hospital is doing something about reducing the amount of smoke that emanates from the current waste burning chamber and the process of waste burning. Although there have not been complaints from the surrounding community in relation to the continued use of the two methods, he knew in his mind that it would have happened in the near future, and especially from KEMRI.</td>
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<td>Charles Omeny, Deputy Sub-County PHO</td>
<td>He pointed out that the hospital is sometimes forced to take some HCW to Busia County Referral Hospital for proper incineration at a very high cost because not all vehicles can transport HCW.</td>
<td>The ESIA Experts urged the stakeholders in the meeting to support the proposed MWTI project so that the hospital will safe on the money utilized in transporting HCW to Busia County Referral Hospital. The ESIA expert also pointed out the MWTI will also help address the issue of air pollution associated with use of the current HCW burning chamber and open water burning. This is because the proposed MWTI is equipped with an air scrubber that helps filter the smoke form the incineration process.</td>
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<td>How are they sure that the proposed MWTI will not be as polluting to the air as the current waste burning chamber</td>
<td>The ESIA Expert responded that the proposed MWTI is designed in a manner that it has two incineration chambers, the primary and the secondary incineration chambers. It is at the primary chamber where the raw solid wastes will be incinerated. The products of combustion from the primary chamber exhaust into the secondary chamber to be located directly above the primary chamber for further treatment. Within the secondary chamber additional heat and air will be added to promote combustion in the gaseous phase, thus ensuring complete combustion of the volatile and solid particulate. There is also the Gas Scrubber/Emission Control Chamber Treated gases will exit the secondary chamber directly into the emission control chamber, what is popularly known as scrubber. The gas scrubber/washer is designed to suck all particulate matter from gases emanating from the burning chambers. Particulate matter from combustion process will be entrained within the spray of water which also will cool the gases to approximately below 450°C.</td>
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<td>Dr. Kilimo, the Hospital Medical Superintendent</td>
<td>She sought for clarification on the operating capacity needed in operating the proposed MWTI, how tall is its chimney, does it come with provisions for First Aid Kits, connection to electricity and who constructs proper access routes.</td>
<td>One of the ESIA Experts, Patrick Kituta clarified that the supplier of the MWTI should train several people seconded by the hospital management on how to operate the MWTI. He requested the hospital through the PHO to make sure that at least 5people re trained as MWTI operator including representative from the Biomedical Engineering and Public Health Department.</td>
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</table>
The Expert said that the chimney of the MWTI should be connected to electricity because the supplier cannot do test-running without proper connection to electricity.

However, the proposed MWTI project does not include the paths to the proposed MWTI project site. Therefore, it is the hospital's responsibility to make sure that the paths to the proposed MWTI project site are paved so as to enable easy push of the HCW transportation trolleys.

### Namdy N. Nyongesa, Municipal PHO, Busia Municipality
He said that there was need to have firefighting equipment fitted within the MWTI shelter and that the MWTI shelter should have a concreted floor.

### The ESIA Expert supported his point by clarifying that Fire extinguishers including sand filled buckets should be provided at the MWTI shelter by the hospital management. He said that should the provision of the fire extinguishers be coupled with training of the MWTI operators on fire emergency response. As well, the MWTI should be subjected to periodic fire management grills to help keep alert.

According to the ESIA Expert, the whole of the MWTI area should be concreted to ensure that any liquid waste from the HCW and the cleaning process do not seep into the soil with a likelihood of polluting underground water resources.

### Leonard Bukeke Ouma, Ward Administrator
He said that he acknowledged the need for the MWTI project for the hospital. However, he wished to know how the incineration ashes will be disposed safely and what could be the lifespan of the MWTI machine.

### The ESIA Expert, Patrick Kituta, explained that the proposed MWTI project included the provision of a standard ash pit, where all incineration should be disposed. He said that the hospital should collecting some data in relation to the amount of HCW being generated from the hospital because it is such data that guides on the size of ash pit that should be constructed to serve the MWTI for at least 10 years so as to avoid constructing many ash pits within the hospital compound. He explained that the MWTI machine is not more special than other machines, hence its maintenance and use will determine how long it remains operational. He gave an example of the vehicles people whereby their deterioration depends on how they used and how well they maintained.

### Peter Nyakundi, Biomedical Engineer
Who should connect the MWTI to water

### The ESIA Expert pointed out that the construction contractor is the one to make sure that the MWTI site is connected to water. This is because the MWTI machine comes with an air scrubber which makes use of water. The design of the MWTI shelter will also have provision for a bathrooms, toilet and hand washing areas, all which cannot function well without piped water supply.

### MINUTE 06/13/01/2021/C-HERP: SUPPORT FOR THE PROJECT
The proposed project was not objected by all in attendance, full support of the project was assured. The ESIA team called upon all in attendance to reach out to others informing them on the proposed project for ramified awareness and wider project acceptance.

### MINUTE 07/13/01/2021/C-HERP: CLOSING REMARKS
Closing remarks were given out by the hospital board chair who said the project was indeed timely and of benefit to the local environment and the community.

Similar comments were made by the hospital medical superintendent. The hospital area Assistant County Commissioner (Mrs. Faith Muriungi) welcomed the development assuring that the proponent would be accorded all the necessary support from the local administration. The meeting was officially closed at 1230 Hrs by the ACC.
Consultation Session

Project site visit

Minutes taken by:
Patrick Kituta (Lead Expert)

Witnessed by:
George Muthoka - Sign:
Team Leader, Devlink Resources Consultants

Witnessed by:
Hospital Representative:

Hospital Stamp:
Date:

Witnessed by:
Area Chief/Assistant Chief:

Chief’s Stamp:
Date:
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<th>ID. No.</th>
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Date: 13/01/2021

Venue: Ayampontin Hospital

Project: Assessment and compilation of Health Intermediate Health Unit's (CIHF) Public Meeting Attendance List

Ministry of Health: The COVID-19 Health Emergence Response Project (C-HERP)

ATTENDANCE LIST
<table>
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<tr>
<th>Name</th>
<th>Residential Address</th>
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<th>ID No.</th>
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**Venue:** Health Care Facility

**Project:** Public Meeting Attendance List

**Ministry of Health:** The COVID-19 Health Emergency Response Project (C-HERP)