ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT
FOR
THE PROPOSED CONSTRUCTION AND INSTALLATION OF A MEDICAL WASTE TREATMENT INCINERATOR
AT
KAUWI SUB-COUNTY HOSPITAL
LOCATED APPROXIMATELY 1KM FROM KABATI TOWN OFF KITUI-KANYOONYOO ROAD IN KABATI TOWN, KAUWI WARD, KITUI WEST CONSTITUENCY, KITUI WEST SUB-COUNTY OF KITUI COUNTY- GPS COORDINATES: 0°10'S.30"S 37°50.39"E
PROJECT: KENYA COVID-19 HEALTH EMERGENCY RESPONSE PROJECT
PROJECT ID NO. 173820
CREDIT NO: IDA 65980

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<thead>
<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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January 2023
CERTIFICATION OF DOCUMENT
We, the undersigned, 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: Off Kitui-Kanyoonyoo Road in Kabati Town, Kauwi Ward, Kitui West Sub-County of Kitui County
GPS Coordinates: 01°14'49.82"S 37°54'52.49"E
Neighbors: Residential Facilities, Kabati Township, and Commercial Establishments
Nature of Activity: Construction, Procurement and Installation of a Medical Waste Treatment Incinerator
Name of Health Facility: Kauwi Sub-County Hospital

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT EXPERTS
This Environmental and Social Impact Assessment (ESIA) Report was prepared by a Firm of Experts in accordance with the World Bank Environmental and Social Framework (ESF), World Bank Group (WBG) Environment, Health and Safety (EHS) guidelines and the Government of Kenya (GoK) policies and regulations for Environmental Assessments:

Signature: __________________________ Date: 27/02/2023
For Devlink Resources Consultants (NEMA Registration Number 2355)
P. O. Box 76065 00508, Nairobi

PROJECT PROponent
Signed: __________________________ Date: 24/02/2023
Designation: __________________________ Official Stamp: __________________________
On behalf of Proponent: __________________________
Ministry of Health
P. O. Box 3001600100
Nairobi.
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<th>Description</th>
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<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
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<tr>
<td>C-HERP</td>
<td>COVID-19 Health Emergency Response Project</td>
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<tr>
<td>CLO</td>
<td>Community Liaison Officer</td>
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<td>COC</td>
<td>Code of Conduct</td>
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<tr>
<td>COVID-19</td>
<td>Corona Virus Disease of 2019</td>
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<td>CPP</td>
<td>Consultation and Public Participation</td>
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<td>DASM</td>
<td>Directorate of Antiquities Sites and Monuments</td>
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<td>DOSHS</td>
<td>Directorate of Occupational Safety and Health Services</td>
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<td>E&amp;S</td>
<td>Environmental and Social</td>
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<td>EHS</td>
<td>Environment Health and safety</td>
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<td>EMCA</td>
<td>Environmental Management and Coordination Act</td>
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<td>ESA</td>
<td>Environmental and Social Audit</td>
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<td>ESF</td>
<td>Environmental and Social Framework</td>
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<td>ESIA</td>
<td>Environmental Social Impact Assessment</td>
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<td>ESMF</td>
<td>Environmental and Social Management Framework</td>
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<td>ESMMMP</td>
<td>Environmental and Social Management and Monitoring Plan</td>
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<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
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<td>ESS</td>
<td>Environmental and Social Standards</td>
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<td>GBV</td>
<td>Gender Based Violence</td>
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<td>GIIP</td>
<td>Good International Industry Practice</td>
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<tr>
<td>GPS</td>
<td>Geographical Positioning System</td>
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<td>GRM</td>
<td>Grievance Redress Mechanism</td>
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<td>HCF</td>
<td>Health Care Facilities</td>
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<td>Health Care Waste</td>
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<td>HCWM</td>
<td>Health Care Waste Management</td>
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<td>HCWMP</td>
<td>Health Care Waste Management Plan</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>HR</td>
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<td>ICU</td>
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<td>ICWMP</td>
<td>Infection Control and Waste Management Plan</td>
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<td>ICRs</td>
<td>Implementation Completion Reports</td>
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<td>IDA</td>
<td>International Development Association</td>
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<td>IPC</td>
<td>Infection Prevention and Control</td>
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<td>ISRs</td>
<td>Implementation Supervision Reports</td>
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<td>KIMWASCO</td>
<td>Kiambere-Mwingi Water &amp; Sewerage Company</td>
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<td>LMP</td>
<td>Labor Management Plan</td>
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<td>MLSP</td>
<td>Ministry of Labour and Social Protection</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<tr>
<td>NACOSH</td>
<td>National Council for Occupational Safety and Health</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>National Gender and Equality Commission</td>
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<td>NHIF</td>
<td>National Hospital Insurance Fund</td>
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<td>National Museums of Kenya</td>
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<td>PAPs</td>
<td>Project Affected Persons</td>
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<td>PCR</td>
<td>Physical Cultural Resources</td>
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<td>PEP</td>
<td>Post-Exposure Prophylaxis</td>
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<td>PHO</td>
<td>Public Health Officer</td>
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<td>PMT</td>
<td>Project Monitoring Team</td>
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<td>PPE</td>
<td>Personal Protective Equipment</td>
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<td>PWE</td>
<td>Public Works Engineer</td>
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<td>SDS</td>
<td>Safety Data Sheet</td>
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<td>SEA</td>
<td>Sexual Exploitation and Abuse</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
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<td>SEP</td>
<td>Stakeholder Engagement Plan</td>
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<tr>
<td>SOPs</td>
<td>Standard Operating Procedures</td>
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<tr>
<td>STD</td>
<td>Sexually Transmitted Disease</td>
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<tr>
<td>STIs</td>
<td>Sexually Transmitted Infections</td>
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<td>WASH</td>
<td>Water, Sanitation and Hygiene</td>
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<tr>
<td>WBG</td>
<td>World Bank Group</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WIBA</td>
<td>Work Injuries Benefits Act</td>
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<tr>
<td>WMI</td>
<td>Waste Management Incinerator</td>
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<tr>
<td>MWTI</td>
<td>Medical Waste Treatment Incinerator</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 Kauwi Sub-County Hospital (KSCH) in Kitui County. This support is intended to improve management of health care waste generated from the hospital 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).

Kauwi is a Sub-County Level 4 Hospital located off Kitui-Kanyoonyoo Road in Kabati Town, Kauwi Ward, Kitui West Constituency, Kitui West Sub- County of Kitui County. The hospital, with 100 bed capacity, was in April 2020 turned into a COVID-19 centre with an isolation ward of 30 bed capacity. In February 2021, Kauwi Sub County hospital was identified as the only vaccination center in Kitui West Sub County. Services offered before the facility was turned to a COVID-19 center included maternal and child health care services, mortuary services, outpatient and inpatient for both medical and surgical services, radiology services, comprehensive care clinics and pharmacy among others. 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, and through the use of a low-cost incinerator. The hospital has also been assisting other HCFs in the area in burning their HCW using the existing incinerator. As the waste accumulates awaiting burning, it is exposed to weather elements such as wind and rain, which cause scattering around the disposal site. There have been numerous complaints from the neighboring community regarding poor waste management and air pollution from the disposal site activities. The HCF also has an inadequately sized ash pit which is already full, leading to open disposal of the remains from the incinerator.

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 that 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 a 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 is expensive and 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 Kauwi 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) (Table 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 on 21st January, 2021. The meeting was attended by 20 representatives of the identified stakeholders from the MoH, Area Chief and Assistant Chief, representatives of the community, political leaders, County Administrators, and Church Leaders. The meeting was organized with the assistance of the office of the Deputy County Public Health Officer. In attendance were 10
females and 10 males out of which and 2 were persons with disabilities (PWD). The consultations yielded positive feedback from the stakeholders expressed full support for the proposed method of HCWM. However, qualms about air pollution from the existing incinerator, increased COVID-19 contaminated wastes, were captured. More details of the stakeholder outcome are captured on Table 7 as well as elaborated on section 5.2.1 of this Report.

Findings of the ESIA
The findings of the ESIA indicate that the potential 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 environmental and social 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, 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 health and safety (OHS) risks which may result to various impacts on the health and safety of the people including road and traffic safety from 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 (SEA), 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, scattering of particles of waste, MWTI not causing wastes to be fully de-contaminated and made non-hazardous (due to loss of power, etc.), improper transport of waste to waste disposal facility (i.e., the inert waste to sanitary landfill) increased energy use by the MWTI, and generation and potential mismanagement of ash from the MWTI. Other pertinent issues of concern will largely rotate around proper management of HCW, protection of workers and the public from such waste.

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. Other mitigation measures include having in place special containers for collection, storage and transportation of HCW to designated areas for its disposal and regular collection for onward suitable disposal of treated waste by a NEMA Licensed waste handler. Detailed mitigation measures for all the potential negative impacts are summarized on Table 10 (ESMP) and the monitoring options have been suggested on Table 10.

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).

Project Implementation and Monitoring Arrangements:
The primary role of monitoring and supervision of project environmental and social compliance is the responsibility of the Kitui County Government since it has 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 Medical Superintendent Hospital Administrator and Public Health Officer)

ii. The contractor
iii. Public Works Engineer; and
iv. Kitui County staff including:
   - County Director for Environment
   - County Director for Physical Planning,
   - Labour Officer
   - Community Development Officer
   - Physical Planner
   - Public Health officer/Inspector
   - Occupational Health and Safety Officer

**Recommendations**
The following are recommended for moving this project forward:
i. Though the anticipated negative environmental and social impacts of the project sub-components are considered low, localized and can be easily mitigated, the ESMP needs to be operationalized to ensure sustainable delivery of this project.
ii. The institutional framework for the delivery of the project needs to be operationalized to effectively follow up on compliance as per their mandates.
iii. There should be a robust monitoring plan to ensure the provisions in the ESMP are implemented, documented and any challenges resolved before they affect the project performance
iv. The project should earmark some resources for supporting the MWTI staff to continue to benefit from continuous capacity building especially on aspects of infection control, healthcare waste management, safety and emergency preparedness.

**Conclusion**
i. The proposed project does not pose any serious environmental and social risks, 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 adequately checked by following the prescribed environmental and social impact management and monitoring plans (ESMMP);
iii. The MWTI project is highly needed to address the breaches in medical waste treatment in Kauwi Hospital especially with respect to treatment of HCW generated from handling of COVID-19 cases; and
iv. Provided that the proposed project is designed, constructed, monitored and operated in compliance with all applicable design and ESHS requirements, it is unlikely to pose significant adverse risks and impacts to the extent that its implementation is halted.
INTRODUCTION

1.1 Background to the Project
The GoK through the MoH has received financing from the 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 Project has eight components¹ one of them being Component 4 - Medical Waste Management: This component supports the safe management of Healthcare Waste (HCW) generated by laboratory and health facilities such as Kauwi Sub County Hospital (KSCH).

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. This is the case for KSCH and other Healthcare Facilities (HCFs) in the project area since there are no modern Healthcare Waste Management (HCWM) facilities such as high-temperature incinerators even within the Kitui West Sub-County. The use of a low-cost incinerator and open burning of HCW is practiced at the hospital, while some of the waste is left in the open without treatment. 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 low-cost incinerator coupled with open burning. The incinerator 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.

The Kauwi Sub-County Hospital produces an average of 60kg of infectious waste per day and burns it on site openly and through a low-cost incinerator. Both methods emit fumes leading high local air pollution. Through these inefficient means of waste disposal, the hospital has been assisting other HCFs in the area to dispose their HCW. Approximately 140kg of waste from KSCH and other HCFs is incinerated per day at the site. This has led to many complaints from the neighboring community in regard to air pollution from the disposal methods applied.

¹ Appendix 2: The Eight Components of C-HERP
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 KSCH. 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, labeling 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.

1.4.2 A Medical Waste Treatment Incinerator (MWTI)
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 will be adequate to treat the infectious and highly infectious waste generated by the HCFs, which is the main focus of the support. The proposed project is expected to cost KES. 25,900,000, covering procurement of the MWTI, construction of the shelter, and commissioning of the facility.

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.

1.4.3 Capacity Building for Healthcare Waste Management at KSCH
The hospital has a designated 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 KSCH was trained on waste management and on the development of the facility ICWMP for the financial year 2021/2022. The developed facility ICWMP therefore guided the incremental implementation of the infection control and waste management activities in the hospital. A review of the ICWMP is expected during the 2022/2023 financial year. A refresher training is also planned as well as appraising the officers on the requirements of the ESIA before the installation of the new the MWTI.

2 Project Objective
The objectives of the proposed project are to facilitate safe HCWM at Kauwi Sub-County hospital and build capacity for better management of highly infectious waste.

2.1 ESIA Scope
The preparation of an ESIA report for the Designing and Planning of the MWTI Project, civil works (construction of the MWTI shelter), installation and operation of the MWTI that will take place at Kauwi Level 4 Sub-County Hospital. The aim was to identify the potential environmental and social impacts associated with the proposed project and recommend appropriate environmental and social mitigation measures for integration in all phases of the project, i.e., planning and design, construction, commissioning and decommissioning phase of the project cycle.

2.2 Terms of Reference
The primary objective of the consultancy was to undertake an ESIA of the proposed construction of a shelter, procurement, installation and operationalization of a MWTI at Kauwi level 4 Sub-County Hospital. The terms of reference (ToR) of this ESIA are to:

I. Identify and assess potential positive and negative environmental and social impacts associated with the proposed civil works, installations and operations of the MWTI;
II. Recommend appropriate environmental, social, health and safety mitigation measures for integration in all phases of the project’s cycle;
III. Determine how far the activities that relate to the civil works, installation and operation at the project site comply with sound environmental health and safety management practices;
IV. Undertake project alternative analysis;
V. Identify potential design opportunities and appropriate measures to have a sustainable MWTI facility;
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-CoK (2010), the EMCA (2015), the EMCA (Environmental Impact Assessment and Environmental Audit) Regulations and the Legal Notice Number
VII. Generate an ESMMP that describes in detail 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 and authorities.

2.3 Justification of the Project and Preparation of the Safeguards Instruments

2.3.1 Justification of the Project

The wastes generated by healthcare activities are highly hazardous in nature and pose a serious challenge in disposal, as is the case in Kauwi Sub-County hospital. C-HERP aims to assist the country in ensuring their safe management. Such will only be guaranteed by having in place the appropriate HCWM equipment such as the proposed MWTI. Thus, the proposed installation of a MWTI at the hospital is an initiative required in all Kenyan hospitals and health centers looking at the detriments associated with poor HCWM. Kauwi Sub-County hospital, which currently utilizes an inefficient low-cost incinerator and open burning of HCW requires a modern MWTI, which if possible, can also be availed for utilization by the surrounding HCFs.

The MWTI will contribute or enable the KSCH and the County Government of Kitui to meet their waste management objectives, and the protection of the health of communities and the environment.

2.3.2 Justification for preparation of the Safeguards Instruments

Under the provisions of the EMCA 1999 and its subsidiary legislation, an ESIA is mandated, to be undertaken prior to construction and commissioning of a MWTI. 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 Environmental and Social Standards (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 (HUTLCs); and
vi. ESS10: Stakeholder Engagement and Information Disclosure.

2.4 Definition and Purpose of the ESIA

ESIA is a process for predicting and assessing the potential environmental and social impacts of a proposed project, evaluating alternatives and designing appropriate mitigation, management and monitoring measures. Through the ESIA, the WBG requires the borrower to provide sufficient information about the potential environmental and social risks and impacts of a proposed project, such as the proposed MWTI at Kauwi Level 4 Sub-County Hospital.

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 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.
2.5 Methodology of ESIA

For the purpose of the assessment and preparation of the ESIA report, the following approaches and methodologies were employed:

i. Desktop studies which 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: This was carried out following the requirements as specified in the C-HERP ESMF. The classification of the sub-project is as per the provisions of the Laws and Regulations applicable in the country. Therefore, the project was categorized as among those requiring ESIA under schedule two (2) of EMCA, 2015. In addition, under the World Bank ESF, the Environmental and Social Risk associated with the proposed project is classified as "substantial;".

iii. Environmental 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 characteristics and environmental status of surrounding areas;

v. CPP to get input into the project activities/risks/impacts and proposed mitigation measures;

vi. Identification of potential environment and social impacts and preparation of an ESMP; and

vii. Reporting.
3 PROJECT DESCRIPTION AND ITS LOCATION

3.1 Introduction
This section highlights details of the proposed project; the project specifications and details of the project location as well as the Project Influence Area (PIA). The section also examines the compatibility of the proposed project with the local land uses. The proposed MWTI is meant to convert all types of biomedical waste from Kauwi hospital into inert ashes on site through burning. The proposed facility will have a capacity to treat through burning medical wastes at a rate of up to 50kg per hour.

3.2 Proposed Location of the Project
The proposed incinerator project will be located within Kauwi Level 4 Sub-County Hospital compound. This is approximately 200m away from the nearby seasonal Kauwi river channel. The hospital is approximately 1km from Kabati shopping centre, off Kitui-Kanyoonyoo road, in Kauwi Ward, Kitui West Constituency, Kitui West Sub-County of Kitui County. Kauwi is a public hospital owned by the GoK through the County Government of Kitui. The LRN are parcels of land; 2265,754 & 756 (Site map - Appendix 11). There are no issues related to land acquisition for the proposed project neither was any land ownership conflict raised during the ESIA scoping and CPP phases. The site designated for the construction of a shelter and installation of the incinerator is a few meters form the existing incinerator and the open-air waste burning sites. The site is characterized by indigenous trees and thick grass cover. The average GPS coordinates for the proposed MWTI site are 1°14’49.82’S 37°54’52.49’E. Figure 1 shows the proposed project site and figure 2 and 3 shows location and direction map for the hospital.

![Figure 4: The proposed project site at the ESIA Scoping Phase (Source: Field Work)](image)

![Figure 5: The Proposed project location within the Kauwi Sub-County Hospital compound (Source: Goggle Map)](image)
3.3 Project Description

The proposed project will involve the construction of a shelter, construction of an ash pit, procurement of the MWTI with a capacity of handling 50kg/h, its installation and commissioning. The total area required for the facility is 220m². The project is estimated to cost KES 25,900,000 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 7 below demonstrates the incinerator.

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 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.

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.

g) Plant Duty and Design Parameters
i. Design burn rate: Up to 50Kg/hour in batch loads/ Up to 400kg range per 8-hour day
ii. Duration of Operation: Nominally 8 hours/day 310 days/annum (Up to a maximum of 14hrs/day)
iii. Waste: General / Medical
iv. Moisture content of waste: 20-50%
v. Weight of ash residue: 10%-12% (Subject to waste profile)
vi. Volume of ash residue: 5-7% (Subject to waste profile)
vii. Auxiliary fuel: Diesel
viii. Maximum Noise level: 82dB (A) at 1m
ix. Ambient operating condition: -5°C to 50°C

Figure 7: 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)
3.4 Project Design Considerations

The proposed project will involve installation of a MWTI of 50kg/hour rating. To be noted is that normal operations at the hospital will not be disrupted during the implementation of the project as the proposed site is far from the other hospital facilities. The site also has an independent entrance and exit from and to the main Kitui-Kanyoonyoo road. The installation of the proposed MWTI unit at the hospital will require the following activities to be undertaken:

i. Construction of a shelter to house the MWTI. As per the design, the total area required is 220m². The shelter should have a temporary waste storage/holding area, incinerator chamber, sanitation facilities, operator changing rooms, material store room, office, emergency response system, fire suppression system;

ii. Installation of the MWTI with primary and secondary burning chambers, control panel and fitted with an air scrubber

iii. Construction of an ash pit within the MWTI compound; 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.

iii. Construction of perimeter fence around the waste management area so as to secure and control movement into and out of the waste management area.

The proposed project site location was deemed appropriate based on the layout of the hospital and hospital operations. This is considering that it is approximately 80m away from the nearest hospital facility and at least 100m away from the nearest homestead. The project site is within a bushy virgin land and an exit is already fixed opening into the main Kitui-Kanyoonyoo road to enable other HCF bring in their HCW without necessarily going through the Kauwi hospital compound.

3.5 Project Activities for Medical Waste Treatment Incinerator

3.5.1 Planning and Design Phase

This is a purely preparatory stage of the project with minimal physical activities at the project site. The activities entail mostly boardroom consultations/meetings, site visits, desktop works, stakeholders and public consultations and participation.

3.5.2 Construction Phase

Activities applicable during the construction of the MWTI shelter and subsequent installation of the incinerator will entail:

I. Recruitment of construction and installation staff and their induction on environmental and social safeguards requirements. The number of staff needed may be about 20;

II. Establishment of a store for materials storage and handling,

III. Transportation and delivery of building materials;

IV. Site clearance and fencing,

V. Excavation of foundations, civil/construction works, connection of utility services such as water, electricity and installation of the MWTI.

VI. Construction of an ash pit.

The incinerator will be sheltered in a permanent structure designed to ensure that there is adequate ventilation. The shelter will be made up of the following:

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

Approximately 6 months will be 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.
3.5.3 Operation Phase

Upon commissioning, the hospital will utilize MWTI in ensuring proper treatment of HCW generated from the COVID-19 treatment centre, healthcare waste from within the hospital and other HCFs located within Kitui West Sub-County. Maintenance activities will include facility cleaning, routine checks and other necessary repairs. Workers will be employed onsite including the operators who will be operating the MWTI and undertaking necessary maintenance of the equipment as part of what they are trained to do in the course of operating the incinerator machine.

3.5.3.1 Waste Management

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 a septic tank that serves to dispose waste water from the entire hospital. It is expected that all waste water generated by the operations of the proposed MWTI will be safely disposed via connection to the said internal waste water disposal system. There is no pre-treatment of waste water before its release to the internal waste water management system. Since the HCF has not carried out any waste water sampling, testing and analysis, it has not been ascertained whether the effluent discharged by HCF complies 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. Additional information on wastewater management provided in sub section 3.12 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, disinfectants, detergents etc which should be disposed into the septic tank. The volumes of such waste waters will depend on the cleaning frequencies.

3.5.3.2 Expected Operation Procedures of the Incinerator

The following are the expected operation procedures in the event of incinerating HCW.
a) Ash Removal
The implementation of the MWTI is expected to provide for an ash pit next to the MWTI, but within the perimeter wall. 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.

b) 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
c) 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 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.

d) Burn down
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.

e) 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.

3.5.4 Decommissioning Phase
In case of the incinerator completely breaks down 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 project; the following will have to be considered.

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

3.5.4.2 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 the 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.

3.5.4.3 Site Restoration
Site restoration is achieved through replenishment of the topsoil and re-vegetation using native plant species and this is usually done once all the waste resulting from demolition and dismantling works is completely removed from the site.

All project phases should adequately include implementation and monitoring of the requisite environmental and social safeguards measures to mitigate against risks that may emanate from the myriad of sub-project activities.
4 ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION

4.1 Introduction
The information contained in this chapter is baseline information against which the performance of environmental and social conditions will be based upon and evaluated. The information can be gathered from both secondary sources and the field visits to the site. The proposed project, as earlier on stated, will be carried out within the Kauwi Sub-County Hospital compound which is in the outskirts of Kabati town, Kitui West constituency in Kitui County and an average of 20km away from Kitui Township. Kitui town, which is the headquarters of Kitui County, is about 160km from Nairobi City on the eastern part of Kenya.

4.2 Physiographic and Natural Conditions

4.2.1 Climate
Most parts of Kitui County where Kauwi hospital falls have an arid and semi-arid climate with rainfall distribution that is erratic and unreliable. The lowest annual average temperature is 14°C and the highest annual average temperature is 32°C.

4.2.2 Physical and Topographic Features
The general landscape at the hospital is flat and gently rolls down eastwards to Kauwi river channel which is roughly 200m away.

4.2.3 Ecological Conditions
Kitui County has seven agro-ecological zones. These are: Upper-Midland 3-4; Upper-Midland 4; Lower-Midland 3; Lower-Midland 4; Lower-Midland 5; Inner Lowland 5; and Inner Lowland 6. The hospital is located in the lower midland where sorghum, millet, dry maize varieties, green gram and sunflowers does well. There were some kitchen gardens planted with beans and maize within the hospital compound as at the ESIA scoping phase as well.

![Figure 8: The beans and maize crops near the project site as at the ESIA scoping phase (Source: Field Visit)](image)

4.2.4 Soils
The major dominant type of soil within the hospital is red soil. 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) at the proposed site which is next to the current hospital waste treatment area. The area to be disturbed is estimated to be an average of 220m². Expected disturbance includes removal of vegetation with possibility of no trees being cut during site clearance in preparation for the erection of the MWTI shed. However, measures have been outlined in the ESMMP that guide on how to manage the spoil generated from excavations and also on how to ensure minimal disturbance of the existing green zones.

4.2.5 Biological Environment
The dominant vegetation type within the project site is thick grass cover and indigenous tree species such as *Acacia tortilis*. But within the hospital compound and the surrounding area there are planted exotic tree species...
such as *Croton megalocarpus* and *Jacaranda* sp. No large animal species were witnessed within or around the project site, only birds and insects could be spotted.

Figure 9: Jacaranda trees planted around the hospital staff houses (Source: Field Visit)

4.3 Socio-Economic Features

4.3.1 Water Supply
The hospital main source of water is by the Kiambere-Mwingi Water and Sewerage Company (KIMWASCO). It was noted that there was no rain water harvesting because of the use of asbestos roofing tiles within the hospital.

4.3.2 Power Supply and Distribution
The hospital main source of power is connection to the single-phase electricity supply from the Kenya Power and Lighting Company. It was reported by the hospital PHO that the hospital has already asked for a quotation to be connected to 3-phase electricity supply and that there is a backup diesel generator of 100kva.

Figure 10: The diesel backup generator at Kauwi hospital (Source: Field Visit)

4.3.3 Fire Safety and Fighting
The hospital does not have any firefighting equipment fitted.

4.3.4 Drainage and Sewer Networks
There was no drainage channels developed within the hospital compound as at the ESIA scoping phase. The hospital has an internal septic tank waste water disposal system that serves to dispose waste water from the entire hospital.

4.3.5 Local Land Uses
The hospital is located in a rural set up, but exhibiting mixed land uses such as settlements/residential, businesses premises and farming.

Figure 11: Some of the facilities neighboring the project site (Source: Field Visit)

4.3.6 Demography and Hospital Catchment
The hospital is situated in Kitui County with population of 2,045,973 as at 2019 and which had been projected to increase to 2,798,000 by 2029. The HCF catchment as per 2020/2021 projections is 34,500, the hospital’s immediate target population include residents of Kitui West Constituency/Kitui West Sub-County.

4.3.7 Health Access in Kitui County and Kauwi Sub County hospital
Kitui County has several hospitals and health centers to meet the health needs of residents, among them Kitui County Referral Hospital, Mwingi Sub-County General Hospital, Kitui Nursing Home, Neema Hospital, Jordan Hospital, mission-run hospitals such as Muthale mission hospital and some private health facilities. Within Kitui West Sub-County, there are community health centres including Kiondoni, Kitamwiki, Katutu, Mutanda, Kavani, Kiseveni, Mithikwani, Syokithumbi, Kwa Mutono, Kwa Mulungu, Tulia, Syanthoni and Yalatani plus 6 private clinics.

4.3.8 The Hospital Capacity and Services Offered
The hospital which was started in 1938 has a bed capacity of 30. The hospital attends to an average of 130 patients in a day, hence an average of 4000 patients per month. It offers diverse healthcare services to the public such as maternal health care services, radiology services, youth friendly services focusing on reproductive health and gender based issues, inpatient and outpatient services for medical and surgical cases, comprehensive care services. The hospital does not have adequate facilities for operationalization as a level 4 hospital but has 1 pharmacy for both inpatient and outpatient, a mortuary, kitchen etc. The hospital has a total of 30 staff who are on different form of employment contracts. A section is from the 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 Care (UHC) coverage and casual on 3 months’ contracts. The proportion of female to male is 80% to 20% respectively.

4.3.9 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, Kitui county accounts for 15% of the cumulative cases in Kenya (Source; MOH website). Kauwi hospital reports to have cumulatively had 40 positive cases of COVID 19 while cumulative suspects have been 15 cases. The positive cases of children below 12 years were a total of 8. The fatalities reported of suspects are 0 and of confirmed cases are 5. At the time of the visit there were no patients at the isolation ward. The isolation centre had a dedicated team of personnel with 5 personnel alternating in weekly shifts. The notable containment measures being undertaken by the hospital are
that no unauthorized persons are allowed within the hospital without a mask, hand washing stations been placed at designated points within the hospital compound, social distancing being observed, fumigation and spraying of the wastes from the wards with 0.5% sodium hypochlorite before being taken to the burning site, on job training of the hospital staff, vaccination of all hospital staff and temperature at the main gate

4.3.10 Cultural and Historic Sites
There are no sites of cultural or historic importance identified within the PIA. It is important to note that KASCH is located in semi-urban setup which is in a developmental growth. However, if during the excavation for construction of the incinerator shelter any cultural or historic importance is found, the guidance provided for in the ESMF should be applied diligently as reports are made to the National Museums of Kenya (NMK).

4.3.11 Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities
The indigenous people occupying the project location are mainly from Kamba community. In addition, there are no historically undeserved traditional local communities living within the PIA.

4.3.12 Health, Safety and Security
The hospital is secured with a chain-link fence and all points of entry are manned by guards who are on casual contract to ensure safety of hospital property and order within the hospital.

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 a perimeter fence. The gate is manned by the hospital contracted security personnel. There are no CCTVs within Kauwi hospital

4.3.13 Gender Based Violence/ Sexual Exploitation and Abuse
The hospital has a gender policy which has been enshrined from the national gender guidelines which is used during recruitment of employees and ensures that the third gender rule is met. Gender based issues in the hospital are currently addressed through the normal administrative mechanisms. Noted is that there is a gender desk manned by a clinician with a register and that there are hotlines for use in reporting GBV for quick response. There is a fence that is separating the male and female wards with different access entry points and the wards are 100m apart

4.3.14 Child Protection
The hospital focuses on the following as a way of enhancing child protection:
- Sensitization of unwanted pregnancies
- Hysteria among adolescences
- Managing HIV positive kids who are being mismanaged by caregivers
- Orphans being taken care by irresponsible care givers or not well to do caregivers like grandmothers and grandfathers

The hospital management also ensures that no children are employed within the premises and no child is to be subjected to suffering within the hospital with the privacy of children being of utmost importance to the hospital management.

4.3.15 Grievance Redress Mechanisms
The hospital has a complaints register and World Bank issued tablets and airtime to enhance management of complaints and grievances from community members and other stakeholders. The hospital also receives walk-in complaints. The reported complains are reviewed monthly by the hospital management committee and are recommended to be resolved at departmental level before escalation to the hospital administration. Follow ups are done up to community and household level in case of complains from the surrounding community.

4.3.16 Labor Risks
The hospital has had his share of labour disputes and disagreements due to conditions of employment and with
the COVID 19 and exposure the health workers are; no proper or serious measures been put in place. The workers do not have any benefits arising, with COVID the working hours been extended for some workers with no benefits since it’s an emergency. There is lack provision of proper PPEs during work and this has resulted to disagreements.

4.3.17 HIV/AIDS and STI Risks
Kauwi area has relatively low prevalence of HIV AIDS at 40% (Hospital Records) but they still receive cases of HIV and the process of managing is continuously do testing and counseling, put the positive patients on the prescribed ART drugs, health education on HIV id done daily at the hospital, provision of condoms at designated points at the hospital among others.
5 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 (1), Legal Framework (2), Institutional Framework (3), Social Statutes (Table 4: 4) and WB ESF (Table 5: 5) and other relevant Good International Industry Practice (GIIP).

5.1 Policy Framework

Table 1: Policy Framework

<table>
<thead>
<tr>
<th>#</th>
<th>Policy</th>
<th>Provision</th>
<th>Relevancy</th>
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<tbody>
<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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<tr>
<td>2</td>
<td>The National OSH 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 commensurate with that of a middle-income country without segregation.</td>
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<tr>
<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 being an isolation centre 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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<tr>
<td>5</td>
<td>National Guidelines for the Management of COVID-19 Wastes, 2020</td>
<td>The EMCA (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 HCW that can be considered as infectious waste (15%). These PPEs are used within the Hospital especially the face masks are single use resulting in increased waste generation which if not well addressed could pose both cross infections and environmental risk.</td>
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5.2 Regulatory Framework

Table 2: Regulatory Framework

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<thead>
<tr>
<th>#</th>
<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 69 in Part 2 provides that the state shall; (v) Establish systems of environmental impact assessment, environmental audit and monitoring of the environment; In addition, Article 43 (1 provides that every person has the right to the highest attainable standard of health, which includes the right to health care services, including reproductive health care, accessible and adequate housing, and to reasonable standards of sanitation and to clean and safe water in adequate quantities.</td>
<td>The project should ensure compliance with the CoK on issues of environment protection, and safeguard of public health through provision of more comprehensive health services to every citizen. Implementing the MWTI is a way of ensuring a clean environment to the people around the hospital. It is upon the hospital management to ensure that the MWTI comes with a air scrubber to assist prevent air pollution from the incineration process.</td>
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<tr>
<td>2</td>
<td>National Infection</td>
<td>Provides comprehensive standardized information</td>
<td>The guidelines shall be reference for all workers with the</td>
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<td><strong>Prevention and Control Guidelines for Health Care Services, 2015 (revised 2018)</strong></td>
<td>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>necessary information and procedures of managing, which include segregation, handling treating, transporting and disposal of HCW to avoid risk of infections and contamination of environment. The installation and operationalization of the MWTI will help address such risks as well as serve to reduce the volume of untreated infectious wastes left in the open at hospital.</td>
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<tr>
<td>3. <strong>EMCA, 1999 (Amended in 2015)</strong></td>
<td>The Act empowers the National Environment Management Authority (NEMA) to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of government in the implementation of all policies 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 wastewater management, aerial emissions, noise and vibrations among others.</td>
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<td>4. <strong>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 &amp; S aspects.</td>
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<tr>
<td>5. <strong>EMCA (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 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 healthcare waste generated from the COVID-19 designated health facilities as well as in its operation of the MWTI by applying for the necessary licenses to operate it.</td>
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<td>6. <strong>EMCA (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 centers)</td>
<td>The Management of the Hospital will subject the MWTI to stack emission testing and analysis and apply for the license to own and operate a waste treatment facility, which is lacking for the currently used MWTI. 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>7. <strong>EMCA (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 resources such as the nearby Kauwi river channel are implemented in all project phases such as channeling all wastewater effluent from the waste treatment area to the septic tank system and undertake periodic monitoring of the waste effluent from the hospital to ensure compliance with the acceptable standards. Necessary water supply or wastewater discharge permits, and compliance with such permits shall also be sought.</td>
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<td>8. <strong>EMCA (Noise and Excessive Vibration Pollution) Regulations, 2009</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 or endangers the comfort, repose, health or safety of others and the environment and section 3(2) states that in determining whether noise is loud, unreasonable, unnecessary or unusual depends on; (i) the time of the day, (ii) proximity to residential area (iii) whether</td>
<td>The contractor will be required to take into consideration monitoring of the noise and vibrations levels within the hospital during construction period to ensure compliance.</td>
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<td>9.</td>
<td><strong>Public Health Act (Cap 242) revised 2012</strong></td>
<td>Part III of the Public Health Act provides 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. The implementation of the MWTI project at the hospital has both direct and indirect implication to the health workers and neighboring communities especially with regard to the movement of labour and associated COVID-19 threats. The contractor is required to abide by these provisions throughout the project cycle. COVID-19 prevention, control and suppression measures shall be adhered to by all the workers.</td>
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<td>10.</td>
<td><strong>The Health Act, 2017</strong></td>
<td>It formalizes collaboration between national and county governments, obliges Kenya to address the health needs of vulnerable groups, and mandates the provision of emergency and specialized care. In a progressive step, the law also ensures the provision of free maternity care, vaccinations for children under age five, and workplace breastfeeding facilities. It further seeks to safeguard 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. The collaboration between MoH and the County Government of Kitui in the implementation of the MWTI is well within the provisions of this Act. All interests of the aged, women, children and PLWD should be observed in the implementation and operation the project sub-components via the provision of PLWD friendly facilities, protecting the welfare of children, respecting women and the aged.</td>
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<td>11.</td>
<td><strong>Physical and Land Use Planning Act, 2019</strong></td>
<td>The County Governments are empowered to prohibit or control the use and development of land and buildings in the interest of proper and orderly development of an area. The Management of the Hospital is required to seek developments approval from the Kitui County Physical planning department for the civil works (construction activities).</td>
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<td>12.</td>
<td><strong>Occupational Safety and Health Act, 2007</strong></td>
<td>This is 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. All Safety and Health measures should be in place to ensure workers and the neighboring communities are not exposed to Safety and Health risks during project construction, operational &amp; decommissioning phase namely: provision of appropriate PPE, training of workers, appointing health and safety committees and safety advisor where there are civil works, keeping incident logs and reporting to DOSHS and WB, registering work place and screening off active construction site.</td>
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<td>13.</td>
<td><strong>Work Injuries Benefits Act, 2007</strong></td>
<td>This Act provides for compensation to employees for work related injuries and diseases contracted in the course of their employment and for connected purposes. The contractor and the management of the Hospital shall comply with part II of this Act with regard to obligations of the employer including Compensation for temporary, total or partial disablement, treatment as well as provision of first Aid Services to workers at all times.</td>
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<td>14.</td>
<td><strong>HIV/AIDS Prevention and Control Act, 2006</strong></td>
<td>Part 11 Section 7 requires HIV and AIDS education in work places; specifically, provision of basic information and instruction on HIV/AIDS prevention and control. During construction/installation phase, the contractor is expected to create awareness to the employees and local community on issues related to HIV/AIDS.</td>
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<td>15.</td>
<td><strong>The County Government Act of 2012</strong></td>
<td>Part II of the Act empowers the county governments to be in charge of planning by coordinating and ensuring integrated planning within the county. The Management of the Hospital is required to seek developments approval from the Kitui County Physical planning department for the civil works (construction and installation activities).</td>
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<td>16.</td>
<td><strong>National Construction Authority Act, 2011</strong></td>
<td>The National Construction Authority Act 2011 seeks to regulate the construction industry and coordinate its development. The Management of the Hospital shall liaise with NCA to ensure licensed contractors are the ones to be awarded contract to construct and install the incinerator at the hospital.</td>
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<td>17.</td>
<td><strong>The National Council for Disability Act, 2003</strong></td>
<td>An 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. People with disability will be catered for including construction of a ramp, friendly ablution and WASH facilities, as well as access to employment and healthcare services.</td>
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<td>18.</td>
<td><strong>The Employment Act 2007</strong></td>
<td>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. 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.</td>
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</table>
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 burn technology that should be fitted with an air scrubber to reduce the release of greenhouse gases into the atmosphere in line with the requirements of the Act to achieve low carbon climate development. It should also be subjected to periodic stack emission testing and analysis to make sure that it is functioning as per the manufacturers guidelines. People with disability interest including access to the healthcare facilities will be catered for including the ramp, abolition and WASH facilities, as well as access to employment and healthcare services.

### 5.3 Compliance to Applicable Kenya EHS Regulatory Requirements

While noting that the HCF has not been fully compliant to 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 Environmental Management and Coordination Act, 1999, Kenya the Occupational Safety and Health Act of 2007 and other sectoral laws. Important also to note is that the Proponent will be required to ensure that this ESIA ESMFP 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 environmental, occupational health and safety and community health and safety issues especially during construction phase of the project.

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

- Certificate of Registration of the site as a Workplace with DOSHS;
- Registration of the project with the National Construction Authority
- ESIA License from NEMA
- Development approval/permits from the Kitui County Physical planning departments for the civil works (construction activities).

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

- License to own and operate the MWTI from NEMA
- An annual environmental audit of the waste disposal site
- Periodic stack emission testing and analysis as provided for by the Air Quality Regulations of 2014

### 5.4 Institutional Framework

Some of the institutions relevant to the proposed project are presented on Table 3 below:

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<tr>
<th>#</th>
<th>Legislation</th>
<th>Provision</th>
<th>Relevancy</th>
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<tbody>
<tr>
<td>1</td>
<td>National Environment Management Authority (NEMA)</td>
<td>The responsibility of NEMA is to supervise and coordinate 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 regulated development activity which requires undertaking of the ESIA study. The report of the study shall be submitted to NEMA for review, approval and facilitate issuance of license. NEMA also has the mandate for solid waste management, including hazardous waste and medical waste management as well as the licensing of the operation and use of the incinerator.</td>
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<tr>
<td>2</td>
<td>Ministry of Health</td>
<td>The proposed project is under the MoH and it shall be the primary role of the Ministry to monitor and measure the progress of implementation of the social and environmental safeguards.</td>
<td>The Ministry, through the hospital management shall prepare periodic reports, which shall be submitted, to the World Bank for review and further action where necessary.</td>
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<td>3</td>
<td>County Government of Kitui</td>
<td>The County Government of Kitui has powers to control or prohibit all businesses, factories and other activities including the proposed project which</td>
<td>County Government of Kitui shall supervise project roll out by use of the technical team to ensure no activity being implemented may become a source of danger, discomfort or annoyance to the</td>
</tr>
</tbody>
</table>
The mandate of the Directorate is to ensure compliance with the provisions of the Occupational safety and health Act 2007, WIBA, 2007 and promote safety and health of workers.

The NCA is responsible for issuing permits to construction sites and advising the government of Kenya on construction.

The World in line with the Project Environment and Social Commitment Plan and other environment and social instruments prepared for the project including the ESMF, LMP and SEP, is duty bound to undertake periodic monitoring of the project implementation.

5.5 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 GBV  
Stigma leads to non-disclosure of GBV  
Non-access to services to address GBV |
| Public participation and consultations | - CoK, 2010, Article 10(2) a, b  
- County Public Participation Guidelines2 | - 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 353 | 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 actors2 |
| 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)  
- Commission for the Administration of Justice  
- Ministry of Health | There is need to 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 other institutions with a mandate to address disputes. |
| Inclusivity | - Disability Act 2003  
- National Gender and Equality Act, 2011 | - National Council for Persons with Disabilities; Department of Social Development; National Gender and Equality Commission | There is need to ensure that civil works and services is sensitive to the accessibility rights for PWDs |
| Child protection | - The Children’s Act  
- Constitution of Kenya (Art 53 (b) and Art. 260) | - The Department of Children Services  
- Department of Labour | There is need to verify children’s ages for contractor works to ensure prevention of child labour risks in the |

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

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. These relevant ESSs to the project are outlined below:

<table>
<thead>
<tr>
<th>#</th>
<th>ESSs</th>
<th>Relevant</th>
<th>Reason</th>
</tr>
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<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 is classified as “High” since Kenya has limited experience in managing the highly infectious medical waste. However, this has since been downgraded to substantial based on the capacity in place. 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 MWTI because it 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 OSH 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 GoK as well as the contracted workers for the Contractor. All workers will have orientation on and sign a CoC on expected behavior 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 incinerator 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 MWTI 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 wastewater, reagents, infected materials, etc.) from the COVID-19 isolation center 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 and COVID-19 vaccination. This ESIA has been prepared to identify the possible ways to prevent and mitigate the potential pollution to the environment see Table 9 (ESMP).</td>
</tr>
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</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 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 waste treatment facility 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.

<table>
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<tr>
<th>5. ESS10: Stakeholder Engagement and Information Disclosure</th>
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<tr>
<td>The project being implemented by the MoH which has established a structured approach to engagement with stakeholders 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 support to establishment of the Isolation Center and improving the waste management at the hospital by installing MWTI (see section 5 stakeholder consultation).</td>
<td></td>
</tr>
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</table>

5.7 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 EHS guidelines apply to specified sub-project components of COVID-19 regarding the civil works for the construction of the MWTI shelter and installation of the microwave. Among the applicable guidelines, the following points provide a 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.

5.8 **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.

5.9 **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.

5.10 **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, 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

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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; and
4. **Non-SEA** - physical assault, psychological or physical abuse, denial of resources, opportunities or services and IPV.

5. Other specific C-HERP ES documents that are required for all subprojects include the ESMF, ICWMP and LMP.

5.11 **World Health Organization Guidelines for COVID-19 Prevention and Management**

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.

v. **WHO Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19):** Aimed to offer guidance to WHO Member States on implementing quarantine measures for individuals in the context of COVID-19 outbreak; and

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.

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6 WB 2018, p.3
KEY STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION

6.1 Introduction
The World Bank ESF, the Constitution of Kenya (2010), and the EMCA 1999 require that the views of persons who may be affected by a proposed project such as the proposed construction of HCWI be sought during the process of conducting an ESIA. Stakeholder and public consultations are geared towards informed decision making by all parties involved or likely to be affected in a project thereby promoting sustainability. Consultative public participation is therefore an important process in ESIA studies, because through this process, stakeholders have an opportunity to internalize and contribute to the overall project design by making recommendations and seeking answers to their concerns. In addition, the process creates a sense of responsibility, commitment and local ownership for smooth implementation of a project. Based on the above provisions, beneficiaries and members of the public likely to be affected by the proposed project were consulted for their views and opinions regarding the project before it is implemented. This was achieved through a public meeting held at Kauwi Sub-County Hospital on the 24th December 2021 starting 9am and lasted for 3 hours.

6.2 Stakeholder Consultations
6.2.1 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.

6.2.2 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.

6.2.3 Summary of Public Consultation Findings
During the meeting, there were a total of 15 participants and 3 ESIA Experts, 8 were female and 7 were male. The participants included area residents, business persons, hospital representatives, PHOs, Church leaders, Village managers, and the National Government Administration representatives (Chiefs/Assistant Chiefs). The participants in the consultative meeting indicated that they fully support the proposed project. Details of the stakeholder outcome is captured in Error! Reference source not found.7 as well as conclusion in section 5.3.

<table>
<thead>
<tr>
<th>Stakeholder Name</th>
<th>Issue raised</th>
<th>Response given</th>
</tr>
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<tbody>
<tr>
<td>Rebecca Mwanziu, Kauwi Sub-County Hospital PHO</td>
<td>Inefficiency in HCWM: She stated that the whole of Kitui West Sub-County, with more than 20 HCF, lacked a modern HCW treatment facility, thus resulting to the use of inefficient methods such as</td>
<td>The PHO therefore said that there was an urgent need to have one. She stated that there was no better location to have it than at Kauwi Sub-County Hospital which is located somehow centrally within the Sub-County.</td>
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<tr>
<td><strong>Thomas Munyao, Area Chief</strong></td>
<td><strong>Details of the proposed project:</strong> He wished to be furnished with details of what the proposed project entailed.</td>
<td>Patrick (ESIA Expert) reported that the proposed MWTI will entail the construction of a shelter to house a MWTI machine. The shelter will also include provisions such as a bathroom, a toilet, a small office, a store for tools and equipment, a temporary HCW storage area, a perimeter wall and an ash pit. The MWTI will have components such as primary burning chamber/ignition chamber, secondary burning chamber, air scrubber and a chimney. He explained that it is at the Primary Burning Chamber where the HCW is loaded and ignited to burn at temperatures averaging 600°C. Any particles and air that escapes from the primary chambers goes to the secondary burning chambers for further burning at higher temperatures averaging 800°C to 1200°C. The gases leaving the secondary burning chambers pass through the air scrubber where all particles and some gases are further filtered/trapped so as to ensure that whatever is released into the atmosphere through the chimney is not harmful. The chimney will be designed in manner that it is at least 10ft above the incinerator shelter roof.</td>
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<tr>
<td><strong>Halima Abdulkarim, one of the community members</strong></td>
<td><strong>Air pollution:</strong> She stated that she is forced to walk away from her business premises when the hospital burned wastes because of the thick smoke and strong smell that emanates from the process.</td>
<td>The PHO reported that the proposed project is expected to solve these challenges of air pollution given that it will install a MWTI, which is fitted with an air scrubber as explained by the ESIA Expert.</td>
</tr>
<tr>
<td><strong>Josephina Musyini, a community member</strong></td>
<td><strong>Scavenging by birds, rodents, cats and dogs:</strong> She stated that there were cases of cats carrying blood soiled cotton wool and placentas to their homesteads, the market and along the paths.</td>
<td>The ESIA expert (Patrick) reported that the proposed project will have a waste storage place that is not accessible to scavenging animals such as dogs, cats and birds. The expert explained that the temporary HCW storage area will be fitted with fine wire mesh so as to enable keep such scavenging animals away from reaching the HCW.</td>
</tr>
<tr>
<td><strong>Halima Abdulkarim, a community member</strong></td>
<td><strong>Fear of contamination of a nearby Kauwi river:</strong> It was pointed out that there exists a seasonal river in the eastern border of the hospital; hence the community members were concerned that the operations of the facility would impact on the river negatively.</td>
<td>The lead expert allayed the fears informing the meeting that by building the facility to the expected standards, adhering to the standard operational procedures and with strict supervision, the river will never be polluted by the operations of the proposed facility. To be noted in relation to pollution control is not the location of the incinerator, but how best it is operated avoiding any potential pollution to soil, air and water resources.</td>
</tr>
<tr>
<td><strong>Solomon Mwendwa, Ward Administrator</strong></td>
<td><strong>Fear of adoption of new technology:</strong> He was concerned whether the local community members through the hospital management would be able to navigate the technology. He was concerned on the availability of the spare parts and further sort clarity on the cost implications of energy (diesel and electricity) utilization.</td>
<td>The PHO explained that cost of maintaining the incinerator was within manageable levels for the county government. The technology was also not complex for the hospital management and with proper training during its installation and test running; identified members of the local community/hospital staff could operate and manage the facility with ease and that the spare parts and technical capacity to maintain the facility is locally available with suppliers of the machines based in Kenya.</td>
</tr>
<tr>
<td><strong>Boniface Mwalimu, Chairman Kabati Market</strong></td>
<td><strong>Employment opportunities:</strong> Members of the local community lead by the business community requested the hospital management to ensure that the local community realized benefits from the proposed project by according employment opportunities to members of the local community as much as possible.</td>
<td>The PHO confirmed that the hospital had the policy to recruit casual workers from among the local community. The Sub-County PHO assured all in attendance that the local community would be given first priority during the project implementation and in any other employment opportunity that would arise as has been the case.</td>
</tr>
<tr>
<td><strong>Feistus N. Malombe, Area Assistant Chief</strong></td>
<td><strong>Gender Based Violence:</strong> She lauded the hospital management for the way they handle complaints from the public. The hospital was also praised for handling of victims of GBV with a lot of dedication, sometimes providing an ambulance to pick victims of GBV from far flung and remote areas of the Sub-County. She praised the hospital management for ensuring that no underage persons are employed within the hospital. She requested the County PHO to ensure that all other HCF within the Sub-County and the County emulate that fineness in responding to emergencies.</td>
<td>The Hospital PHO promised that her office will continue partnering with the hospital management so as to ensure a professional Community Engagement Plan (CEP) that will ensure structured reporting of matters affecting the public in relation to the hospital operations and a feedback on all matters arising, hence strengthening the hospital’s GRM.</td>
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</table>
6.3 Conclusion of Stakeholder Engagement

The stakeholders present reaffirmed their support for the proposed project owing to its value in addressing the present waste disposal and management challenges including infectious COVID-19 wastes. There was therefore a consensus among the stakeholders to fast track the completion of the MWTI project especially due to the escalating cases of COVID-19 infections. The stakeholders underscored the need for a functional feedback and grievance redress mechanisms within the facility to allow all stakeholders raise their concerns. The facility should therefore assess and strengthen the existing system to make it more responsive to the public and in line with the CHERP requirements.

Figure 12: The public meeting (Source: Field work)
7 ANALYSIS OF PROJECT ALTERNATIVES
The team of experts analyzed several project alternative aspects which included site, technology, scale and waste management options in order to acquire project alternatives.

7.1 Project Site
The proposed project site has been chosen after consideration of several factors including accessibility by other HCF in the area without necessarily going through the hospital compound, wind direction and water supply. The space within the site is also enough for the equipment housing, and so will not require decommissioning of the existing structures within the area nor require relocation because of inadequate space. After all factors were considered, the proposed site was identified as the most suitable for construction and installation of the proposed MWTI Project.

7.2 The No Action Alternative
Considering extends of the paybacks associated with implementation of the proposed project, the “No Action” alternative can only arise in a situation where the proposed development fails to be implemented. This means that the positive impacts associated with the proposed development will not accrue to the stakeholders including the hospital, the environmental and public health advocates. The “No Action Alternative” should not be adopted, as there is need to encourage installation of adequate HCWM equipment to address the current HCWM challenges and mitigate public health related risks associated with poor medical waste management.

7.3 Incineration
Incineration is described as a high-temperature dry oxidation process which aims at reducing organic and combustible waste to inorganic, incombustible matter and result in very significant reduction of waste volume and weight. This process is usually preferred for non-recyclable wastes which cannot be reused or directly disposed off in sanitary landfill. All types of modern incinerators, if operated properly according to the specifications will eliminate pathogens from the waste and reduce waste to ashes.

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

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

Because of the many advantages of incineration, including that they can treat the greatest variety of waste, significantly reducing the volume of wastes, trained personnel are readily available and that they are cheaper to install, this method is considered as a viable option provided the mitigation measures provided in this ESIA report are fully exercise.

7.4 Analysis of Alternatives to Incineration
7.4.1 Open Uncontrolled, Non-Engineered Dump Sites
The above method has proved to be one of the most environmentally and socially unfriendly method of waste disposal.

This method could not be considered because it does not protect the environment neither does it lead to social cohesion between the hospital and the public as well as advocates of environmental and public health protection.
7.4.2  Sanitary landfill
If properly constructed and operated, landfill sites can act as an alternative 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.

7.4.3  Open Burning of HCW
Burning HCW at low temperatures in the open releases toxic pollutants into the air and should be highly discouraged and avoided at all costs.

7.4.4  Microwaving
This kind of technology is considered an alternative technology of the incinerator. It 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. The types of waste generally treated in incinerator systems are equal to those treated in autoclaves.

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

b)  Disadvantages include:
- Its operating cost is very high (high electricity bills),
- 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
- Volatile and semi-volatile organic compounds, chemotherapeutic waste, mercury, other hazardous chemical waste and radiological waste should not be treated in a microwave
- Produces offensive odours within the sheds

This method could not be considered given that it will need further investment in items such as specialized waste transportation vehicles.

7.5  Comparison of Alternatives
The proposed project is the best alternative since it will provide a modern hazardous waste management facility within the hospital leading to conservation of environmental resources and public health. According to many studies, incineration methods are most used among the technologies for HCWI in most countries including Kenya. Therefore, opting for incineration against the other waste treatment options is well within the standards for HCWI and favourable for this health facility.
8 POTENTIAL IMPACTS IDENTIFICATION AND MITIGATION MEASURES

8.1 Introduction
The activities undertaken during pre-implementation, implementation and operation of the MWTI are associated with several potential impacts. The potential impacts are classified into temporary/transient and permanent impacts depending on the influence period of the impact. The potential impacts are also 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 categories of their time of occurrence (pre-construction/design, implementation/construction, operational and decommissioning phase).

8.2 Potential Impacts During Planning and Design Phase
8.2.1 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 sociologists 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 ownership and sustainability of the project. Awareness was done through consultations on different aspects of the project.

8.2.2 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.

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. As experts we do suggest that the Design Team shall incorporate Environmental and Social Experts in the team and take time to sensitize and alert those within the project influence area about the activities of the proposed project. The Design Team should also ensure that the MWTI shelter provides for all the needed amenities as discussed under the project description. 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 (ESHIS) 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.

8.3 Potential Impacts during Implementation
8.3.1 Potential Positive Impacts during Construction Phase
a) Creation of a Market for Construction materials
The contractor will utilize locally available materials for construction of the project. This will in turn provide a ready market for suppliers within and around the project area.

b) Creation of Employment Opportunities
The construction works are a source of temporary employment opportunities to the community, either as skilled or as unskilled labourers. They include machine operators to be engaged for the excavation works, site clearance, compaction works and backfilling.
As well, several workers including casual labourers, plumbers, electricians and engineers are expected to work on the site for a period of time. Semi-skilled, unskilled and formal employees are also expected to obtain gainful employment during the period of construction.

8.3.2 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 improvement of access paths at the health facility;
- The contractor should ensure minimal disturbance to the topography of the area as much as possible;
- 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;
- Construction of the waste storage area should have adequate capacity to accommodate peak waste generated due to increased patient intake compared to normal average monthly medical waste generated and to allow for handling of HCW from neighboring HCFs (both private and public). 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;
- Restoration shall be undertaken to ensure that the original setting is as much as possible retained;
- The proponent should observe measures stipulated in the ESMP for sustainable project implementation.

b) Noise and vibration 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 activities.

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:
- Contractor to coordinate with HCF 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;
- Install portable barriers to shield compressors and other small stationary equipment where necessary;
- Equipment 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;
- 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 (Dust and 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 or use screen/nets as and when necessary to reduce dust;
- When transporting construction material, ensure vehicles are covered with tarpaulins in order to decrease dust emissions; and
- No burning of waste will be allowed at the project site

d) Management and disposal of spoil material generated
Construction works will involve minor earthworks and excavation which will generate some spoil. The waste spoil requires to be adequately disposed to prevent 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 marram 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.
- 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 minimised if care is taken to site the construction in such a manner no established tree will be cleared. To contain the potential negative impacts related to vegetation loss, the following mitigation measures are recommended:

- The contractor should properly demarcate the project area likely to be affected by the construction works;
- 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 phase are likely to be fuel, lubricants, grease, paints and pest control substances to be applied on the wooden structures and foundations. Spillage or escape 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 of all hazardous/toxic substances in specifically designated areas on site will be in safe containers, labelled with details of composition, properties and handling information including safety data sheets and for use only for construction works;
- Store all chemicals and related materials properly 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;
- Disperse the meteoric waters during the course of the construction works by constructing temporary drainage channels and soak pits
- 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) Extraction, Use and Management of Solid waste from Construction Materials
Construction materials that will be used include; timber, building blocks, ballast, sand and cement. This will be obtained from quarries, hardware shops and sand harvesters who extract such materials from natural resource banks such as rivers and land. To check on the impacts of material extraction use and for management of non-hazardous wastes, both solid and liquid, the following is recommended:
✓ The Contractors 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 and socially friendly processes in their operations;
✓ 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;
✓ Contractor shall prepare waste management plan as part of the C-ESMP to be implemented at the site (storage, provision of bins, site clean-up, bin clean-out schedule, etc.) before commencement of any works, which should promote waste minimization and recycling.
✓ Contractor shall be responsible for handling and disposal of all construction and related waste;
✓ 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; and
✓ Fine earth materials (sand and murram) should be covered using tarpaulins during haulage to prevent spillage, dust and particulate matter emission.

h) 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 bowser.
✓ Encourage prompt maintenance of water pipeline leaks;

i) 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. Should any archaeological or culturally important artefact be discovered during the construction/excavation process, the contractor should implement the chance find procedure attached as Appendix 3 of this ESIA report.

j) Occupation/Public Health and Safety risks and Impacts
Construction works unavoidably expose workers to OHS risks such potential accidents and injuries resulting from unintentional falls and injuries associated with working from heights, burns from welding, electrocution and use of faulty hand tools and construction equipment. Construction workers are also likely to be exposed to health hazards related to the handling and disposal of HCW next to the construction site. The piling and open burning of the HCW near the construction site exposes the workers to the risk of contact with infectious wastes, and inhalation of toxic fumes emitted as the waste burns.
In relation to public safety, the most serious threats will be on the areas with heavy vehicles moving in and out of the construction site. There will also be an increased risk of traffic related accidents from vehicles transporting construction materials. Although there are additional measures listed in ESMF, ICWMP, LMP, and WG EHS General Guidelines, this can be mitigated through observing the following:

- To reduce on workers accidents and hazards, the contractor is expected to comply with Occupational Health and Safety rules and regulations as stipulated in the Occupational Safety and Health Act (OSHA), 2007. Ensure the workplace is registered by the Directorate of Occupational Safety and Health Services (DOSHES);
- The contractor shall prepare an OHS plan as part of their C-ESMP for the construction works and which should include input from the HCF management on potential health and safety risks associated with the construction activities. The Plan should 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 health and safety requirements while at project site;
- Workers should be provided with adequate and appropriate PPE (safety helmets, shoes, gloves, mask);
- Provision of clean and accessible sanitary facilities and water to 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 sites;
- All trenches or wherever soil conditions dictate should be secured to prevent accidental fall by workers and the public into the trenches;
- 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;
- Site should have an accessible grievance redress mechanism to allow workers/community to raise safety issues and propose improvements on projects sites;
- Electrical works and installations of the medical waste incinerator should be done by a trained certified, experienced personnel and
- Contractor shall report immediately to the HCF and C-HERP PIU any worker death or serious accident

k) Potential Spread of Communicable Diseases and Other Infections

Aspects of the physical environment that promote transmission of diseases include: disposal of wastes and ventilation which are likely to occur during the construction phase of the project. With the influx of people during construction, there will be a likelihood of increase in diseases such as typhoid, tuberculosis, diarrheal diseases, dysentery, and cholera and, respiratory diseases like the COVID-19.

**Proposed mitigation measures**

- Immunize and treat affected local and migrant workers
- 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.

All the requisite COVID-19 prevention measures should be observed such as the following:

- Wearing prescribed and appropriate PPE 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.
- Seeking healthcare services immediately one experiences any of the following symptoms (while at home or work): cough, fever and shortness of breath.
- Prevent avoidable accidents and report conditions or practices that pose a safety hazard or threaten the environment.
- Treat women, children and men with respect regardless of race, colour, language, religion, or other status.
- Report any violations of this code of conduct to workers’ representative, HR or grievance redress committee and ensure that no employee who reports a violation of this code of conduct in good faith will be punished in any way.
- 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
 ✓ Regularly assess work force characteristics and adjust work practices such as avoiding concentration of more than 15 workers per site)
 ✓ Clean up the tools and equipment used on site with soap and water or use sanitizer as appropriate

Comply with all MoH guidelines and protocols geared towards controlling spread of diseases especially 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:
 ✓ Limiting workforce importation to those with specialized skills.
 ✓ 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

It is envisaged that there will be a number of persons working in the health facility during the construction phase. It is recommended that the contractor restricts recruitment of persons from other counties especially for unskilled labour to prevent COVID-19 infections and potential complaints by locals regarding reserving such job opportunities to the locals. The measures will include:
 ✓ Hiring of employees from within the locality hence limit movement or only short distances from their homes.
 ✓ Effective contractual obligations for the contractor will be done with workers to adhere to the mitigation of risks against labour influx including SEA.
 ✓ The contractor to maintain proper records of all workers indicating age and gender and avoid recruiting people aged below 18 years and forced labor.
 ✓ Contractor to observe fair treatment, non-discrimination and equal opportunity of all labourers including persons with disabilities
 ✓ All contracted workers to sign a CoC that will have provisions on individual responsibilities; and
 ✓ The contractor to ensure that the workers have access to and are informed about the project 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 female workers are especially vulnerable. The COVID-19 pandemic worsened the already high prevalence of 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 supply safety facilities such as PPE
 ✓ Contractor to engage an expert to conduct a training on GBV
 ✓ The contractor to ensure provision of the necessary basic sanitary facilities in relation to gender – separate for men and women
 ✓ The contractor to collaborate with the hospital management in handling any emerging GBV cases that may arise
 ✓ Report any violations of the CoC to workers’ representative, HR or grievance redress committee, the Social Safeguards experts at the PMT and ensure that no employee who reports a violation to the CoC in good faith will be punished in any way; and
 ✓ Comply with the National Gender and Equality Act, 2011 and related statutes.
✓ Implement strict sanctions on any worker who is reported to have been a perpetrator of SEA to fellow workers and community members

**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.

**Proposed mitigation measures**

✓ The contractor should explore possibilities of having a different access to the project site so as 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 if possible, security men dedicated to the construction site and its activities.
✓ Ensure heightened security surveillance and measures during constructions to ensure safety of construction material

**p) Sexual Exploitation and Abuse/Sexual Harassment**

The uncontrolled interaction between construction workers and other project stakeholders such as hospital staff and community could lead to SEAH as senior workers may seek sexual favors from the juniors. It is recommended that:

✓ The contractor develops a CoC which encompasses clear warning to workers on any kind of SEAH and to be signed by every worker on site
✓ It’s the contractor’s responsibility to provide a mechanism where workers are free to report any SEAH to the senior management without fear of intimidation.
✓ Ensure that the GBV One pager protocols are placed on strategic sites of the facility where the construction workers can view.
✓ Document the nearest GBV/SEA referral services from victims information and support

**q) Increase of COVID-19 Cases.**

As the project could bring in a significant population of new people and their high contact levels in the project area is forecasted that rates of new COVID-19 infections may increase.

**r) Grievance arising from construction activities**

This is the procedure and mechanism through which relevant stakeholders specifically the 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 or using other channels e.g. telephone, email, letters etc. as guided in the Project Stakeholder Engagement Plan (SEP).

**Proposed mitigation measures**

The recommended measures include the following: -

- 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)
- Implement strict sanctions to any worker who contravenes the CoC; and
- Ensure complaints reporting to the PMT on a monthly basis - using the annexed formats

**s) Labor Disputes**

The contractor and suppliers for the incinerator will have workers who will be involved in the installation of the MWTI and undertaking the other construction works. 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;
- The PMT shall abide by the provisions of the project LMP, and
- The project shall respect the workers’ right of labor unions and freedom of association

**t) 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 and other causes. It will be critical for the contractor management to protect the project from such incidence by ensuring that recruitment comply 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 GBV/SEA.
- All staff must sign, a contract which clearly defines what is and is not acceptable behavior and commit themselves towards protecting children
- 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
- 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
- Ensure that recruitment inventory indicates the ages of employment applicants and age verification is done using the national identification cards

8.4 Potential Impacts during Operational phase

a) Improper Healthcare Waste Management
During its operation, the MWTI will treat medical waste generated from the hospital healthcare activities which need to be disposed of in an appropriate medical waste disposal facility. Improper disposal of HCW would have environmental and public health impacts: for example, open burning of HCW can result in emission of dioxins, furans and particulate matter, and result in unacceptable health risks.

**Proposed 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 (HCWMP) adequate for the scale and type of activities and identified hazards consistent with the National Regulations, ICWMP and the WBG EHS guidelines for Health Facilities, and WHO guidelines (section 4.5.2). Key content of HCF waste management plan should include: assignment of responsibilities including designate waste management officer; waste classification (including quantities of waste generated); waste minimization, reuse and recycling; waste segregation; on-site handling, transport and storage practices (including containerization, color coding, labelling and signage); waste-treatment and disposal options (on-site and off-site); record keeping and documentation, training and monitoring; costs relating to waste management, including capital, operational and maintenance costs; Training; Procedures for segregation, storage and handling of wastes requiring special arrangements, contingency plans, containing instructions on storage or evacuation of health-care waste in case of breakdown
of the treatment unit or during closure for planned maintenance and emergency procedures.

- 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 at their place of production to reduce the health risk from the smaller potentially infectious factions (typically waste items contaminated with body fluids and used sharps); Staff should receive instruction on three-bin waste segregation and safe handling and storage of health-care wastes; Staff are aware of how to protect themselves from injuries and infection from waste; Waste containers and storage areas are cleaned regularly.

- 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 to purchase 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.

- 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 regularly and never transport infectious and no-infectious waste together. Disinfectant should be used on outer and inner surfaces in order to avoid possible transmission of the infections. Transport of general waste and infectious health-care waste should be collected separately and at least once a day. Collection is at regular times and is reliable; Waste containers and on-site transport trolleys are closed with lids to isolate wastes from patients and the public.

- Transport staff (Health care waste handlers) should be vaccinated at least against hepatitis A and B, polio and tetanus

- 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.

- 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).

- Recommendations for storage facilities for healthcare waste (WHO, 2014) 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; isolated from patients and the public;
  - The facility to keep general waste separated from infectious and other hazardous waste
  - 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.
  - Have a washing basin with running tap water and soap that is readily available for the staff; be cleaned regularly (at least once per week); have spillage containment equipment;
  - As for infectious waste storage: Floors and walls should be sealed or tiled to allow easy disinfection. If present, the storage room should be connected to a special sewage system for infectious hospital waste water.
  - 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.
• Packaging containers for sharps should be puncture-proof.
• Customized training for the staff handling and management of HCW contaminated with COVID-19 should include:
  o The use of appropriate / full PPEs (N95 respirators, apron, heavy duty gloves, eye protection, boots and long-sleeved gown);
  o Hand hygiene practices;
  o Waste segregation strategies and clean up procedures;
  o On-site Handling, Collection, Transport and Storage;
  o Exposure to COVID-19 infections and diseases transmission;
  o Exposure to radiation; and
  o Fire safety measures.
• Training treatment plant operators should be on general functioning of the treatment facility, including simple maintenance of the incinerator 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 and quality control

b) Fire Risk
Without provisions for fire safety, there is a risk of fire outbreak at the hospital and at the building to host the MWTI with disastrous life and financial impact. Fires can start from accidents or elevated emissions associated with incinerator, the high voltage electricity, chemical spills, ignitable materials within the hospital, cigarette smoking in non-designated places or old electrical connections.

Proposed Mitigation measures
• Provide 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 MWTI.
• The MWTI shall prepare a fire emergency management plan.
• Undertake regular fire drills targeting the MWTI operators to test on emergency response and use the results to improve on the response mechanism.

c) Occupational Safety and Health Risks for Waste Handling Workers and Operators
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. While some OSH risks will be new borne by the MWTI equipment introduced after upgrade of facilities, 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. Below is a list of OSH risk sources for healthcare staff:
  i Electrical hazard /Loose electrical installations;
  ii Lack of adequate lighting in workplaces;
  iii Lack of safe access particularly for disabled employees;
  iv Inadequate ventilation in rooms;
  v Lack of adequate training (or neglect of safety precautions/ guidelines) in use of medical equipment;
  vi Dust emission;
  vii Handling and transportation of contaminated wastes (biological hazards);
  viii Malfunctioning machine controls; and
  ix Loose mechanical fixes;
  x 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 the MWTI maintenance. In this regard, the MWTI operators should be trained on OSH and expected to implement the prevailing National Health Care Waste Management Strategic 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,

- Ensure identification of risks (Job Risk Assessment) and instituting proactive measures,

Train the healthcare workers on the potential OHS 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

- 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.

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

- All the MWTI operators 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 MWTI site;

- All personnel involved with the HCWM process should be subjected to medical surveillance;

- Regularly 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 health care wastes inventory;
  - Training given to employees in terms of HCWM and MWTI maintenance for as long as the employee remains at the workplace in which he is being exposed to HCW.

**d) Environment Pollution**

Solid waste to be generated during operation phase of the MWTI mainly includes incineration ashes. Littering around the site will interfere with the aesthetic status and has a direct effect on the surrounding community. Disposal of the incineration ashes off-site could also be a social inconvenience if done in the wrong places. The off-site effects could be pollution of physical environment including water resource and informal reuse by communities.
Proposed Mitigation measures

▪ The management of the 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 the ashes from the incineration into the constructed ash pit.
▪ Encourage efficient use of materials to as much as possible avoid and minimize waste production.
▪ Ensure wastes 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.
▪ Waste disposal by open burning shall not be permitted and signage should be erected.
▪ 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.
▪ Wastes generated from maintenance of MWTI facility should be collected and disposed as per the management and handling guidelines of medical waste including decontamination, reuse and recycling.

e) Community Health Risk
Improper waste disposal can cause public health risks due to environmental pollution via impaired air quality from open air burning of HCW, storm water contamination or when people rummage through raw waste stockpiles.

Proposed Mitigation measures

▪ Ensure regular monitoring of solid, liquid waste management practices and waste treatment;
▪ Ensure provision of sanitation facilities to the healthcare waste handlers and operators;
▪ 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 wastewater;
▪ Ensure the incinerator is serviced regularly and scrubbers changed to mitigate risks from emissions from the incinerator;
▪ Seek NEMA license for the MWTI, and
▪ The MWTI should be secured and out of reach from any unauthorised persons.

f) Increased Water Use and Liquid Waste Generation
Once the MWTI is completed, there will be an increased demand for water use for cleaning and air scrubbing as well as increased liquid wastewater generation.

Proposed mitigation measures

▪ The MWTI shelter construction should provide for a human waste/sewage and cleaning water management facility such as connecting to the main hospital septic tank system;
▪ Designs have to provide for the MWTI shelter to be fitted with easy to clean tiles on their walls as well;
▪ Fix roof gutters to collect rainwater from the facility roof during the rainy season for cleaning purposes;
▪ Encourage prompt maintenance of water pipeline leaks;
▪ Install water conserving taps that turn-off automatically when water is not being used;
▪ The septic tank should never be allowed to spill on land and it should be exhausted by a NEMA licensed exhauster.
g) Increased Energy Use
The Installation of the MWTI will lead to the increased demand for electricity energy to run 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, and
- Install solar energy resources to provide for additional security lighting within the waste management area in case of power outages

h) Occupational Health and Safety Risk to Waste Handling Staff
While working at the MWTI facility, the operators will face daily health and safety risks as a result of the following:
- Uneven walkways;
- Dust; Handling and transportation of contaminated wastes;
- Loose electrical installations;
- Malfunctioning machine controls; and
- Loose mechanical fixes;

These hazards have the potential to cause injury or fatalities to the healthcare workers involved in handling HCW and plant maintenance.

**Proposed mitigation measures**
- The MWTI operators should be trained on OSH and expected to implement the prevailing National Health Care Waste Management Strategic Plan (2016-2021) applicable to HCW treatment to avoid and minimize injuries or fatalities on their premises
- 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 guidelines issued by WHO;
- All the operators should be in the appropriate PPE during operations of the MWTI;
- There must be a health and safety plan that is kept on-site which must contain appropriate safety measures;
- The operators of the MWTI must be trained on the contents of the health and safety plan;
- Provide adequately stocked first aid kits placed at strategic locations to allow ease access by workers on-site;
- Provide serviceable fire safety equipment and workers on use,
- Regular fire safety drills should be undertaken to gauge the levels of preparedness of the operators,
- Ensure good documentation and inventory on waste received and treated,
- Maintenance of an accident incident log book on site.

i) Potential Impacts on Health and Safety of the MWTI Operators
There is usually high potential for contaminants and diseases causing pathogens in the HCW. This calls for suitable precautionary measures to be implemented during the transportation, storage and disposal of HCW. Mitigation measures are essential to avoid exposure of the incinerator operators and other staff (Public health officers, biomedical engineers, maintenance staff and any other person authorized to access the HCWM. In the absence of mitigation measures, and if people especially the employees operating the incinerator, are directly exposed and the exposure is prolonged, the following potential negative human health effects may occur in the long term (note that it takes years before these effects can materialize and would be related to the level of exposure):
- Respiratory diseases;
- Skin diseases and disorders;
- Physical Injuries due to raising of heavy waste loads leading to potential incapacitation/ disability;
- Electrocution which could lead to fatalities

**Proposed mitigation measures**
- All the incinerator operators should be provided with appropriate PPE and trained on their proper use. Each of the incinerator operator 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 to authorized persons only,
Warning and Safety signage be placed at the areas within the incinerator site.
All personnel involved with the HCW disposal process should be subjected to medical surveillance.
Regular cleaning and disinfection at the waste treatment area should be performed;
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 will be washed and disinfected prior to leaving site.
Air quality monitoring should be done regularly by qualified experts within 100m of the PIA;
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 health care wastes inventory;
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

j) 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 Security Management Plan (SMP).

Proposed mitigation measures
• Ensuring that security personnel undertake adequate surveillance
• Ensuring that Incinerator 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.
• Liaise with the national security forces especially during the transportation of equipment and materials.
• Ensure transport of equipment and materials to the sites is done during the day.
• Engage drivers who are appropriately trained in defensive driving.

k) Grievances arising from the project activities
Complaints can increase especially where there is lack of proper arrangement to dispose incineration ash leading to piles of wastes in the neighbourhood. Similarly, there could be increased dissatisfaction of workers over terms and working conditions of operating the Microwave waste treatment facility and therefore the need to continuously operationalize the facility GRM mechanisms. There also may be complaints on community health and GBV/SEAH

Proposed mitigation measures
• Ensuring that there is an operational GRM that is responsive to stakeholders’ concerns
• Continuous 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 and neighbouring communities
• Ensure that there is a workable mechanism of opening complaints reported through suggestion boxes
• Ensure that workers adhere to the CoC and implement strict sanctions to misdeeds.

l) 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.
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
▪ To include prohibition of GBV/SEA in Employees Code of conduct e.g. discouraging the use of inappropriate language or behaviour, harassing, abusive, sexually provocative, demeaning or culturally inappropriate language towards women or children.
▪ Prohibiting sexual activity with children under 18 years—including through digital media and promoting respect to the rule of law in respect to children’s rights.

8.5 Potential Impacts during Decommissioning Phase

After the MWTI including the shelter is considered non-functional, by the PWE or PHO, the facility will require to be decommissioned. At that point, the proponent may be required to vacate the site. The decommissioning exercise will have both positive and negative impacts:

During the decommissioning stage, demolition will be done, creating temporary job opportunities. 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. Some of the decommissioning operations may also elicit grievances from the community and therefore such complaints should be handled in a responsive manner.

A decommissioning plan will be prepared by the HCF and submitted to NEMA for approval before decommissioning works begin. The plan will contain subplans for protection of occupational and public health and safety, waste management, noise management, and site restoration, among other subplans for identified risks and impacts.
9 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

9.1 Introduction

Under the ESMF, the MoH developed the project ESMP to guide in the development of the recommended safeguard instruments based on the specific proposed project activities under the C-HERP. The main objective of the project ESMP is to guide the Project Management Team (PMT) and the sub-project proponents on the E&S screening and subsequent sub-project E&S assessment, monitoring and reporting including development of sub-project specific plans that have to be developed in accordance with the World Bank ESF.

The project ESMF forms the basis of the ESIA prepared for Kauwi Sub County Hospital. The proponent acknowledges the fact that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees, workers, the wider public as well as the local residents. Thus, the focus will be on minimizing/mitigating the negative impacts and enhancing the positive impacts associated with the project activities.

Environmental and social management and monitoring plans (ESMMP) are important tools developed to assist in guiding the proponent and contractor in mitigating the potential environmental, social health and safety risks and impacts of a proposed project. It is worth noting 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 ESMP. As such, the ESMP will be subject to a regular periodic reviews on need basis 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. These include, but are not limited, to the following.

9.2 Main ESMP implementation activities

9.2.1 During Project Preparation

- Training of the relevant project staff in environmental and social safeguards management;
- Verification of design details, layout and specifications;
- Inclusion of environmental health and safety specifications in Tender Documents, and development of CoC for the Contractor; and
- Stakeholder engagement;

9.2.2 During Construction

- 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.
- The contractor should prepare an occupational/community safety and health plan and a C-ESMP for use during project construction phase to be reviewed and approved by the PIU and HCF prior to start of any construction works. Enforcement of Environmental and OSH requirements by the ESH Expert; as provided in the ESMP
- Collection of data on air quality, and noise and vibration levels at the construction site by qualified specialists;
- 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 as provided in the ESMP and C-ESMP;
- Training the Contractor’s workforce in environmental and social awareness and responsibility (including COVID-19, STD/HIV/AIDS, awareness);
- 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.
- Undertake monitoring to ensure that requisite contractor/facility systems are in place to mitigate against

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inherent social risks (GBV/SEA, Insecurity, child labour influx, child labour, and grievance relating to the sub-project).

9.2.3 During Operation

- The healthcare facility shall develop (or update the existing) and implement a H&S Plan an ESMP, a specific HCF Waste Management Plan (for all hospital wastes)/ICWMP, and Emergency Response Plan;
- Establish written agreement with other HCFs related to accepting and treating their HCF wastes;
- Operation and maintenance, calibration and checking of all equipment as specified in respective manuals or as required by regulations;
- Undertaking air quality monitoring and emissions testing of the incinerator,
- Monitoring of any leakages and spills around the MWTI;
- Collection of data on water (surface and ground), noise and vibration levels, to be used for analysis and remediation where necessary;
- Treatment and disposal of solid and sanitary wastes in an acceptable manner and in conformance with regulations;
- Compliance with OSH manual to be prepared by hospital management during the project preparation phase;
- Environmental and social performance reporting based on evaluation of data collected from the MWTI site and the health facility. This will include a statutory annual environmental and social audit of the operations of the MWTI, to be submitted to NEMA for review
- Observing SOP designed for the proposed MWTI;
- Monitoring and implementation of various requirements in project SEP, LMP, ESMMP, GBV/SEAH, Stakeholder involvement and management of complaints arising from the sub-project operations; 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 has been provided with detailed suggestions on how each of the main mitigation measures proposed should be implemented, the frequency, and the responsible party during the construction and operation phases. The ESMMP table includes also the monitoring indicators and means of verification. It is imperative that this ESMMP forms part of contractors’ bidding documents so that they can allocate resources required for implementing the proposed mitigation measures. Prior to mobilization, the Contractor should also prepare a contractor-ESMP for review by the MoH E&S Specialist. In his schedule of works, the contractor must include all potential risks and mitigation measures, and the MoH E&S experts and the health facility public health officer should ensure that the schedule and ESMMPs are complied with.

9.2.4 During 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, Public Health among others. Any concerns that may emanate from the decommissioning activities must be addressed appropriately.

9.3 Personnel Responsible for Implementing the Environmental and Social Safeguards

The primary role of monitoring and supervision of project environmental and social compliance of the proposed sub-project will fall squarely in Kitui County Government since it has the mandate and institutional framework enshrined in the County Government Act of 2012. Key players in the monitoring of compliance in the project will include:

i. MoH E & S specialists
ii. Kitui County Administration staff which include County Director for Environment; County director for Physical Planning; Labour Officer; Community Development Officer; Physical Planner; Public Health Inspector; Public Works Engineer; Occupational Safety and Health Officer

9.4 External Supervision and Support Implementation

- National Environment Management Authority
- Directorate of Occupational Health and Safety Services (DOSHS)
- World Bank CHERP Project Task team

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 EHS Specialist as part of his employees. During the operation phase the hospital administration, County Director responsible for Public Health, County Engineer / Public Works Engineer and, County Director for Environmental will play a greater role to ensure the mitigation measures are implemented.

**Table 7: Roles and Responsibilities**

<table>
<thead>
<tr>
<th>Entity</th>
<th>Roles and Responsibilities</th>
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</table>
| **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 where required, |
| **County Government of Kitui Housing, Lands, Urban Renewal, Urban Planning and Projects Management** | - Supervise the Contractor and monitor works at all sites in particular;  
- Provide specific technical advice on mitigation measures for construction and operational activities related to the project,  
- Supervise the implementation of the approved project design,  
- Supervise project’s implementation for construction progress with regard to timelines and quality. |
| **Hospital Administration with assistance from County of Kitui Technical Team Labour / 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 Mobilisation of the communities to keep project on track. 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 |
| **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 license and any contractual conditions.  
- Display and educate the workers on the workers’ CoC,  
- Work with the hospital management to address worker's and community concerns in a timely manner,  
- Liaise with a HIV/AIDs service provider, undertake HIV/AIDs sensitzation and organize-have 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, SEP/ communication plan and report regularly on progress  
- Educate the communities on the site operations and the GRM 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.  
- Provide information to PIU and HCF related to HSE performance, and immediately report any significant environmental incident or worker accident |
| **Contractor’s HSE personnel** | - Develop the Contractor ESMP based on the Client ESMP, NEMA license conditions 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,  
- Display of the ESMP and Safety information.  
- Ensure availability and access of drinking water at the work site by all workers.  
- Develop an EHS Checklist, and report regularly on progress. |
To 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 EHS;
- Respond to site inspection findings;
- Receive and respond to any complaints from external parties on project issues on EHS;
- Institute management of accidents (if they occur), keep a log book/sheet;
- Follow up on the health insurance requirements including compensation related to accidents (in case of any occurrence);
- 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 ensuring that the MWTI Shelter with its associated facilities are constructed in accordance with the approved designs,
- 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
- Clear contractors’ compliance with managing social risks.
- Provide information to PIU and HCF related to HSE performance, and immediately report any significant environmental incident or worker accidents.

**Directorate of Occupational Safety and Health Services (DOSHS)**

- Ensure compliance with the provisions of the Occupational safety and health Act 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 accredited by NCA.

**National Environment Management Authority (NEMA)**

- Issuance of the ESIA License and 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.

### 9.5 Key Monitoring Indicators

Key monitoring indicators proposed include:

1. Vegetation loss and remedial restoration measures instituted;
2. Air quality and Noise pollution control measures in place and how they operate;
3. Erosion control measures
4. Control measures for traffic accidents
5. OHS measures for workers and the hospital staff
6. Public Health observance
7. Water Management
8. Energy Use
9. Material Storage
10. Employment opportunities
11. HIV/AIDS interventions and related sexual behaviors among workers, and
12. Labour recruitment by gender and age
13. GRM including number of complaints received and resolved within the project timeline
14. Number and type of stakeholders consulted during the sub-project period
15. Number of staff inducted on safeguards requirements and those who have signed the CoC
16. Security incidences and systems
17. GBV/SEA prevalence reported in the facility

*Table 8: Environmental and Social Risks and Mitigation Measures during Planning and Designing, Construction and Operation Phase*

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Potential Environment &amp; Social Risks and Impacts</th>
<th>Some of the Proposed key Mitigation Measures</th>
<th>Responsibilities</th>
</tr>
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</tbody>
</table>
### Planning and Designing Phase

| 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 (ESHWS) 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 |
| ----------------------------- |-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Inadequate awareness and consultation of stakeholders | Awareness improves civility in project planning, implementation and operations and ensuring there is social acceptability that leads to sustainability of the project. | ✓ Ensure the stakeholders are aware of the initiation of the project and the plans under way. | Public Health Department (County /Hospital Level), Hospital Management, ESIA Experts |

### Construction Phase

<table>
<thead>
<tr>
<th>MWTI Shelter Construction</th>
<th>Interference with the Physical Setting</th>
<th>✓ The contractor should ensure that there is minimal disturbance to the project site area; ✓ 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 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. 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, ✓ 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.</th>
<th>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation Loss</td>
<td>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;</td>
<td>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</td>
<td></td>
</tr>
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MoH E&S Expert, CPHO, PWE, County Government
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<thead>
<tr>
<th>Activity</th>
<th>Guidelines</th>
<th>Responsible Party</th>
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</thead>
<tbody>
<tr>
<td><strong>Restoration of vegetation</strong></td>
<td>✓ Restoration of vegetation in the disturbed surfaces should be done after completion of works.</td>
<td>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</td>
</tr>
<tr>
<td><strong>Noise and vibration Generation</strong></td>
<td>✓ 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, ✓ 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 muffs) to the workers &amp; 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.</td>
<td>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</td>
</tr>
<tr>
<td><strong>Air pollution (Dust and Emissions)</strong></td>
<td>✓ Contractors should wet the surfaces, use dust screens/nets during demolition activities or 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 marram) should be covered using tarpaulins during haulage to prevent spillage, dust and particulate matter emission.</td>
<td>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</td>
</tr>
<tr>
<td><strong>Increased generation of Spoil Material</strong></td>
<td>✓ 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 marram 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 spoilage/ degrading land that could otherwise be used for productive purposes.</td>
<td>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</td>
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<tr>
<td><strong>Accidental Spills and Leakages</strong></td>
<td>✓ 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 ✓ During the course of the construction works, temporary drainage channels should be constructed to encourage dispersal of meteoric waters.</td>
<td>MoH E&amp;S Expert, CPHO, PWE, County Government, Contractor</td>
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</tbody>
</table>
| **Extraction and Use of Construction Materials** | 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;  
- 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;  
- The contractor C-ESMP should promote waste minimization and recycling. | MoH E&S Expert, CPHO, PWE, County Government, Contractor |
| **Increased Water Demand** | The contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid water wastage; and  
- 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 vendors who can supply by use of water browsers.  
- Encourage prompt maintenance of water pipeline leaks,  
- Install water conserving taps that turn-off automatically when water is not being used  
- 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 from Kitui Water and Sewerage Company. | MoH E&S Expert, CPHO, PWE, County Government, Contractor |
| **Archaeological and Other Cultural Properties** | Prepare and implement a Chance Finds Procedure attached as appendix 3. | MoH E&S Expert, DASM Officer |
| **Occupation/Public Health and Safety Impacts** | To reduce on the workers accidents and hazards, the contractor is expected to comply with OHS rules and regulations as stipulated in the OSHA, 2007. Ensure the work place is registered by the Directorate of Occupational Health and Safety (DOHS);  
- 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;  
- All construction workers should be sensitized on the health and safety requirements while at project site,  
- Workers should be provided with adequate and appropriate PPE (safety helmets, shoes, gloves, mask)  
- Provision of clean and accessible sanitary facilities and water to workers;  
- 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 in the construction site;  
- Trenches over 1.5m deep or wherever soil conditions dictate should be secured against accidental fall by workers and the public;  
- Install safety signage along the work areas;  
- Site should have an accessible grievance redress mechanism to allow workers/community to raise safety issues and propose improvements on projects sites,  
- Task based risk assessment should be done on daily basis to assess the risks and hazards thereby prescribing the appropriate prevention measures. | MoH E&S Expert, CPHO, PWE, County Government, Contractor |
Electrical works and installations of the MWTI should be done by a trained certified, experienced personnel; and
A Health and safety officer shall be designated at each site and shall maintain a log of incidents/accidents (safety register) on site and report any fatalities related to the project within 24 hours.
Contractor shall report immediately to the HCF and C-HERP PIU any worker death or serious accident.

<table>
<thead>
<tr>
<th>Community and Construction Workers Exposure to Construction and Existing Incinerator Related Hazards</th>
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<tbody>
<tr>
<td>Restricting access to active renovation sites, including screening off or fencing the entire site to limit public access that is appropriate to the site;</td>
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<tr>
<td>Use institutional and administrative controls with a focus of high risk areas including:</td>
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<tr>
<td>Provision of adequate signage and communication of risks to workers, patients, the health community and the neighbours;</td>
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<tr>
<td>The public shall be notified of the works through appropriate publicly accessible sites such as the main entrance to the health facility;</td>
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<tr>
<td>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;</td>
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<tr>
<td>The contractor shall place adequate signboards to divert staff and passengers away from the work sites;</td>
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<tr>
<td>Use of screens/nets to avoid flying debris, ensure good housekeeping in the construction sites;</td>
</tr>
<tr>
<td>All workers shall be adequately trained on the use of PPEs which they should wear at all times while at the work site;</td>
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<tr>
<td>Only authorized visitors shall access the site and wear basic PPE all the time;</td>
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<tr>
<td>Construction workers shall be aware of the sensitive nature of workplace they are operating in and advised to limit verbal noise; and</td>
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<tr>
<td>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</td>
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<tr>
<th>Spread of Communicable Diseases and Other Infections</th>
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<td>Treat affected local and migrant workers which will control the spread of disease vectors (through contaminated water and between people);</td>
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<tr>
<td>Provision of adequate and accessible sanitation facilities in good condition with adequate water supply; and</td>
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<tr>
<td>Create awareness to workers on proper sanitation and personal hygiene to promote proper health</td>
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<tr>
<td>To mitigate risk from food related contamination amongst construction workers, food supplies will be from the vendors with public health certificate,</td>
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**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.
- Taking of body temperature of all workers and any other personnel visiting the site. The temperature should not be above 38°C. (but ensure that all thermometers are functional);
- Seeking healthcare services immediately one experiences any of the following symptoms (while at home or work): cough, fever and shortness of breath.
- Train staff on preventive measures of COVID-19 including 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 workforce 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;
- Clean up the tools and equipment used on site with soap and water.

MoH E&S Expert, CPHO, CDE, PWE, County Government, Contractor
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<tr>
<th><strong>Increase in HIV/AIDS Prevalence and other STIs</strong></th>
<th><strong>Labour influx</strong></th>
<th><strong>Human Rights and Gender Inequalities</strong></th>
<th><strong>Conflict and Insecurity</strong></th>
</tr>
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<tbody>
<tr>
<td>✓ Provide an easily accessible GRM to raise workplace concerns relating to COVID-19; such as encourage reporting of co-workers if they show outward symptoms, and ✓ Comply with all MoH guidelines and protocols geared towards controlling spread of diseases especially COVID-19.</td>
<td>✓ 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 the closest proximity to the project area; ✓ Effective contractual obligations for the contractor will be done with workers to adhere to the mitigation of risks against labor influx, including sexual exploitation and abuse; ✓ 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 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.</td>
<td>✓ During recruitment of workers there will be no discrimination against one gender either by design or oversight; ✓ Contractors not to overlook provision of sanitary, health and safety facilities such as PPE; ✓ Ensure equal pay for men and women; ✓ The contractor to ensure provision of the necessary basic sanitary facilities in relation to gender – provide separate sanitary facilities; ✓ Treat women and men with respect regardless of race, colour, language, religion, or other status; ✓ Report any violations of the CoC/gender mainstreaming requirements to supervisors, 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 and all gender related statutes, and ✓ Implement strict sanctions on any worker who is reported to have been a perpetrator of SEA to fellow workers or community members.</td>
<td>✓ 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 trained to address security related issues as they arise. ✓ 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 ✓ Ensure heightened surveillance of the project site and facility during the installation works ✓ Utilize intelligent information for security of workers and project materials e.g. during operations and transit of materials and workers. ✓ Raise awareness on the GRM mechanisms</td>
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| MoH E&S Expert, CPHO, Hospital Management, PWE, Contractor | MoH E&S Expert, County Labour Officer, Hospital Management, PWE, Contractor | MoH E&S Expert, County Gender Officer, NGEC, Hospital Management, PWE, Contractor | MoH E&S Expert, Project manager, Contractor and Hospital Management, PWE, Contractor |
| Sexual Exploitation and Abuse/Sexual Harassment | The contractor develops a CoC which encompasses clear warning to workers on any kind of sexual exploitation and abuse and to be signed by every worker on site.
The contractor and the supported HCF should provide a mechanism where workers and clients are free to report any sexual advances and abuse to the senior management without fear of intimidation;
Share information with the facility and contractor GRM to communities and all stakeholders;
Share information on GBV/SEA services around/near the facility for victim’s information support;
Contractor to ensure that staff is sensitized on GBV/SEA risk management. | MoH E&S Expert,
County Gender Officer,
NGEC, Hospital Management,PWE, and Contractor |
| Complaints arising from 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, WhatsApp 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);
Implement strict sanctions to any worker who contravenes the CoC, and
Ensure complaints reporting to the PMT on a monthly basis -using the annexed formats are reported. | MoH E&S Expert, GRMFP, Contractor,PWE |
| Child labour and abuse | 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 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 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.
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.
Ensure that recruitment inventory indicates the ages of employment applicants and age verification is done using the national identification cards. | MoH, Children Officer,
PWE, Hospital Management, Contractor |
| Labour 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. | MoH, PWE, Hospital Management, Contractor |
<table>
<thead>
<tr>
<th>Potential impacts during Operational phase</th>
<th>Operating activities of the MWTI</th>
<th>Improper Healthcare Waste Management</th>
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<tr>
<td></td>
<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>The project contractors shall abide by the provision of the projects LMP; The project shall respect the workers' right of labor unions and freedom of association; and Ensure overtime is recorded and compensated</td>
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<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>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td></td>
<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>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Reuse or recycling of wastes to the degree feasible,</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Seal and replace waste bags and containers when they are approximately three quarters full. Full bags and containers should be replaced immediately.</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td></td>
<td>Identify and label waste bags and containers properly prior to removal.</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Transport waste to storage areas on designated trolleys / carts, which should be cleaned and disinfected regularly, and never transport infectious and no-infectious waste together.</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td></td>
<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>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Instructions on how to handle the infectious waste from isolation and treatment centres should be made available to the waste handlers.</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td></td>
<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>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Waste storage areas should be located within the hospital and sized to the quantities of waste generated</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>The waste holding area/chambers should be well sheltered from direct rainfall, sunlight and strong winds but should be adequately aired;</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Train treatment plant operators on general functioning of the treatment facility, including simple maintenance of the incinerator where appropriate; and</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Seek operational licence from NEMA of the waste treatment incinerator to ensure compliance with the Waste Management Regulations, 2006</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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<td>Reporting of spillages, accidents and other incidents, and suggesting changes</td>
<td>✓ The project contractors shall abide by the provision of the projects LMP; ✓ The project shall respect the workers' right of labor unions and freedom of association; and ✓ Ensure overtime is recorded and compensated</td>
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**Fire risk**

- Provide sand buckets, fire extinguishers to 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 MWTI.
- Undertake regular fire drills targeting the MWTI operators, to gauge the levels of preparedness of the operators and test on emergency response and use the results to improve on the response mechanism.

**Occupational Safety and Health Risks for Healthcare Workers**

- 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,

- Update and implement HCF emergency response plan.
- Ensure identification of risks (Job Risk Assessment) and instituting proactive measures
- Train 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
- 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.
- Provision of a system for disinfection of the multi-use PPE if not available.
- Implementation of systemic risk management plan comprising risk prevention, evacuation of accident victims, evaluation and improvement measures.
- All MWTI operators should be provided with appropriate PPE such as overalls, gum boots, hand gloves and face masks and trained on their proper use,
- Limit access to the waste treatment area only to authorised persons;
- Warning and safety signage to be placed at the areas within the MWTI site;
- All personnel involved with the HCWM process should be subjected to medical surveillance;
- Regularly cleaning and disinfection at the waste treatment area and the COVID-19 centre should;
- All machinery and equipment involved in the waste treatment and disposal process should be washed and disinfected prior to leaving site;
- Air quality monitoring should be done regularly by qualified experts within 100m of the project influence area;

Environmental Pollution

- It shall be the responsibility of the hospital to ensure that incineration ash is disposed in a properly constructed ash pit.
- The management of the 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.
- Designate proper temporal waste / garbage holding areas at site free from access by scavengers, and weather elements such rain
- Waste disposal by open burning shall not be permitted and signage should be erected.
- 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

MoH E&S Expert, CPHO, Biomed engineer, CLO, County Government and DOSHS
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<th>Section</th>
<th>Description</th>
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<tr>
<td>Community Health Risk</td>
<td>Ensure regular monitoring of solid, liquid waste management practices and waste treatment; Install appropriate drainage channels within the hospital; 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 wastewater; 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; and Community should be sensitized on infection prevention and control measures related to COVID-19.</td>
</tr>
<tr>
<td>Occupational Health and Safety Risk to Waste Handling Operators</td>
<td>The MoH waste management 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 guidelines issued by WHO; All the operators should be in the appropriate PPE during operations of the MWTI; There must be a health and safety plan that is kept on-site which must contain appropriate safety measures; The operators of the MWTI must be trained on the contents of the health and safety plan; healthcare waste management and basic maintenance of the incinerator; Provide adequately stocked first aid kit and ensure placed at strategic locations to allow ease access by workers on-site; Provide serviceable fire safety equipment and workers on use, Regular fire safety drills should be undertaken to gauge the levels of preparedness of the operators, Ensure good documentation and inventory on waste received and treated, Maintenance of an accident incident log book on site.</td>
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<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>
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<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, Install solar energy resources to provide for additional security lighting within the waste management area in case of power outages 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</td>
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<td>Security and conflict</td>
<td>The hospital will operationalize the existing CCT and make more installations at all strategic points to enhance security.</td>
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<td>The security guards should ensure proper surveillance of the facility.</td>
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<td>Security guards should be sensitized on the CoC and the provision of the Security management plan.</td>
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<td>Ensuring that security personnel undertake adequate surveillance.</td>
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<td>Ensuring that incinerator sheds are locked all the time when not in use.</td>
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<td>Stock taking of the equipment and accessories to ensure there is no loss.</td>
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<td>Ensuring proper fencing and lighting arrangement.</td>
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<td>Consider public police reinforcement in incidences of escalated insecurity.</td>
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<th>GBV/SEA</th>
<th>Continues sensitization of staff on SEA risk management.</th>
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<tr>
<td></td>
<td>Provision of GRM channels for reporting SEA cases.</td>
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<td>Ensuring that the GBV/SEA one pager is placed on strategic points of the facility.</td>
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<td>Document available GBV/SEA referral pathways for victims’ information and support.</td>
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<td></td>
<td>Develop an Action plan of all GBV/SEA incidences to avoid recurrence.</td>
</tr>
<tr>
<td></td>
<td>Ensure the facility is well laid to avoid hiding places for SEA perpetrators.</td>
</tr>
<tr>
<td></td>
<td>Provision of separate helping places for men and women.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>To include prohibition of GBV/SEA in Employees Code of conduct, e.g. discouraging the use of inappropriate language or behaviour, harassing, abusive, sexually provocative, demeaning or culturally inappropriate language towards women or children.</td>
</tr>
<tr>
<td></td>
<td>Prohibiting sexual activity with children under 18 years—including through digital media and promoting respect to the rule of law in respect to children’s rights.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grievance emanating from the sub-project</th>
<th>Ensure that there is an operational GRM that is responsive to stakeholders’ concerns.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Continues stakeholder engagement to raise awareness of the project and clarify any outstanding issues.</td>
</tr>
<tr>
<td></td>
<td>The hospital should continue to create awareness about the GRM mechanism in place to all workers and patients.</td>
</tr>
<tr>
<td></td>
<td>Ensure appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants.</td>
</tr>
<tr>
<td></td>
<td>Ensure that there is a workable mechanism of opening complaints reported through suggestion boxes, and.</td>
</tr>
<tr>
<td></td>
<td>Ensure that workers adhere to the CoC and implement strict sanctions to misdeeds.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decommissioning phase</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment/ Machine decomposition</td>
<td>All machinery, equipment, structures and partitions that will be used for other purposes must be removed, fumigated, packaged and containerized for relocation.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structures decomposition</th>
<th>All foundations must be removed and recycled, reused or disposed of at a licensed disposal site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soils degradation / water Resources pollution / air pollution</td>
<td>All anchorages plinths must be removed, recycled, reused or disposed of at a licensed disposal site.</td>
</tr>
</tbody>
</table>
Disposed by NEMA licensed waste handler.
- Use dust screens and nets to mitigate on dust/particulate matter

Demolition Wastes
- Soils pollution / 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. Sanitary land-filling
- 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

Project Decommissioning
- 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 0800hrs to 1700 hrs.
- Provide adequately well stocked first aid kit and ensure one of the workers can administer first aid.

Site Rehabilitation
- Soils pollution/ water resources pollution/ Air pollution
- Proper treatment of the site should be carried out (Decontamination)

- Backfilling excavation sites
- Ensure the contractors backfill and rehabilitate excavated sites before final payment

Re-vegetation
- Soils degradation/ 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 concerns during project decommissioning
- GBV/SEA
- 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 surroundings, or at workers camps. Prosecution of those who commit to be pursued.
- 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 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.

**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.

**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 9: General Environmental and Social Management Plan**

<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>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil resources</td>
<td>Soil erosion</td>
<td>Re-vegetation through grasing</td>
<td>After construction</td>
<td>Contractor, MoH E&amp;S Expert and KSCH management, CPHO, PWE</td>
<td>100,000.00</td>
</tr>
<tr>
<td></td>
<td>Provision of silt traps during construction as necessary</td>
<td>Continuous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restrict construction vehicle movements to defined tracks/paths</td>
<td>Continuous</td>
<td></td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Water Quality and Resource use efficiency</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 KSCH 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></td>
<td>0.00</td>
</tr>
<tr>
<td>Construction materials usage</td>
<td>Depletion of natural resources</td>
<td>Efficient use of building materials</td>
<td>Contractor</td>
<td>Optimize materials through reuse</td>
<td>Continuous</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------</td>
<td>------------------------------------</td>
<td>------------</td>
<td>--------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Building materials</td>
<td>• Efficient use of building materials</td>
<td>• Optimize materials reuse</td>
<td>Monthly</td>
<td>Contractor, MoH E&amp;S Expert and KSCH management, CPHO, PWE</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### Air Quality (Dust and Emissions)

- **Nuisance and adverse health due to dust emission**
  - Wetting of project site to reduce dust
  - Put up dust screen/nets around the construction and renovation sites,
  - Provision of PPE (dust masks) for the workers,
  - Covering all trucks delivering construction material
  - Covering of stock piled construction material

- **Adverse health impacts as a result of emissions of fumes from vehicles,**
  - Use of low emission machinery that use electricity as source of power or use manual labour;
  - Periodically Service all the equipment and machinery used during construction phase

- **Noise and Vibration**
  - Planned schedules for Construction during day time;
  - Using silencers in heavy machines,
  - Use of PPE such as ear muffs
  - Operation and maintenance of equipment used on site

- **Waste Management**
  - Provide appropriate solid waste receptacles on site
  - Sensitize workers on appropriate solid waste management
  - Engagement of a NEMA licensed contractor to collect and dispose the waste

- **Social Concerns during construction and operational phases**
  - Having guards dedicated to the project sites and fencing off the project sites

- **Exclusion (ethnicity, gender, age, location and disability)**
  - Public awareness of the project requirements,
  - Stakeholder engagement and collective reasoning,
  - Implementation of the requirements of the LMP, and the GBV Action Plan.

- **Gender based Violence/Sexual Exploitation and Abuse**
  - 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.

| 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. | Continuous | MoH E&S Expert, KSCH 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 | Continuous | MoH E&S Expert, KSCH 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 | Continuous | MoH E&S Expert, KSCH CLO, PHO, PWE Contractor | 30,000.00 |
| 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. | Continuous | MoH E&S Expert, KSCH CLO, PHO, PWE Contractor | 250,000 once |
| General Health and Safety | • 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, KSCH CLO, PHO, PWE, Contractor | 250,000 once |

Operational Phase

<p>| Efficient use of | Surface run-off and • Embankment, re-vegetation, | Continuous | KSCH | 150,000.00 |</p>
<table>
<thead>
<tr>
<th>resources</th>
<th>waste water management</th>
<th>proper drainage systems</th>
<th>management, PHO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Efficient use of water resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spill prevention procedures and response plan</td>
<td></td>
</tr>
<tr>
<td>Pollution of surface and ground water</td>
<td></td>
<td>• All liquid waste from the MWTI should be directed to the hospital septic system</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installation of pre-treatment chambers before discharge to hospital septic system</td>
<td>KSCH management, hospital PHO</td>
</tr>
<tr>
<td>Increased use of Energy and indoor air pollution</td>
<td></td>
<td>• Efficient energy use and use of clean energy as back up source of power</td>
<td>Continuous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Install a meter to monitor power consumption</td>
<td>KSCH management, hospital PHO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Switch of lights when not in use</td>
<td></td>
</tr>
<tr>
<td>Air Quality (Dust and Emissions)</td>
<td>Emissions arising from MWTI combustion</td>
<td>• Use of air pollution control devices through installation of scrubbers/filters to the incinerator to remove particulate matter and other gases</td>
<td>Continuous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Train the MWTI operators on best operational practices</td>
<td>KSCH management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Periodic operation and maintenance of the MWTI</td>
<td>Hospital, hospital PHO &amp; Biomedical Engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Conduct periodic air quality monitoring of the MWTI area</td>
<td></td>
</tr>
<tr>
<td>Waste Management</td>
<td>Healthcare Waste generated from the health facility</td>
<td>• Ensure appropriate and adequate segregation of HCW waste at source</td>
<td>Continuous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensure appropriate on-site transportation of HCW to Waste treatment area,</td>
<td>Health facility manager, KSCH PHO &amp; Biomedical engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensure proper records of waste received from the immediate health facility and other health facilities,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Appropriate healthcare waste storage area free from vermins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensure efficient treatment of healthcare waste</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Appropriate transportation of ash to disposal site that is if ash pit not within the hospital.</td>
<td></td>
</tr>
<tr>
<td>General Health and Safety</td>
<td>Occupational and public health hazards</td>
<td>• Ensure provision of and appropriate use personal protective equipment</td>
<td>Continuous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Erecting warning signs on site</td>
<td>Proponent, KSCH PHO, CLO &amp; biomedical engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Regular medical check-up for healthcare waste handlers and vaccination such as against Hepatitis A, B and tetanus and COVID-19,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provision of appropriate sanitary facilities,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provision of first aid kits</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Undertake awareness creation on OHS to the healthcare workers and the MWTI operators in relation to COVID-19 and first aid training</td>
<td></td>
</tr>
</tbody>
</table>
• 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

Table 10: Environmental and Social Monitoring Plan

<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>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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 KSCH 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>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Soil compaction by equipment and machinery</td>
<td>Restrict construction vehicle movements to defined tracks/paths</td>
<td>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 KSCH 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.  
• Water saving measures instituted at the site | Monthly |                                          | 0.00                                   |
<p>| Construction                                | Depletion of                                         | Ensure efficient use of               | Records of building                                                                    | Continuous              |                                          | 0.00                                   |</p>
<table>
<thead>
<tr>
<th>materials usage</th>
<th>natural resources</th>
<th>building materials</th>
<th>materials tracking</th>
<th>Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Optimize materials through reuse</td>
<td>Financial savings in subsequent bills</td>
<td>Continuous</td>
</tr>
</tbody>
</table>
| Air Quality (Dust and Emissions) | Nuisance and adverse health due to dust emission | • Wetting of project site to reduce dust  
• Put up dust screen/nets around the construction and renovation sites,  
• Provision of PPE (dust masks) for the workers,  
• Covering all trucks delivering construction material  
• Covering of stock piled construction material | • Air quality measurement to determine amounts of dust at site  
• Visual observation  
• Complains received from staff | Continuous |

Contractor, MoH E&S Expert and KSCH PHO, PWE | 100,000.00 |

**Adverse health impacts as a result of emissions of fumes from vehicles,**
- Use of low emission machinery that use electricity as source of power or use manual labour;  
- Periodically Service all the equipment and machinery used during construction phase
- Type of machinery being used,  
- Visual observation of emissions  
- Air quality measurements to determine air borne particulate matter.  
- Records of serviced construction vehicles

Continuous |

**Noise and Vibration**
- Nuisance and adverse health impacts from high noise and vibration levels
- Planned schedules for Construction during day time;  
- Using silencers in heavy machines,  
- Use of PPE such as ear muffs  
- Operation and maintenance of equipment used on site
- Schedules of activities  
- Noise and vibrations measurement in Decibels  
- Complains from workers and staff  
- Records of machine operation and maintenance
While at site and during operation of heavy machines

Contractor, MoH E&S Expert and KSCH PHO, PWE | 30,000.00 |

**Waste Management**
- Health and safety hazards and environmental pollution from poor management of wastes
- Provide appropriate solid waste receptacles on site  
- Sensitize workers on appropriate solid waste management  
- Engagement of a NEMA licensed contractor to collect and dispose the waste
- Availability of waste receptacles  
- Waste streams and volumes generated on site including hazardous waste - used oil, waste paints  
- Waste tracking documents

Continuous |

Contractor, MoH E&S Expert and KSCH PHO, PWE | 30,000.00 |

**Social Concerns during construction and operational phases**
- Insecurity / public safety
- Having guards dedicated to the project sites and fencing off the project sites
- Presence of a security Personnel.  
- Fence around the project site;

Continuous |

The proponent KSCH/MoH, PWE | 30,000.00 |

**Exclusion (ethnicity, gender, age, location and disability)**
- Public awareness of the project requirements,  
- Stakeholder engagement and collective reasoning,  
- Implementation of the requirements of the LMP, and the GBV Action Plan.
- Minutes of public awareness/stakeholder engagements carried out

Continuous |

MoH E&S Expert, KSCH PHO/CLO | 30,000.00 |

**Gender based Violence/Sexual Exploitation and Abuse**
- The contractor should develop a code of conduct which should encompass clear warning to workers on any kind of sexual
- Signed code of conduct  
- Code of conduct for workers

Continuous |

MoH E&S Expert, KSCH PHO/CLO | 30,000.00 |
| **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, KSCH, 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, KSCH, 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, KSCH, CLO, PHO, PWE  
Contractor | 30,000.00 |
| **General Health and Safety during construction & operation** | • 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  
• Visual inspection and observation of functionality of sanitary facilities | • Visual inspection and observation of functionality of sanitary facilities | Continuous  
MoH E&S Expert, KSCH, CLO, PHO, PWE  
Contractor | 50,000 |
<table>
<thead>
<tr>
<th>Public Health Certificate</th>
<th>Accidents, Incidents causing harm or sickness due to existence of health and safety hazards on site</th>
<th>Continuous</th>
<th>MoH E&amp;S Expert, KSCH, CLO, PHO, PWE, Contractor</th>
</tr>
</thead>
</table>
| - Put in place all infectious diseases including COVID-19 prevention and containment measures. | - 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 | 50,000 once | |
| - Publish health and safety information including site rules at the site  
- 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. | - 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  
- Provision of first aid kits  
- Undertake first aid training and 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 | 50,000 once | |
| 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 firefighting equipment  
- Statistical records and safety reports Serviced fire extinguishers. | Continuous | KSCH PHO, CLO & biomedical engineer |
| Efficient use of resources Surface run-off and waste water management | - Extent of vegetation cover; % of bare ground  
- Amount of water used monthly; water saving measures instituted at the site | Continuous | KSCH management, PHO |

Operational Phase
<table>
<thead>
<tr>
<th>Plan</th>
<th>Presence of silt traps</th>
<th>Construction</th>
<th>KSCH management, hospital PHO</th>
</tr>
</thead>
</table>
| 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 | Construction | KSCH 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 | • Power usage bills monthly; energy saving measures instituted, presence of a meter | Continuous | KSCH management, hospital PHO |
| Air Quality (Dust and Emissions) | Emissions from the MWTI during the combustion process | 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 | • Air quality measurement to determine amounts of dust at site  
• Visual observation  
• Complains received from staff | Continuous | KSCH management, hospital PHO & Biomedical Engineer |
| 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 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 | Health facility manager, KSCH PHO & Biomedical Engineer |

| Total cost | 790,000 |
10 CONCLUSION AND RECOMMENDATION

10.1 Conclusion

In accordance with EMCA CAP 387 (Amended 2015) and the Environmental (Impact and Audit) Regulations, 2003, the findings of the ESIA carried out for this project indicate that the possible environmental and social impacts generated during construction, operation and decommissioning phases can be addressed effectively by the proponent through the mitigation measures indicated in Table 9 (ESMP) and the monitoring options have been suggested on Table 10. Based on the analysis of positive and negative environmental and social impacts of the proposed project, no inordinately negative impacts have been identified that could bar the proposed project from being implemented. This is provided that the project is designed, constructed, monitored and operated in compliance with all applicable design and ESHS requirements.

The identified potential negative impacts of the proposed project could be mitigated with the suggested environmental and social mitigation measures. 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 proper HCWM,

iv. MoH has put appropriate measures for the management of medical waste in most of health facilities. There should be routine monitoring of medical waste collection, transportation and validation of functionality / operations of treatment facilities such as the MWTI, 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.

10.2 Recommendations

The following are recommended going-forward with the project:

a. Though the anticipated negative environmental impacts of the project are considered low, 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 COVID-19 Isolation / Waste Treatment Facilities’ staff to continue to benefit from continuous capacity building especially on aspects of infection control and waste management, equipment operations, safety and emergency preparedness.
11 REFERENCES


xii. Kenya gazette supplement Acts Local Authority Act (Cap. 265) government printer, Nairobi.


12 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: Kauwi 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: Minutes of Public Participation Meeting
Appendix 9: List of Attendance
Appendix 10: HCWM Unit Layout/Design Specifications
Appendix 11: Kauwi Hospital Site Map
Appendix 12: Bill of Quantities
Appendix I: Copy of NEMA Practicing Certificate for the Consulting Firm

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No.: NEMA/EIA/ERPL/18295
Application Reference No.: NEMA/EIA/EL/23981

M/S DEVLINK RESOURCES CONSULTANTS
(individual or firm) of address
P.O. Box 76065 - 00508 NAIROBI

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) Firm of Experts registration number 2355

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.
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

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

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

is licensed to practice in the

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

Expiration 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 seven components as stated 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**: This component aims to improve the capacity and quality of GBV response services for survivors in targeted counties, with focus on health systems strengthening. While GBV is an issue requiring comprehensive, multi-sectoral interventions in order to reduce incidents and to respond to the full range of needs of survivors, the health sector presents an immediate and critical entry point for engaging in GBV mitigation and first line response through the provision of medical and psychosocial care, and through referral to additional services beyond health. The health sector is often a key starting point for referral processes as it is often the first and only place women are willing to disclose experiences of violence in order to receive care and access to other needed services, including access to justice and police support, protection/shelter options and economic support.
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: Kauwi Environmental and Social Screening Checklist

KAUWI - KITUI

ENVIRONMENTAL 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>KAUWI SUB COUNTY HOSPITAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-project Location</td>
<td>KITUI COUNTY</td>
</tr>
<tr>
<td>Sub-project Proponent</td>
<td></td>
</tr>
<tr>
<td>Estimated Investment</td>
<td></td>
</tr>
<tr>
<td>Start/Completion Date</td>
<td></td>
</tr>
</tbody>
</table>

Questions

<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>Yes</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>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
<td>---------------</td>
<td>-------------------------</td>
</tr>
<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>*</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>*</td>
<td>ESS5</td>
<td>RAP/ARAP, SEP</td>
</tr>
<tr>
<td>Does the sub-project involve permanent resettlement or land acquisition?</td>
<td>*</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>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>---------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Does the sub-project involve recruitment of workers including direct, contracted, primary supply, and/or community workers?</td>
<td>✓</td>
<td>ESS2</td>
<td>LMP, SEP</td>
</tr>
<tr>
<td>Does the sub-project have a GRM in place, to which all workers have access, designed to respond quickly and effectively?</td>
<td>✓</td>
<td></td>
<td>SEP/LMP</td>
</tr>
<tr>
<td>Does the sub-project involve significant adverse social impacts and may give rise to significant social conflict?</td>
<td>*</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Does the sub-project involve use of security or military personnel during construction and/or operation of healthcare facilities and related activities?</td>
<td>✓</td>
<td>ESS4</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Are there any indigenous groups (meeting specified ESS7 criteria) present in the sub-project area and are they likely to be affected by the proposed sub-project negatively or positively?</td>
<td>✓</td>
<td>ESS7</td>
<td>Indigenous Peoples Plan/other plan reflecting agreed terminology</td>
</tr>
<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 cultural heritage sites?</td>
<td>✓</td>
<td>ESS8</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Does the project area present considerable Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) risk?</td>
<td>✓</td>
<td>ESS1</td>
<td>ESIA/ESMP, SEP</td>
</tr>
<tr>
<td>Is there any territorial dispute between two or more countries in the sub-project and its ancillary aspects and related activities?</td>
<td>✓</td>
<td>OP7.60 Projects in Disputed Areas</td>
<td>Governments concerned agree</td>
</tr>
<tr>
<td>Will the sub-project and related activities involve the use or potential pollution of, or be located in international waterways¹?</td>
<td>✓</td>
<td>OP7.50 Projects on International Waterways</td>
<td>Notification (or exceptions)</td>
</tr>
</tbody>
</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 screened 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 addresses 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 salaries 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.
Appendix 8: Minutes of Public Participation Meeting

MINUTES FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) MEETING HELD AT KAUWI SUB-COUNTY HOSPITAL ON 24TH DECEMBER 2020 FOR THE PROPOSED INSTALLATION AND COMMISSIONING OF A MODERN HEALTH CARE WASTE FACILITY R AT KAUWI SUB-COUNTY HOSPITAL UNDER THE COVID-19 HEALTH EMERGENCE RESPONSE PROJECT (C-HERP)

ATTENDANCE LIST
Ass attached

AGENDA
1. Welcome and Introduction
2. Background to the Proposed Project
3. Purpose of the consultations and Discussions
4. Presentation: Project description
5. Environmental and Social Impact Assessment
6. Discussion (Environmental and Social Concerns)
7. Support for the project
8. Closing Remarks

MINUTE 01/24/12/2020/C-HERP: WELCOME AND INTRODUCTION
The meeting was called to order at 0910Hr by the County PHO, Ms Faith Kanini, who welcomed all in attendance. She welcomed all in attendance and requested one of the attendees to pray for the start of the meeting. Self-introduction followed thereafter with all in attendance introducing themselves and the community interests represented.

MIN 02/21/12/2020/C-HERP: BACKGROUND TO THE PROPOSED PROJECT
The County PHO gave a detailed background to the state of HCW management in Kitui County informing the meeting that the county lacked capacity to safely manage HCW wastes. She confirmed to the meeting that the county was still using old methods (burning chambers ad open waste burning) to manage HCW and this was detrimental to the environment and the wellbeing of the residents of Kitui County.

The County PHO informed the meeting that the Public Health Department was the custodian of public health in the county and management of HCW was one of its responsibilities. Towards this end the Public Health Department had made proposal to the MoH detailing the needed capacity to safely manage HCW in Kitui County. The ministry had considered the proposal and the proposed project was being implemented by MoH to build capacity on HCW in Kitui County. The PHO stated that Kitui County lacks capacity to manage HCW in a sustainable manner. The County PHO informed the meeting that the County is still using the burning chambers and open waste burning to dispose off HCWs. She stated that the Kitui West Sub-County had 23 Public HCF and they all lacked effective HCW management capacity, and that the same scenario is replicated in the entire county and considering the numerous private healthcare facilities in the Kitui County, the magnitude of challenges in disposal of HCW cannot be gain said.

MINUTE 03/21/12/2020/C-HERP: PURPOSE OF THE MEETING
3.1. Purpose of the Meeting
The PHO informed the meeting that the proposed project required certain approvals before implementation; one of the key approvals is the Environmental and Social Impact Assessment (ESIA) licencing. She informed the meeting
that public and stakeholders consultation was a major step in the ESIA process and hence the need for the meeting. She called upon all in attendance to give their views, recommendations and to ask any questions to get clarifications in relation to the proposed project.

One of the lead experts informed the meeting that subject to the Environmental Management and Coordination Act of 1999 (CAP 387) which was revised in 2015 and the Environmental Impact Assessment Regulations (Revised Edition) of 2003 (Revised in 2016 and in 2019) and the Legal Notice Number 31 and 32 of 2019, the proposed project that entailed procurement, installation and commissioning of a modern healthcare waste (HW) treatment incinerator facility must be subjected to an ESIA. In addition, regulation 17 of the Environmental (Impact Assessment and Audit Regulations, 2003 (revised 2019) requires the project proponent in consultation with the authority (NEMA) to seek views of the persons that may be affected by the proposed project either directly or indirectly.

Public and stakeholders consultations is an open governance procedure that offers a chance to all persons and stakeholders living within the project influence area to air their proposals, opinions, recommendations and ask for clarifications during the project planning stage. The reasons for the consultations are as follows:

(a) Provide information regarding a proposed project, in this case a proposed medical waste facility project, to the people likely to be affected, key stakeholders and interested persons;
(b) Ensures that the ESIA process is open and transparent;
(c) Provides valuable sources of information on key impacts, potential mitigation measures and possible alternatives;
(d) Ensures that the proposed project meets the community’s needs;
(e) Ensures that the project is legitimate and it is a way of ensuring that conflicts can be addressed before the authority (NEMA) makes a decision;
(f) Assists in informed decision making;
(g) Promotes better implementation of the project once the Authority (NEMA) has made a decision on the proposed project;
(h) Enlightens the community on the opportunities and benefits arising;
(i) Provide an opportunity for members of public, key stakeholders and Interested persons to seek clarity and provide input into the project; and
(j) Record and document the comments raised and include them in the final report.

MINUTE 04/21/12/2020/ C-HERP: PROJECT DESCRIPTION

The description of the project was done in detail by one of the lead experts. This entailed describing the technologies applicable for the proposed project, machines applying the technologies, the major components of the machines, maintenance of the machines and adaptability of the technologies by the local community. Several questions were asked and the necessary clarifications made during this session. The microwaving and modern incineration technologies were discussed in depth while the microwave and incinerator machines were described comprehensively while giving premium to their modes of operation and the capacities (skills, maintenance and energy) required.

The meeting was also informed that a shelter was required in order to secure the facility and a standard design of the house entailed the following:

- Incinerator Chamber,
- Waste storage chamber (temporary storage);
- Material/ Supplies store;
- Office, changing rooms, sanitary convenience (bathroom/toilet);
- Fire suppression system;
✓ Emergency alert system;
✓ Appropriate Signage;
✓ Perimeter fence;
✓ Ash pit;
✓ Trained operator;
✓ Operating licenses and permits from relevant government agencies; and
✓ Requisite managerial strategies (Air quality monitoring, environmental auditing, Safety audits) must be undertaken.

The roles played by each of the components listed above were explained for better understanding.

MINUTE 05/21/12/2020/ C-HERP: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The lead expert took the meeting through the process of undertaking ESIA as well as defining it. The need for ESIA for the proposed project was explained in detail. The lead expert informed the meeting that ESIA process was highly regulated to ensure that the desired goal of sustainable environmental and social management was achieved.

The regulatory framework guiding the ESIA process was highlighted by the lead expert listing the applicable policies, laws and regulations as follows:

- 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 Public Health Act, Cap 242.
  ✓ Occupational Safety and Health Act (OSHA) 2007.
  ✓ Noise and Excessive Vibrations Pollution Control Regulations 2009.
  ✓ Water Act of 2016 and others
- The Constitution of Kenya
- International Treaties
The following issues were discussed in length during the consultation session:

<table>
<thead>
<tr>
<th>Stakeholder Name</th>
<th>Issue raised</th>
<th>Response given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebecca Mwanziu, Kauwi Sub-County Hospital PHO</td>
<td>Inefficiency in HCWM: She stated that the whole of Kitui West Sub-County, with more than 20 HCF, lacked a modern HCW treatment facility, thus resulting to the use of inefficient methods such as burning chambers and open burning;</td>
<td>The PHO therefore said that there was an urgent need to have one. She stated that there was no better location to have it than at Kauwi Sub-County Hospital which is located somehow centrally within the Sub-County.</td>
</tr>
<tr>
<td>Thomas Munyao, Area Chief</td>
<td>Details of the proposed project: He wished to be furnished with details of what the proposed project entailed.</td>
<td>Patrick (ESIA Expert) reported that the proposed MWTI will entail the construction of a shelter to house a MWTI machine. The shelter will also include provisions such as a bathroom, a toilet, a small office, a store for tools and equipment, a temporary HCW storage area, a perimeter wall and an ash pit. The MWTI will have components such as primary burning chamber/ignition chamber, secondary burning chamber, air scrubber and a chimney. He explained that it is at the Primary Burning Chamber where the HCW is loaded and ignited to burn at temperatures averaging 600ºC. Any particles and air that escapes from the primary chambers goes to the secondary burning chambers for further burning at higher temperatures averaging 800ºC to 1200ºC. The gases leaving the secondary burning chambers pass through the air scrubber where all particles and some gases are further filtered/trapped so as to ensure that whatever is released into the atmosphere through the chimney is not harmful. The chimney will be designed in manner that it is at least 10ft above the incinerator shelter roof.</td>
</tr>
<tr>
<td>Halima Abdulkarim, one of the community members</td>
<td>Air pollution: She stated that she is forced to walk away from her business premises when the hospital burned wastes because of the thick smoke and strong smell that emanates from the process</td>
<td>The PHO reported that the proposed project is expected to solve these challenges of air pollution given that it will install a MWTI, which is fitted with an air scrubber as explained by the ESIA Expert</td>
</tr>
<tr>
<td>Josephina Musyini, a community member</td>
<td>Scavenging by birds, rodents, cats and dogs: She stated that there were cases of cats carrying blood soiled cotton wool and placentas to their homesteads, the market and along the paths</td>
<td>The ESIA expert (Patrick) reported that the proposed project will have a waste storage place that is not accessible to scavenging animals such as dogs, cats and birds. The expert explained that the temporary HCW storage area will be fitted with fine wire mesh so as to enable keep such scavenging animals away from reaching the HCW.</td>
</tr>
<tr>
<td>Halima Abdulkarim, a community member</td>
<td>Fear of contamination of a nearby Kauwi river: It was pointed out that there exists a seasonal river in the eastern border of the hospital; hence the community members were concerned that the operations of the facility would impact</td>
<td>The lead expert allayed the fears informing the meeting that by building the facility to the expected standards, adhering to the standard operational procedures and with strict supervision, the river will never be polluted by the operations of the proposed facility. To be noted in relation to pollution control is not the location of the incinerator, but how best it is operated avoiding any potential pollution</td>
</tr>
<tr>
<td>Name</td>
<td>Topic</td>
<td>Details</td>
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<td>-----------------------------</td>
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<tr>
<td>Solomon Mwendwa, Ward Admin</td>
<td>Fear of adoption of new technology</td>
<td>He was concerned whether the local community members through the hospital management would be able to navigate the technology. He was concerned on the availability of the spare parts and further sort clarity on the cost implications of energy (diesel and electricity) utilization. The PHO explained that cost of maintaining the incinerator was within manageable levels for the county government. The technology was also not complex for the hospital management and with proper training during its installation and test running; identified members of the local community/hospital staff could operate and manage the facility with ease and that the spare parts and technical capacity to maintain the facility is locally available with suppliers of the machines based in Kenya.</td>
</tr>
<tr>
<td>Boniface Mwalimu, Chairman Kabati Market</td>
<td>Employment opportunities</td>
<td>Members of the local community lead by the business community requested the hospital management to ensure that the local community realized benefits from the proposed project by according employment opportunities to members of the local community as much as possible. The PHO confirmed that the hospital had the policy to recruit casual workers from among the local community. The Sub-County PHO assured all in attendance that the local community would be given first priority during the project implementation and in any other employment opportunity that would arise as has been the case.</td>
</tr>
<tr>
<td>Felistus N. Malombe, Area Assistant Chief</td>
<td>Gender Based Violence</td>
<td>She lauded the hospital management for the way they handle complaints from the public. The hospital was also praised for handling of victims of GBV with a lot of dedication, sometimes providing an ambulance to pick victims of GBV from far flung and remote areas of the Sub-County. She praised the hospital management for ensuring that no underage persons are employed within the hospital. She requested the County PHO to ensure that all other HCF within the Sub-County and the County emulate that fineness in responding to emergencies and especially GBV related matters. The Hospital PHO promised that her office will continue partnering with the hospital management so as to ensure a professional Community Engagement Plan (CEP) that will ensure structured reporting of matters affecting the public in relation to the hospital operations and a feedback on all matters arising, hence strengthening the hospital’s GRM.</td>
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**MINUTE 07/21/12/2020/ C-HERP: SUPPORT FOR THE PROJECT**

The proposed project received overwhelming support from all in attendance. This was largely informed by the potential benefits that would arise from the proposed project. The community stressed on the need to observe all the set environmental and social standards for such a project to ensure that the project is not injurious to the local environment and members of the surround community.

**MINUTE 08/21/12/2020/C-HERP: CLOSING REMARKS**

There being no other business, the ESIA Experts, the Sub-County PHO and the Area Chief made their closing remarks calling all in attendance to be good ambassadors of reaching out to others on the proposed project. The Area Chief emphasized on the need of the proposed project in the face of ongoing pandemic and managing HCW in the sub-county.
The Area Chief closed the meeting at 1050Hrs.
<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date of Birth</th>
<th>ID No.</th>
<th>Telephone No.</th>
<th>Residential Address/District</th>
</tr>
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**Venue:** Ministry of Health: The COVID-19 Health Emergency Response Project (C-HERP)
<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Contact Title</th>
<th>Telephone</th>
<th>ID No.</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haflima Rajab Miriam</td>
<td></td>
<td>Res. Coor.</td>
<td>0723002620</td>
<td></td>
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</tr>
<tr>
<td>Shafik Mwenga</td>
<td></td>
<td>New Vacuum Shop</td>
<td>0712405584</td>
<td></td>
<td></td>
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<tr>
<td>Esther Nyanji</td>
<td></td>
<td>Chemist</td>
<td>0731692020</td>
<td></td>
<td></td>
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<tr>
<td>Josephine Machimba</td>
<td></td>
<td>Greener Grocer</td>
<td>0716214720</td>
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<td>minced</td>
<td></td>
<td>Roma Tender</td>
<td>0745642392</td>
<td></td>
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<tr>
<td>Esther M. Nyanji</td>
<td></td>
<td>Asst Chief - K. Arew</td>
<td>0713235568</td>
<td></td>
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<tr>
<td>Fulusing N. Makembe</td>
<td></td>
<td>Asst. Chief - K. Arew</td>
<td>0713235568</td>
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</tr>
</tbody>
</table>

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

**Date:** A/J 12.2020

**Project:** Environmental and Social Impact Assessment (ESIA) Public Meeting Attendance List
Appendix 10: HCWM Unit Layout/Design Specifications
Appendix 11: Kauwi Hospital Site Map
Appendix 12: Bill of Quantities

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
State Department for Public Works

Works Building
Ngong Road, Nairobi
www.publicworks.go.ke

Ref No: QD 108/GEN/VOL. XI/39

The principal Secretary,
Ministry of Health,
P.O. Box 30016-00100,
NAIROBI.

REF: PROPOSED MEDICAL INCINERATORS AND MICROWAVES IN SELECTED HOSPITALS

Reference is made to your letter Ref. MOH/PROC/631/20/21FY VOL.11 dated 27th October, 2022 on the above-mentioned subject.

Forwarded herewith please find the Cost estimates for the Incinerator and Microwave installations as described below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Scope</th>
<th>Estimated Cost</th>
<th>NCA Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Garissa County Referral Hospital, Garissa County</td>
<td>31,200,000.00</td>
<td>NCA 4 &amp; above</td>
</tr>
<tr>
<td>2.</td>
<td>Loitokitok Sub County Hospital, Kajiado County</td>
<td>25,900,000.00</td>
<td>NCA 4 &amp; above</td>
</tr>
<tr>
<td>3.</td>
<td>Hola County Referral Hospital, Tana River County</td>
<td>27,500,000.00</td>
<td>NCA 4 &amp; above</td>
</tr>
<tr>
<td>4.</td>
<td>Alupe Sub County Hospital, Busia County</td>
<td>27,500,000.00</td>
<td>NCA 4 &amp; above</td>
</tr>
<tr>
<td>5.</td>
<td>Kasese Sub County Hospital, Kasese County</td>
<td>25,900,000.00</td>
<td>NCA 4 &amp; above</td>
</tr>
</tbody>
</table>

Enclosed please find one copy of blank Bills of Quantities for each facility for your further necessary action.

Qs. N.M. Mutua
FOR: PRINCIPAL SECRETARY

19th January, 2023