

**ENVIRONMENTAL AND SOCIAL IMPACT
ASSESSMENT
PROJECT REPORT**

March 2022

PROJECT
**PROPOSED RENOVATION OF
EXISTING WARDS IN THE HIGH
DEPENDENCY UNIT (HDU) AND
INTENSIVE CARE UNIT (ICU)
BUILDING TO CATER FOR COVID-19
TREATMENT AND
OPERATIONALIZATION OF A
MEDICAL WASTE TREATMENT
INCINERATOR AT KENYATTA
UNIVERSITY TEACHING, REFERRAL
AND RESEARCH HOSPITAL
(KUTRRH)**

LOCATION
**KAHAWA WEST WARD, ROYSAMBU
SUB-COUNTY, NAIROBI COUNTY**

GEOGRAPHICAL COORDINATES
**01°10'33.0"S, 36°54'57.0"E (Latitude:
-1.175833; Longitude:36.915833)**



ASSIGNMENT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED RENOVATION OF NILE AND ZAMBEZI WARDS IN THE HDU AND ICU BUILDING TO CATER FOR COVID-19 TREATMENT AND OPERATIONALIZATION OF A MEDICAL WASTE TREATMENT INCINERATOR (MWTI) WITHIN KUTRRH COMPOUND, LOCATED IN KAHAWA WEST WARD, ROYSAMBU SUB-COUNTY, NAIROBI COUNTY

ENVIRONMENTAL CONSULTANTS

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**On Behalf of Proponent
Ministry of Health
P.O. Box 30016-00100
Nairobi.**

SUBMISSION OF DOCUMENTATION

ENVIRONMENTAL CONSULTANTS

We hereby submit the following Environmental and Social Impact Assessment comprehensive report for the proposed renovations of existing wards to cater for COVID-19 treatment and operationalization of a MWTI at KUTRRH compound, Kahawa West Area Ward, Roysambu Sub-County, Nairobi County. To the best of our knowledge, all information contained in this report is an accurate and truthful presentation of all findings as relating to the proposed project.

Devlink Resources Consultants (Reg. No. 2355)

Signature: [Signature] Date: 28/03/2022

Designation: Environmental Lead Expert

Official Stamp: 

THE PROPONENT

We confirm that this ESIA comprehensive report has been prepared and forwarded to National Environment Management Authority (NEMA) with our authority as the project proponent. We also confirm our commitment to implementing the Environmental and Social Management and Monitoring Plan (ESMMP) as proposed in this report, as well as any other conditions that NEMA may prescribe.

Name: LOHEM LOKOLE BUSEO Position: Waste and Environmental Safeguards Lead, CHERP

Signature: [Signature] Date: 28/03/2022



DECLARATION

This report was prepared for submission to NEMA in accordance with Part VII, Section 58 of Environmental Management and Coordination (Amendment) Act (EMCA 1999, Amendment 2015), the Environmental (Impact Assessment and Audit) Regulations of 2003 (Revised in 2016 and 2019), and other gazette legislations related to Environmental Management in Kenya.

The environmental and social consultants exercised due diligence during data collection and assessment of relevant data, in order to address potential significant environmental and social issues.

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TABLE OF CONTENTS

SUBMISSION OF DOCUMENTATION	iii
DECLARATION	iv
TABLE OF CONTENTS	v
LIST OF FIGURES	viii
LIST OF ACRONYMS AND ABBREVIATIONS	ix
1.0 BACKGROUND INFORMATION	14
1.1 Introduction	14
1.2 Project Objectives	14
1.3 ESIA Scope	14
1.4 Terms of Reference (ToRs).....	2
1.5 Justification for Preparation of Safeguards Instruments/ESIA	2
1.6 Definition and Purpose of the ESIA	2
1.7 Methodology Applied for the ESIA	3
2.0 PROJECT DESCRIPTION	4
2.1 Introduction	4
2.2 Proposed Location of the Project.....	4
2.2.1 Location of the Wards Identified for Renovation to Cater COVID-19 Treatment Centre	4
2.2.2 Location of the MWTI	6
2.3 Project Description.....	6
2.3.1 Renovation Considerations.....	6
2.3.2 Operationalization of the MWTI	7
2.3.2.1 What is in Place	7
2.3.2.2 Designing and Locating of an Ash Pit.....	8
2.3.2.3 Project Activities for Covid-19 Centre and MWTI.....	9
2.3.3 Decommissioning the COVID- 19 Center and the MWTI.....	12
3. ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION	13
3.1 Introduction	13
3.2 Physical Environment.....	13
3.2.1 Physical Features.....	13
3.2.2 Ecological Conditions.....	14
3.2.3 Climatic Conditions.....	14
3.3 Socio Economic Environment	14
3.3.1 Demography and Hospital Catchment	14
3.3.2 Health Access.....	15
3.3.3 COVID- 19 Information and Containment Measures.....	15
3.3.4 Infection Control and Waste Management.....	15
3.3.4.1 Existing HCWM System	16
3.4 Water Supply.....	18
3.5 Power Supply and Distribution	19
3.6 Drainage and Sewer Networks	19
3.7 Fire Safety and Fighting	20
3.8 Transport and Communication.....	21
3.9 Local Land Uses	21
3.10 Cultural and Historic Sites.....	21
3.11 Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities	21
3.12 Security.....	21
3.13 Gender Based Violence/Sexual Exploitation and Abuse	21
3.14 Grievance Redress Mechanisms.....	22
4 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK	23
4.1 General Overview	23
4.2 Policy Framework	23
4.3 Regulatory Framework	24
4.4 Institutional Framework	26
4.5 Relevant Social Statutes	27
4.6 World Bank Environmental and Social Standards (ESSs)	28
4.7 The World Bank Group General Environment Health and Safety Guidelines	29
4.8 World Health Organization Guidelines for COVID-19 Prevention and Management.....	31
5 STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION	32
5.1 Introduction	33
5.2 Goals of Consultations	33
5.3 Objectives of Stakeholder consultation	33
5.4 Conclusion of the Stakeholder Consultation	36

6.1	Overview	37
6.2	Relocation	37
6.3	Zero or No Project Alternative	37
6.4	Waste Management Alternatives	37
6.4.1	Liquid Waste	37
6.4.2	Solid Waste	38
6.5	Alternative Schedule	38
6.6	Medical Waste Treatment Microwave Versus Land-filling, Autoclaving and Incineration	39
6.7	Comparison of Alternatives	41
7	PROJECT POTENTIAL E&S IMPACTS AND MITIGATION MEASURES	42
7.1	Introduction	42
7.2	Potential Impacts during the Planning and Design Phase	42
7.2.1	Potential Positive Impacts During Planning and Design Phase	42
7.2.2	Potential Negative Impacts During Planning and Design Phase	42
7.3	Potential Impacts during Construction Phase	43
7.3.1	Potential Positive Impacts during Construction Phase	43
7.3.2	Potential Negative Impacts during Construction Phase	43
7.4	Potential Impacts during Operation Phase	52
7.4.1	Potential Negative Impacts during Operation Phase	52
7.5	Potential Impacts during Decommissioning Phase	60
7.5.1	Project Machinery, Structure and Waste	60
7.5.2	Rehabilitation of Project Site	61
7.5.3	Socio-Economic Impacts	61
8	ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS	62
8.1	Introduction	62
8.2	Project Preparation	62
8.3	Construction Phase	62
8.4	Operation Phase	62
8.5	Decommissioning	63
8.6	Monitoring Team	63
8.6.1	Key Monitoring Indicators	65
9	CONCLUSION AND RECOMMENDATIONS	81
9.1	Conclusions	81
9.2	Conclusion	81
9.3	Recommendations	82
10	REFERENCES	83
11	APPENDICES	84
11.1	Appendix 1: NEMA License for the Consulting Firm	85
11.2	Appendix 2: The Eight Components of C-HERP	86
11.3	Appendix 3: Chance Find Procedure	87
11.4	Appendix 4: KUTRRH Environmental and Social Screening Checklist	88
11.5	Appendix 5: Code of Conduct for All Staff and Project Workers on Kenya C-HERP Project	93
11.6	Appendix 6: Terms and Conditions for Employment	94
11.7	Appendix 7: MWTI Repair Report	95
11.8	Appendix 8: Layout designs for the HDU and ICU building housing the wards to be renovated	96
11.9	Appendix 9: Ash Pit Design Layout and BQs	97
11.10	Appendix 10: NEMA license of the waste collector	98
11.11	Appendix 11: EHS Guidelines for Waste Treatment Facilities (MWTI)	99
11.12	Appendix 12: Minutes of Public Participation Meeting	100
11.13	Appendix 13: Minutes of 2 nd consultation meeting – technical consultations	106
11.14	Appendix 14: KUTRRH Land LR No.	108

LIST OF TABLES

<i>Table 1: Policy Framework</i>	23
<i>Table 2: Regulatory Framework</i>	24
<i>Table 3: Institutional Framework</i>	27
<i>Table 4: Relevant Social Statutes</i>	27
<i>Table 5: World Bank ESS's relevant to the project</i>	28
<i>Table 6: Issues/views of stakeholders</i>	33
<i>Table 7: Other Potential Negative Impacts During the Decommissioning phase</i>	61
<i>Table 8: Roles and Responsibilities of personnel's directly implementing the project</i>	64
<i>Table 9: Environmental and Social Risks and Mitigation Measures during Planning and Designing, Construction and Operation Phase</i>	66
<i>Table 10: General Environmental and Social Management and Monitoring Plan</i>	77

LIST OF FIGURES

Figure 1: The block housing the wards earmarked for renovation/modifications (Source: Field Work)	4
Figure 2: Paved paths with ramps that are disability friendly (Source: Field Work)	5
Figure 3: The chain-link fence around the two wards identified for renovation (Source: field work)	5
Figure 4: The roads serving the target wards (Source: field work)	6
Figure 5: The 10, 000litres diesel storage metallic tank outside the MWTI shelter (Source: field work)	7
Figure 6: The raised 500litres diesel metallic tank outside the MWTI shelter (Source: field work)	7
Figure 7: The MWTI shelter (Source: field work)	8
Figure 8: The installed MWTI (Source: field work)	8
Figure 9: The wetland bordering the KUTRRH compound (Source: field work)	13
Figure 10: Flora within the project site (Source: Field work)	14
Figure 11: COVID-19 control messages within the KUTRRH premises (Source: Field work)	15
Figure 12: One of the wheeled trolleys utilized in transporting HCW from the hospital facilities (Source: Field work)	17
Figure 13: Colour coded waste bins for waste sorting within the hospital premises (Source: Field work)	17
Figure 14: HCW placed next to the MWTI awaiting incineration (Source: Field work)	18
Figure 15: Some of the rain water gutters directing storm water on to open grounds (Source: Field work)	18
Figure 16: One of the surface water storage tanks within the hospital (Source: Field work)	19
Figure 17: One of the well-constructed drainage channel within the hospital compound (Source: Field work)	19
Figure 18: One of the well-marked fire management points within the hospital premises (Source: Field work)	20
Figure 19: A suggestion box in one of the hospital premises (Source: Field work)	22
Figure 20: Consultations and project site visit (Source: Field work)	36
Figure 21: The already paved waste management area around the MWTI area (Source: Field Work)	44
Figure 22: The rooms next to the MWTI shelter that could be converted to operator's office and store area (Source: Field work)	45

LIST OF ACRONYMS AND ABBREVIATIONS

BoQ	Bill of Quantities
CDE	County Director of Environment
C-ESMP	Contractor- Environmental and Social Management Plan
CFP	Chance Find Procedure
CLO	Community Liaison Officer
CO	Carbon Monoxide
CoC	Code of Conduct
CPHO	County Public Health Officer
CPP	Consultation and Public Participation
DOSHS	Directorate of Occupational Safety & Health Services
EA	Environmental Assessment
EA	Environmental Audit
EHS	Environmental, Health, Safety
EMCA	Environmental Management and Coordination Act
EOSH	Environmental and Occupational Safety and Health
ESA	Environmental and Social Audit
ESF	Environment and Social Framework
ESIA	Environmental and Social Impact Assessments
ESMMP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESSs	Environmental and Social Standards
GBV	Gender Based Violence
GoK	Government of Kenya
GPS	Geographical Positioning System
GRM	Grievance Redress Mechanism
HCF	Health Care Facilities
HCW	Health Care Waste
HCWM	Health Care Waste Management
HCWs	Health Care Workers
HDU	High Dependency Unit
HVAC	Heating, Ventilation, and Air Conditioning
ICU	Intensive Care Unit
IDA	International Development Association
IPC	Infection Prevention and Control
KHFA	Kenya Health Facility Assessment
KUTRRH	Kenyatta University Teaching, Referral and Research Hospital
MoH	Ministry of Health
MWTI	Medical Waste Treatment Incinerator
NCA	National Construction Authority
NCWSC	Nairobi City Water and Sewerage Company
NEMA	National Environment Management Authority
NGEC	National Gender and Equality Commission
NMS	Nairobi Metropolitan Services
OSH	Occupation Safety and Health
OSHA	Occupational Safety and Health Act
PAPs	Project Affected Persons
PEP	Post-Exposure Prophylaxis
PHO	Public Health Officer
PMT	Project Management Team
PPE	Personal Protective Equipment
PSEA	Protection Against Sexual Exploitation and Abuse

PTSD	Post-Traumatic Stress Disorder
PWDs	People with Disabilities
PWE	Public Works Engineer
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SOP	Standard Operating Procedures
STI	Sexually Transmitted Infections
ToRs	Terms of Reference
TRI	Training Research and Innovations
WBG	World Bank Group
WHO	World Health Organization
WIBA	Work Place Injuries and Benefits Act

EXECUTIVE SUMMARY

KUTRRH is a leading National Referral Hospital with a 650-bed capacity and equipped with state-of-the-art medical amenities established as a state corporation by the legal notice No. 4 of 2019. The hospital is well equipped to offer highly specialized Oncology, Trauma & Orthopedics, Renal, Accident & Emergency, among other services. It further offers both outpatient and inpatient services supported by state-of-the-art radiology services, 24-bed intensive care unit (ICU), High Dependency Units (HDUs) and Theatres. It features additional support services and facilities such as a specialist clinics plaza, staff quarters, academic block, laundry and catering services, restaurants, funeral home, oxygen plant, water treatment plant, helipad, banks, among others. The hospital aims to:

- Provide adequate and quality healthcare for all, including highly specialized services;
- Train healthcare professionals for the local and regional market; facilitated by the state-of-the-art technology such as teleconferencing;
- Reduce the outward flow of medical professionals and attract inbound medical tourism from countries within the Eastern African region and beyond;
- Address the current health challenges, including non-communicable diseases such as cancer, kidney disease, among others; and
- Carry out medical/scientific research to come up with innovative ways to address health issues in the region.

The World Bank, through the International Development Association (IDA), has granted credit to the Government of Kenya (GoK) through the Ministry of Health (MoH) to carry out renovations of the newly constructed Nile and Zambezi wards to a 36-bed COVID-19 treatment centre and operationalize the 100kg/hr MWTI. This is intended to provide for an up to standard COVID-19 treatment centre, improve on Health Care Waste Management (HCWM) generated from the COVID-19 Centre, other hospital activities and from other healthcare facilities (HCF) in the surrounding areas of Kahawa Sub-County.

Project Scope

The renovation of existing wards in the HDU and ICU building to be a COVID-19 treatment unit and operationalization of the MWTI at KUTRRH are likely to have environmental and social impacts. In order to proceed with implementation of this project without causing adverse impacts on the environment and the society, C-HERP/MoH with guidance from the World Bank commissioned this ESIA to ensure that the project is implemented in line with environmental and social safeguards as well as other requirements specified in the project documents such as ESMF, ICWMP and LMP

Based on the nature of works of the project sub-components as well as magnitude and duration of anticipated environmental and social impacts arising from the implementation and operations of the two project sub-components, the project was risks were rated as “Substantial” in accordance with the Bank’s Environmental and Social framework. With such a risk rating, “its compliance can be ensured by subjecting it to an ESIA.”

Project Cost

The total investment cost of the facilities is estimated at about KSH 80,620,000.

Design considerations for KUTRRH COVID-19 Treatment Center

The planned facility is to be based on World Health Organization (WHO) standards and specifications for COVID-19 treatment centres. Therefore, there should be standard access facilities (steps and ramps), adequate working and circulation space alongside enclosed sections/rooms for handling patients. Specific features of the COVID-19 treatment centre include: (a) consultation room complete with medicine and records store; (b) Male wards; (c) Female wards; (d) Washrooms - separate for male and female patients; (e) Specimen collection area for male and female patients; (f) negative pressure system; and (g) secured entrance by use of a chain link which has already been done to isolate the centre and COVID-19 patients from other hospital facilities.

MWTI Operationalization Design Requirements:

The operationalization of the installed MWTI will require re-design of its shelter to provide for a temporary waste

holding area, sanitation facilities, operators' changing rooms, material/equipment store room, operators' office, emergency response system, and a fire suppression system. This will also include construction of an ash pit in close proximity to the incinerator.

Policy, Legal and Institutional Framework

The administrative and legal framework pertinent to the C-HERP project in terms of 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) (

Table5) and World Bank Group Environment, Health and Safety (EHS) Guidelines and other relevant Good International Industry Practice (GIIP) (chapter 4) have been contextualized and presented in this ESIA report.

Stakeholder Consultations

Stakeholder and public consultations were undertaken through holding a public meeting at KUTRRH at one of the hospital's boardrooms in the Training Research and Innovations (TRI) building on the 23rd October, 2020. In attendance were a total of 25 stakeholders who included community leaders, KUTRRH representatives and administration. There were 13 men and 12 women plus two ESIA experts. A second consultation meeting was held on 19th July 2021 at the PHOs office. This was a technical meeting attended by the ESIA experts, hospital PHOs, hospital engineer and incinerator operators. The agenda was on proposed change of site for the COVID 19 treatment centre from the proposed training research and innovations building to the HDU and ICU wards' building. The consultations bore full support for the proposed project sub-components from the stakeholders and the surrounding community. More details of the stakeholder outcome are captured on chapter 5, table 6.

Potential Project Impacts

Implementation of the two project sub-components will have potential negative and positive environmental and social impacts. The positive impacts include additional infrastructure for improved medical care for COVID-19 patients and effective HCWM. Other potential positive impacts include; income from sale of construction materials and creation of employment opportunities and capacity building for the hospital human resource.

Possible negative environmental and social impacts during renovation and construction phase include: interference with the physical setting of the area including the minimal loss of vegetation, increased noise and vibration, air pollution/ dust emission, increased waste generation, accidental spillages, increased use and extraction of construction materials and possible encounter with physical cultural resources. Other adverse health impacts include Occupational Safety and Health (OSH) risks, which may result to health and safety risks due to truck movements in and out of the HCF, fire hazards, spread of communicable diseases and other infections including COVID-19, increase in HIV/AIDS prevalence and other STIs. Negative social impacts include; labour influx, cases of violation of individual rights and gender inequalities, possible cases of conflict and insecurity, sexual exploitation and abuse, child labour, cases of work and community related grievances.

Potential impacts during operation phase include: Improper HCWM, fire risks, air pollution from emissions from the MWTI and/or decomposing uncollected HCW, OSH risks for healthcare workers, OHS risks to waste handlers and the MWTI operators, increased water use, community health risk from the COVID-19 treatment center, increased solid/liquid waste generation, and increased energy use.

This ESIA report outlines appropriate mitigation measures in chapter 8 of this document for the anticipated environmental and social negative impacts related to the two project sub-components. In operationalizing the MWTI, there is need to redesign its shelter, as noted above, in the MWTI design requirements including construction of an ash pit. Other recommended mitigation measures include restricted vegetation clearance to minimize vegetation loss/re-vegetation of open patches of the site, putting in place proper drainage channels for discharge of storm water, sprinkling of water on bare/open surfaces to suppress dust and complete fencing off of the MWTI to limit unauthorised access to the waste treatment area and protect it from vandalism. All incineration ash shall be managed by ensuring that it is disposed into the ash pit to be constructed as per the standards. In addition, all wastewater from the cleaning process of the MWTI shelter shall be directed into the sewer system.

During the renovation works, only authorised persons should be allowed to access the wards under renovation, no construction debris should be piled unnecessarily within the project site and all renovation workers should be in appropriate PPE such as helmets, hand gloves, nose masks and safety boots at all times. It is important to install lightning arresters on the building to be renovated to manage risks of fire from lightning. Detailed mitigation measures for all the potential impacts are summarized on Table 9 (ESMP) and the monitoring options have been provided on **Error! Reference source not found.**10.

Project Implementation Monitoring Arrangements of this ESIA

The primary role of monitoring and supervision of project environmental and social compliance is the responsibility of the Nairobi County Government Health Department, currently under the Nairobi Metropolitan Services (NMS), since it has the mandate and institutional framework enshrined in the County Government Act, 2012. Key players in the monitoring of compliance in the project will include:

- i. MoH (project E&S specialist, Hospital administrator);
- ii. Public Works Engineer (PWE); and
- iii. External monitoring Nairobi County staff include:
 - County Director for Environment;
 - County Director for Physical Planning;
 - Labour Officer;
 - Community Development Officer;
 - Physical Planner;
 - County Public Health Officer; and
 - Occupational Health and Safety Officer.

Conclusion

- i. Implementation of the two project sub-components is classified as of environmental and social moderate risk, but the environmental and social concerns can be mitigated successfully.
- ii. The positive impacts of the two project sub-components outweigh the negative ones. The latter will be adequately mitigated by following the prescribed environmental and social impact management and monitoring plans.
- iii. The operationalization of the MWTI sub-component is highly needed to address the gaps in medical waste treatment especially with respect to improvement of the treatment and management of COVID-19 pandemic.
- iv. The COVID-19 isolation and treatment centre is urgently needed to complement the government's ability to manage COVID-19 cases and other highly infectious diseases.
- v. The two sub-projects should be allowed to commence, and activities carried out in compliance with the ESMP and sound environmental and social management practices that are locally and internationally recognized.

Recommendations

The following are recommended going-forward with the project:

- a. Though the anticipated negative environmental and social impacts of the project sub-components are considered moderate, localized and can be easily mitigated, the ESMP needs to be operationalized to ensure sustainable delivery of this project;
- b. The institutional framework for the delivery of the project needs to be operationalized to effectively follow up compliance to the guiding environmental and social laws, regulations and policies as discussed in chapter 4 of this document;
- c. The project should earmark some resources for supporting the COVID-19 treatment centre and the MWTI's staff to continue to benefit from continuous capacity building especially on aspects of infection prevention and control, healthcare waste management, health and safety and emergency preparedness;
- d. The MWTI shelter should be redesigned to provide for washrooms, office, temporary waste holding areas, standard ash pit and equipment/material store;
- e. On social aspects, the facility should be renovated in a manner as to allow for separated male, female and children's wards so as to reduce on chance of GBV and sexual harassment; and
- f. There should be a functional grievance redress mechanism that allows people to voice complaints and get feedback on any aspect of the project.

1.0 BACKGROUND INFORMATION

1.1 Introduction

Kenyatta University Teaching, Referral and Research Hospital (KUTRRH) is a leading national referral hospital with a 650-bed capacity equipped with state-of-the-art medical amenities. The legal notice No. 4 of 2019 issued on 25 January 2019 created KUTRRH as a state corporation. The hospital opened its doors for patients on 28 October 2019, with its' unveiling by the President of Kenya on 10 September 2020.

The hospital is well equipped to offer highly specialized oncology, trauma and orthopedics, renal, accident and emergency, among other services. It further offers both outpatient and inpatient services supported by state-of-the-art radiology services, ICU, HDUs and theatres. It features additional support services and facilities such as specialist clinics plaza, staff quarters, academic block, laundry and catering services, restaurants, funeral home, oxygen plant, water treatment plant, helipad, banks, among others. The hospital aims to:

- Provide adequate and quality health care for all, including highly specialized services;
- Train health care professionals for the local and regional market; facilitated by the state-of-the-art technology such as teleconferencing;
- Reduce the outward flow of medical professionals and attract inbound medical tourism from countries within the Eastern African region and beyond;
- Address the current health challenges, including non-communicable diseases such as cancer, kidney disease, among others; and
- Carry out medical/scientific research to come up with innovative ways to address health issues in the region.

The MoH received funding from World Bank towards the Kenya C-HERP, which is a multi-phased programmatic approach for strategic preparedness and response which aims to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness. The C-HERP project entails eight¹ components out of which two are relevant to this ESIA:

- i. **Component 3. Quarantine, Isolation and Treatment Centers:** This component will strengthen the health systems capacity to effectively provide Infection Prevention and Control (IPC) and case management of COVID-19 cases; and
- ii. **Component 4. Medical Waste Management:** This component will ensure the safe management of waste generated by laboratory and medical activities.

Consequently, the MoH intends to apply part of the received funding for construction, installation and commissioning of medical waste treatment facilities and renovations of COVID-19 health facilities. Further, the MoH is supporting KUTRRH to renovate two existing wards, Nile and Zambezi, to a COVID-19 treatment centre and operationalize the already installed MWTI.

1.2 Project Objectives

The objectives of the proposed project are to:

- i. Facilitate safe HCWM at the health care facility (HCF) and build capacity for better management of highly infectious waste; and
- ii. Contribute to increased capacity to manage COVID-19 patients.

1.3 ESIA Scope

The scope of this consultancy entailed conducting an ESIA for civil works related to renovation of the two existing wards and operationalization of MWTI that will take place at KUTRRH. The aim of the ESIA is to identify the potential environmental, social, health and safety impacts associated with implementation and operationalization of the proposed project sub-components and recommend appropriate mitigation measures for integration in all phases (planning and design, construction, operation and decommissioning phases) of the

¹ Appendix 2: The eight components of C-HERP

project cycle.

1.4 Terms of Reference (ToRs)

The ToRs of this ESIA are:

- i. To identify and assess potential positive and negative environmental and social impacts associated with the proposed renovations and operationalization of the existing MWTI;
- ii. To determine how far the activities that relate to the renovations and any civil works that may be involved in the operationalization of the MWTI at the sub-project sites as well as ensuring their operation comply with sound environmental health and safety management practices;
- iii. Undertake project alternative analysis;
- iv. Identify potential design opportunities and appropriate measures to have sustainable MWTI;
- v. Conduct a public consultation process as described in the Stakeholder Engagement Plan (SEP), and in conformity with the provisions of the Constitution of Kenya (2010), the EMCA (2015), the EMCA (Environmental Impact Assessment and Environmental Audit) Regulations and the Legal Notice Number 31 and 32 of 2019;
- vi. To recommend appropriate environmental, social, health and safety mitigation measures for integration in all phases of the project's cycle;
- vii. Generate an Environmental and Social Management and Monitoring Plan (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 authorities.

1.5 Justification for Preparation of Safeguards Instruments/ESIA

The objective of the C-HERP project is to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness and response in the country. Thus, the proposed renovation of the two identified wards at KUTRRH to cater for COVID-19 treatment will not only benefit Nairobi County population but also the neighboring counties hence contributing to the Country's COVID-19 response and management goals. To complement the operations of the COVID-19 centre by ensuring the effective management of infectious medical waste, the MoH will also support KUTRRH to operationalize a recently installed MWTI.

Under the provisions of the EMCA 1999, amended in 2015, the EMCA (Environmental Impact Assessment and Environmental Audit) Regulations of 2003 (Revised in 2016) and the Legal Notice Number 31 and 32 of 2019, it is a requirement by law that an ESIA is undertaken prior to construction and commissioning of a medical waste treatment equipment and before any major renovations are carried out. In addition, the C-HERP project is prepared under the World Bank Environment and Social Framework (ESF). The Environmental and Social Risk associated with the project was initially rated as "High" but currently rated as substantial due to overall improvement of the C-HERP project performance. 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.

1.6 Definition and Purpose of the ESIA

The ESIA is a systematic analysis of projects, policies, plans or programmes to determine their actual and potential environmental and social impacts, the significance of such impacts and to propose measures to mitigate the negative ones (*NEMA, 2002*). ESIA is mainly used at the level of specific developments and projects such as the mentioned proposed operationalization of a MWTI and the proposed renovations of identified wards to cater for COVID-19 management facility. 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.

ESIA is both a planning and decision-making tool. As a planning tool, ESIA presents methodologies and techniques for identifying, predicting and evaluating actual and potential environmental and social impacts of projects, policies, plans and programmes in the project cycle (planning, implementation, operation and decommissioning phases). As a decision-making tool, the ESIA process presents decision-makers with the information necessary to determine whether or not a project should be fully implemented (if still under implementation or not yet implemented), its operations continued or not (if up and running), and if it should, then under what conditions (*NEMA, 2002*). This ESIA is intended to identify the impacts - actual and potential (both beneficial and adverse-environmental (biophysical) social and economic) of implementation and operation activities related to renovations of the identified wards and MWTI sub-projects.

The principal purpose of this assessment was to carry out a systematic examination of the present environmental and social situation within the project area in an attempt to determine whether the proposed project will have adverse environmental and social impacts to the surrounding area and community. The primary objective of this consultancy is to undertake an ESIA for the proposed renovations of the identified wards to cater for COVID-19 treatment and operationalization of an installed MWTI at KUTRRH as identified under the C-HERP project and during the screening exercise by the MoH project management team.

1.7 Methodology Applied for the ESIA

The ESIA is based on site visits, literature review, Environmental and Social Screening for C-HERP (Appendix 4) and discussions with the project proponent (MoH), the hospital management, Public Health Officers (PHOs), biomedical engineers, local administrators and consultation with the public (consultation and public participation -CPP). While preparing the ESIA report, the potential negative impacts and their mitigation measures were identified to include:

- i. Impacts due to project location;
- ii. Impacts from project planning and design;
- iii. Impacts during project construction;
- iv. Impacts during the operation phase of the project; and
- v. Decommissioning.

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

- i. Desktop studies which involved review and analysis of literature (project documents, design layout and specifications, legislative framework) for acquisition of secondary data;
- ii. Environmental and social screening, in which the project was identified as among those requiring ESIA as guided by the Environmental and Social Screening Form for C-HERP, schedule two (2) of EMCA, 2015, and whereby the proposed project is classified as a High-Risk project under the Legal Notice Number 31 and 32 of 2019 provisions. In addition, under the World Bank ESF, the Environmental and Social Risk associated with the proposed project was initially rated "High" but currently rated as "substantial" due to improvement in overall project performance;
- iii. Environmental and social scoping that provided the key environmental and social issues to be investigated in relation to implementation of the proposed project sub-components;
- 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.

2.0 PROJECT DESCRIPTION

2.1 Introduction

This section highlights details of the proposed project components; the project specifications, project location and its compatibility with the local land uses.

2.2 Proposed Location of the Project

The two project sub-components are located within the KUTRRH compound. Administratively, KUTRRH is located along Northern by-pass road in Roysambu Sub-County, Kahawa West ward, in Nairobi County. The geographical positioning system (GPS) coordinates of the project site were determined to be 1°10'34.29"S 36°54'56.80"E.

2.2.1 Location of the Wards Identified for Renovation to Cater COVID-19 Treatment Centre

The wards identified for renovation to cater for COVID-19 treatment are the Nile and Zambezi, located on the ground floor of the wards block and immediately surrounded by other wards. This block is centrally located in relation to other hospital facilities and it is neighboring the oxygen plant approximately 100m to the west, the funeral home, approximately 130m to the south-west, the kitchen and laundry approximately 150m to the south, the HDU 60m to the north and other wards to the east while the first floor of the building houses the ICU and other wards. The two identified wards are next to each other. They are easy to develop independent and secure access to them and to other wards and hospital facilities within the same block. They are close to the oxygen plant and these factors make them ideal for the proposed role of COVID-19 treatment centre. They are well served by a network of concrete paved roads wide enough with adequate parking spaces to cater for medical operations. The external designs of the wards are suitable for movement of physically challenged persons with ramps at their entrances for ease of movement of medical equipment such as stretchers and wheel chairs. The identified wards have a chain-link perimeter fence around the area with a central gate. The facility has lockable doors separating the wards from the nursing stations to control their access. Waste transfer gates are linked with an existing road leading to the MWTI.



Figure 1: The block housing the wards earmarked for renovation/modifications (Source: Field Work)



Figure 2: Paved paths with ramps that are disability friendly (Source: Field Work)



Figure 3: The chain-link fence around the two wards identified for renovation (Source: field work)



Figure 4: The roads serving the target wards (Source: fieldwork)

2.2.2 Location of the MWTI

The already installed MWTI is located on the South-Western edge of the hospital compound neighbouring the mortuary to the east, parking lots to the north, vacant plots to the south and vacant space to the west. This project location was deemed appropriate based on the layout of the hospital and hospital operations considering that the site is isolated from the main hospital facilities and that there are no other hospital services provided beyond the waste treatment area. The environmental outlook of the project site is good with well-manicured compound planted with trees and aesthetic plants. The project site is well served by concrete-paved access with electric power and water supply already connected to the facility.

2.3 Project Description

The proponent intends to carry out renovations of two identified wards, Nile and Zambezi, to a 30-bed COVID-19 treatment centre and operationalization of the installed MWTI project.

2.3.1 Renovation Considerations

The wards identified for renovations had been constructed as general wards with a total of 36 beds (18 beds each). Their renovations will involve redesigning them to separate the nurse stations from the patients' wards area, installing 30-ICU beds, strengthening oxygen supply system and doing a negative pressure system. The renovated wards will house men and women in completely separated compartments, with different nurse stations and different entrances, thus will prevent exposure to Gender Based Violence (GBV)/Sexual Exploitation and Abuse (SEA) risks.

The target building has good accessibility for persons with disabilities and separate exit walkways for healthcare workers and the patients. The wards to be renovated are newly constructed and had not been put into any use as at the time of ESIA scoping; hence the proposed development will not affect any of the hospital activities neither will their operation lead to any conflict with their surrounding considering that they are surrounded by other wards. The proposed conversion of the identified wards to cater for COVID-19 treatment is in harmony with the current hospital system as there is need for a COVID-19 treatment wards at the hospital and in the country. To be noted is that the proposed COVID-19 treatment wards, which are already fenced off has 24hour security deployed to ensure safety of equipment, patients and workers. The building has been connected to electricity to ensure proper lighting during the day and night. Medical gas has also already been piped to the building, however, there will be need to increase the volume to be piped to the facility and provide for the negative pressure system.

2.3.2 Operationalization of the MWTI

2.3.2.1 What is in Place

As at the ESIA Scoping phase, there had been installed a MWTI of 100kg/hr rating, which was under test running. The MWTI which is fitted with a scrubber and a 10ft chimney is installed in a shelter that is well ventilated with 10, 000litres diesel storage tank installed outside the shelter and a 500 litres raised diesel tank. The shelter provides for an office space and an equipment/material store.



Figure 5: The 10, 000litres diesel storage metallic tank outside the MWTI shelter (Source: field work)



Figure 6: The raised 500litres diesel metallic tank outside the MWTI shelter (Source: field work)



Figure 7: The MWTI shelter (Source: field work)



Figure 8: The installed MWTI (Source: fieldwork)

Lacking is complete fencing off of the waste management area, washrooms, hand washing areas, fire extinguishers and an ash pit. Following the test-running that has been on-going since March 2021 by the KUTRRH Medical Engineers, the MWTI was found not to be operating optimally with production of a lot of smoke due to identified component failures as described by the report annexed (**Appendix 7**). For full commissioning of the MWTI to be realized, recommendations made in **appendix 7** will need to be undertaken coupled with the construction of facilities such as washrooms, bathrooms, construction of secured and sheltered temporary waste holding area and an ash pit as well as putting in place fire control measures.

2.3.2.2 Designing and Locating of an Ash Pit

Operationalization of the MWTI should provide for an ash pit as a standard. Therefore, there will be need for the Hospital Infrastructure Engineer together with the Public Health Department to decide on the capacity of the ash pit required. Medical waste is not very dense, so volume reduction of around 95% can be anticipated. According to “Health Care Without Harm”, there should be enough capacity to take at least 5 to 10 years’ production of ash (<https://noharm-global.org/documents/technical-specifications-ash-pits>). The amount and density of waste produced will vary from facility to facility, so it is best to estimate the ash volume based on KUTRRH’s waste

production rates. Therefore, the hospital should make use of the data on waste generation rates. Data needed includes:

- Amount of waste (kg) produced per day in the facility;
- Density of waste to be incinerated. A simple way to estimate this is to fill a 50liter bin with waste, weigh it, and subtract the weight of the bin to give the weight of 50liters of waste in kilograms. Multiply this by 20 and you will have the weight of 1,000liters or 1 cubic meter;
- Percentage of ash remaining after incineration. If you do not know this, assume 5%; and
- Calculate the volume of ash to be produced over 5 years as follows:

Weight of waste produced in one day (kg)	/	Density of waste (kg/m ³)	*	Number of days in 5 years (1825 days)	*	% Volume remaining (number/100)	=	Volume of ash (m ³)
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If the hospital produces 60kg of waste each per day with a density of 225kg/m³. Assuming 95% volume reduction (i.e., only 5% of the volume remains after incineration, the calculation would be:

60 kg/day	/	225 (kg/m ³)	*	1825 days	*	5/100	=	24.3 (m ³)
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In selecting the appropriate site for the ash pit, to be considered is that it should be as close to the incinerator as possible. The site should be in a secure, non-public area that cannot be accessed by feral or domestic animals. Considerations for the local soil type should also be in mind when designing the ash pit. Through carrying out a hydro-geological survey, it should be checked that the ash pit will not affect the groundwater, or be affected by it. Ash pits are not recommended in sites where the water table is near the surface or in areas prone to flooding. At least 1.5m from the bottom of the pit to the groundwater level is recommended. The contractor should dig a test pit and insert a narrow metal pipe or bar into the soil to a depth of 1.5 m. If the end of the bar is wet or soil removed from the pipe is wet, the pit may be too close to the ground water. If the groundwater is too close to the bottom of the test pit, considerations for other options such as changing the design of the pit to make it wider but shallower; creating more, shallower pits or creating a pit that is partially made of bricks above ground.

(See appendix 9 for more details on the ash pit design)

2.3.2.3 Project Activities for Covid-19 Centre and MWTI

a) Planning and Design Phase

The planning and design phase is purely preparatory in nature and entails boardroom consultations, site visits, and desktop works where the proponent and the financier engage in planning meetings upon which the concept of the project is agreed. The planning meetings are punctuated with appropriate site visits for data collection.

Physical interference of the project site is not expected at this stage because most of the renovation works will be internal in the already constructed wards.

i. Key Social Considerations in Planning and Design of the Project

The objective for incorporating social considerations in this phase is to ensure designing of socio-cultural friendly physical facilities with minimal negative impacts to the well-being of people within and around the project area and procuring contractors that will be intentional in enhancing the social well-being of the users and community members. The identified social considerations are applicable in both the operation phases of the COVID-19 Centre and the operationalization of the MWTI. Some of the key considerations include those listed below.

- **Security:** The facility management and contractors will prepare for maximum security for the workers at site, and also ensure workers maintain maximum cooperation that will not bring conflicts, fights and crime within the project site. The security of the staff/workers and the patients at MWTI and the COVID-19 Centre must be ensured.
- **Safety and Health:** constructing physical facilities that are safe and healthy for use by making use of materials and technology that will not be harmful to the people within and around the project sites
- Put in place mechanisms for incorporating women and people living with disabilities (PLWD) in all phases and levels of construction.
- **Economic Empowerment - income and employment opportunities:** This will ensure that planners confirm that all employment/income generating opportunities are mapped out and the necessary guidelines

formulated in the ESMP for contractors to follow to ensure deserving members of the local community benefit from the project.

- **SEA, GBV, prostitution and HIV:** The design and in the event of procuring contractors, will ensure the contractors develop strict code of conduct (CoC) that will prevent sexual exploitation, prostitution and increase in HIV prevalence within the project sites by formulating an *HIV/AIDS management plan that will include* HIV/AIDS prevention measures such as provision of condoms and a link to VCT services plus HIV/AIDS messages posted within the project site.
- **Social Evils**—Measures should be put in place at the planning and design stage to ensure that the occurrence of social evils such as use/abuse of substances and excessive alcohol consumption. This will be achieved via drafting and enforcing a workers' CoC as guided by Appendix 1 in the LMP, inducting construction workers on the CoC, ensuring that they sign it and ensuring that the truncated CoC (Appendix II of LMP) is placed on facilities where construction works are ongoing for attention of workers.
- **Protection against child labour and forced labour:** Ensure the design is one that will not allow violation of child rights, but guarantee child safety all the time, will not involve children (persons below the age of 18years old) in the construction or any kind of labour at the construction sites, maintaining a database of workers with age verification, including contractor contractual obligations to deter these vices and ensuring compliance with the relevant laws prohibiting child labour and forced labour to persons of all ages.
- **Sustainability:** Consider the designs, technology that are user friendly, easy to maintain and cost effective for sustainability after the renovations are carried out. This could include using easy to clean floor and wall materials and installing automatic taps for the COVID-19 centre. The hospital management could consider incinerating waste for other HCF within the surrounding area at a fee so as to generate some funds to run it.
- **Grievance Redress Mechanism (GRM):** The project team will work to address grievances through the implementation of proposed mitigation measures as per the ESMP and as identified through the GRM. Specific objectives of the GRM are:
 - ✓ To provide community and stakeholders in general with a clear process for providing feedback and raising grievances;
 - ✓ To provide a platform for stakeholders to raise feedback and concerns; and
 - ✓ To structure and manage the handling of comments, responses and grievances, and allow monitoring of effectiveness of the mechanism.
- **Exposure to COVID-19:** The contractor, in conjunction with the MoH E&S specialists, will appoint a dedicated team with responsibilities to identify and implement actions that can control spread of COVID-19 during the construction phase.

b) Construction and Renovation Phase of the COVID- 19 Center

The construction phase will entail the renovation works and increasing the oxygen supply outlets and installation of the negative pressure systems, with the following being the processes that will be undertaken.

i. Recruitment of Contract Workers

The implementation of the proposed project will entail recruitment of contract workers that will be involved in implementing the various project activities. It is expected that the contractor will hire the services of members of the local community as much as possible apart from expertise that is not locally available. Such undertakings will the improvement of the social-economic welfare of the contracted members of the local community even though temporarily.

ii. Transportation of Building Materials

Renovation materials including aluminum, glass, pipes, wooden boards, desks and chairs will be transported safely from the suppliers to the project site by the use of lorries. It is expected that the contractor will source these materials from hardware shops within the area and the surrounding environs, in order to minimize the materials' carbon footprint and reduce transportation costs.

iii. Storage of the Construction Material

All project materials will be stored in an orderly manner to observe good housekeeping so as to avoid possible accidents from poor housekeeping. Additionally, the contractor will be expected to order for materials in considerable quantities to minimize stockpile on site. Careful design, planning and good site management would be maintained to minimize over-ordering and waste of raw materials such as ready mixed concrete, mortars and cement grouts.

iv. Installation of Utility Services and Civil Works

The project construction/renovation activities will be based on relevant Kenya policies and regulations, World Bank ESF, WBG EHS guidelines and any other GIIP which may be incorporated. The constructions will as well incorporate environmental guidelines, health and safety measures.

There will also be plumbing works, installation of necessary electrical supply and wiring, communication and information cables, fire suppression system and emergency response systems. In carrying out the proposed renovations at the wards, the necessary works will include but not be limited to the following components.

v. Builders Works

- **Finishes:** These will include mainly the painting works.
- **Partitioning works:** This shall include facilitation of clear demarcation of nursing station and the wards areas clean and dirty areas, by use of aluminum / glass partitions.
- **Signage works:** To guide the flow of patients and staff there is a proposal to have directional, landing and rooms' identification signage.
- **Chain-link fence:** This was already in place at the ESIA scoping phase. This is primarily meant to contain the movement of patients to within set limits but allowing them space for movement within the COVID-19 treatment facility. In addition, it is an Infection Prevention and Control (IPC) measure.
- **Pharmacy Shelving:** The proposal is to set a pharmacy unit for storage of pharmaceutical products within the COVID-19 treatment centre for dispensing.

vi. Mechanical Works

These works shall include the following:

- **Patient and staff showers:** This is the creation of showers at the washrooms for all the patients and staff
- **Dooffing area showers:** This will involve creation of both the conventional showers as well as the chlorine showers at the doffing area.
- **Additional Air-conditioning Units:** Additional air-conditioning units will be installed at both the donning room as well as the pharmacy.

vii. Electrical Works

- These works will include provision of additional power points sufficient for bed services, additional lighting, upgrading of the current breakers and installation of instant showers as well as mosquito killer lamps.

viii. Furniture Outfitting

The furniture outfitting shall include the provision of shelving for storage, nurse stations, staff lockers, tables and cabinets, staff lounge furniture as well as food microwaves and fridges.

ix. The Negative Pressure System

Part of the works will involve conversion of the target wards to negative pressure system. The scope of the works comprises installation, testing and commissioning of mechanical ventilation and air conditioning systems.

The contractor and facility management should ensure that the relevant environment and social safeguards measures are implemented to mitigate against inherent risks at this phase.

c) Operation Phase of the COVID -19 Center

The operations of the COVID-19 center will entail provision of outpatient services for confirmed cases of COVID-19 recommended for homecare and inpatient services through admission. The main services provided will entail triage, diagnosis, laboratory testing and pharmacy services, ward services, cleaning and sanitation services, regular disinfection, kitchen operations, biomedical engineering services, general, liquid, and HCWM.

During this phase, the staff at the health facility will be expected to comply with MoH IPC measures. To institutionalize this requirement, the hospital will be required to develop and implement a facility-based IPC and waste management plan. Within this phase, all the relevant environmental and social mitigation measures outlined in the ESMP shall be implemented and monitored to manage potential negative risks.

2.3.3 Decommissioning the COVID- 19 Center and the MWTI

Should the need arise to discontinue operations at the COVID-19 Centre and the MWTI, it will then be decommissioned. The proponent might opt to put the facilities to other uses if it will be found to still be structurally sound upon assessment by relevant professionals.

Upon decommissioning, in the event of a demolition, a lot of solid waste will be produced. Such waste could be reused or if not reusable, disposed of appropriately by a licensed waste disposal company. Waste requiring pretreatment and/or treatment shall be handled as per the set requirements and such waste shall undergo the necessary treatment before final disposal. Special attention will be put in place to ensure that special waste, like the decommissioning of the ash pit should follow clear procedure provided in its decommissioning.

All equipment including the electrical installations, furniture, finishing fixtures, partitions, pipework and sinks among others will be dismantled and removed from the site on decommissioning of the project. Priority should be given to re-use of these equipment. These being an infectious disease treatment and management centre and MWTI, all materials/ machines deemed fit for further use MUST be procedurally cleaned and disinfected/sterilized thoroughly before being put into any other use.

Once all the waste resulting from demolition and dismantling works is removed from the site, the site should be restored through replenishment of the topsoil and re-vegetation using native plant species.

3. ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION

3.1 Introduction

This section describes the major elements of the project area's environment, encompassing the physical, biological and social environment as well as the condition of the proposed project site. The information presented in this section is based on observation of the project area by the consultants as well as information from secondary literature.

3.2 Physical Environment

3.2.1 Physical Features

The terrain around the wards to be renovated and the MWTI is gently sloping southwards. To the south of the KUTRRH is a wetland that is separated from the KUTRRH compound by a concrete perimeter wall. This is next to the MWTI.



Figure 9: The wetland bordering the KUTRRH compound (Source: field work)

3.2.2 Ecological Conditions

The project site is in Nairobi County, which is a predominantly terrestrial habitat that supports a diverse web of biodiversity and ecosystems. It is home to about 100 species of mammals, 527 bird species and a variety of plant species. Although it is endowed with some permanent rivers, the aquatic ecosystems are largely choked by the effects of pollution from different sources.

i. Flora

The project sites are well manicured with grass, ornamental plants and a few trees that are planted in the entire hospital compound. It is expected that there will be minimal disturbance to flora during the project implementation because it will involve mainly renovation works at the existing 2 wards in HDU and ICU building and commissioning of an already installed incinerator that will need minimal construction works.



Figure 10: Flora within the project site (Source: Field work)

ii. Fauna

The site is situated within an area zoned for residential cum commercial uses where human activities have altered the natural habitat for wildlife over the years. Consequently, there are no major animals in the environs except may be birds, insects, and small rodents. Therefore, there is no fauna threatened by the proposed project.

3.2.3 Climatic Conditions

Nairobi County has a fairly cool climate resulting from its high altitude. Temperature ranges from a low of 10°C to a high of 29°C. It has a bi-modal rainfall pattern. The long rains season falls between March and May with a mean rainfall of 899 millimeters (mm) while the short rains season falls between October and December with a mean rainfall of 638 mm. The mean annual rainfall is 786.5 mm (CIDP, 2018).

3.3 Socio Economic Environment

3.3.1 Demography and Hospital Catchment

The hospital is situated in Nairobi County with population of 4,397,073 as at 2019 and which had been projected to increase to 4,922,000 by 2029. Kahawa West Ward where the facility is located is one of the electoral wards in Ruiru Constituency, Roysambu Sub- County in Nairobi County. The Ward continues to attract people who purchase land and construct their homes, while others are investors who construct residential flats for rental. The surrounding project area comprises of a mixture of residential flats, shops, hotels, schools, churches, etc.

3.3.2 Health Access

Health access is the timely use of personal health services to achieve the best health outcomes (IOM, 1993). This is a function of coverage, timeliness, service and availability of healthcare personnel. This section gives the description of health access situation, facilities available, personnel and staffing and COVID-19 information and containment measures in the hospital.

3.3.3 COVID-19 Information and Containment Measures

As at early May 2021 Kenya had 160,559 cumulative confirmed cases of COVID 19, the numbers of fatalities were at 2781 cases while the recoveries amounted to 109,077 cases, the capital of Nairobi is the most affected county accounting for 45% of the cumulative cases in Kenya (Source; MOH website). KUTRRH reports to have managed cumulatively more than 1,000 COVID-19 positive cases.

Other than in-patient specialized case management and treatment, the notable containment measures being undertaken by the hospital are that; no unauthorized persons are allowed into the hospital without a mask, hand washing stations and sanitizers have been placed at designated points within the hospital compound, social distancing being observed, decontamination of the waste from the treatment wards by spraying with 0.5% chlorine solution before being taken for off-site healthcare waste treatment and disposal incineration site, on job training of the hospital staff, vaccination of all hospital staff and temperature monitoring.



Figure 11: COVID-19 control messages within the KUTRRH premises (Source: Field work)

3.3.4 Infection Control and Waste Management

Healthcare waste 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. On the other hand, Infection prevention and control (IPC) is defined as the discipline concerned with prevention of the spread of infections within the healthcare setting and at community level. IPC are evidence-based practices and procedures that are applied consistently in health care settings to prevent or reduce the risk of transmission of micro-organisms to health care providers, clients, residents and visitors. Therefore, either at health care or community setting, IPC is concerned with interventions relating to health and environment, which can be divided into; personal (staff); patient; population (community) and environment protection. According to

the WHO, about 15-25% of total health-care waste should be infectious waste, and improper handling of health care waste can cause serious health problems for workers, community and environment. IPC strategies to prevent or limit transmission as per the WHO Infection Prevention and Control in health care settings especially those handling COVID-19 case management 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.

Infection control and waste management challenges are numerous and a salient feature in Nairobi County, the project influence area (PIA) is no different with the local community attesting to challenges in waste management among other infection control challenges in the locality. The Ministry of Health Division of Monitoring and Evaluation assessment (The Kenya Health Facility Assessment (KHFA), 2019), found that, the mean availability of standard precaution for infection prevention items in Nairobi was 66%. At the National level, the assessment found that only 12% of health facilities have all items for standard precaution for infection prevention. Further, the assessment found that a number of health facilities in Nairobi had good facility level waste management practices with some of the level 5 and 6 facilities having good functional incinerators. Potentially infectious waste generated by the hospital are sharps, cultures from medical laboratories or infected blood, infected wipes or masks from quarantine, isolation and treatment center 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 absence of proper health care waste management exposes the patients and health care workers to risk of infection.

3.3.4.1 Existing HCWM System

The hospital has been outsourcing the treatment and disposal of its infectious and general waste. But following the test running of the installed 100kg/hour rating MWTI. The serviced MWTI is utilized to incinerate infectious waste generated from the hospital operations. These waste 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 semi-volatile organic compounds, chemotherapeutic waste, mercury, other hazardous chemical waste and radioactive waste with high content of heavy metals, pressurised containers (cartridges and cylinders) should not be treated in the MWTI. However, the facility continues to outsource a waste collection company called December Waste Services, which is licensed by NEMA (*see attached NEMA license, appendix number 10* for collection of general waste together with the incinerated ash. Once the installed incinerator is fully operationalized, the hospital will be in a position to incinerate an average of 800kg per day if the MWTI is operated for 8hours or 1000kg if operated for 10hours against a waste generation rate of between 700kg to 1000kg per day. Thus, the installed MWTI is able to treat the hospital waste adequately, although the waste generation rate has been pushed to high quantities by the hospital's adoption of single use utensils and single use PPE. The MWTI which is located at the designated waste treatment area measuring approximately 1,350m², was not in compliance with applicable EMCA (Air Quality Regulations, 2014) given that it had not been subjected to periodic stack emission testing and analysis but during the assessment phase it was undergoing major repairs, adjustments and re-calibrations to improve on its efficiency (*see Appendix 7: MWTI Repair Report*)

Noted is that there is efficient waste segregation at source following the National Healthcare Waste Management plan with only the infectious waste and all the waste from the wards finding its way to the MWTI. The hospital has wheeled trolleys used in the transportation of the HCW from the hospital facilities/wards to the MWTI through well paved paths. However, the waste is stored in the same room with the MWTI as it awaits incineration, making the room highly congested. The hospital wards are issued with the right waste bags (bin liners) (which are issued daily at the designated points. The rest of the solid waste are disposed of to NEMA approved dump sites by use of NEMA registered waste transporter. The hospital has hand washing stations placed at strategic points with sustained supply of water and soap. Medical waste management is under the public health department and the hospital public health officer is responsible for proper management of the healthcare waste.



Figure 12: One of the wheeled trolleys utilized in transporting HCW from the hospital facilities (Source: Field work)



Figure 13: Colour coded waste bins for waste sorting within the hospital premises (Source: Field work)



Figure 14: HCW placed next to the MWTI awaiting incineration (Source: Field work)

3.1 Water Supply

The hospital is dependent on a single source of water supply, the Nairobi Water and Sewerage Company (NCWSC). Though the hospital does not practice rainwater harvesting, it is fitted with gutters which direct the storm water to the constructed drains as well as to open grounds. To ensure continuous supply, the water from NCWSC is directed into storage tanks including a basement tank of 200,000 litres and surface tanks of 160,000litres.



Figure 15: Some of the rain water gutters directing storm water on to open grounds (Source: Field work)



Figure 16: One of the surface water storage tanks within the hospital (Source: Field work)

3.2 Power Supply and Distribution

The hospital is connected to 3 phase power supply from the national electricity grid with the proposed project sites (wards and the MWTI site) already connected to electric power supply. There are 4 power backup generators strategically placed at the hospital with two each of 660kva serving the main hospital premises, where the wards proposed for renovation are located, one of 550kva serving the oxygen plant and the laundry while another of 550kva serving the TRI and the staff quarters. The proponent/ hospital management is expected to undertake sustainable resources use in all the phases of the proposed project. Motor vehicles engaged in all phases of the proposed project are expected to fuel at stations that are known to offer unadulterated fuel to prevent impacts associated with contaminated fuels. In future, the Hospital should tap into the solar energy to increase its energy back up sources as well as reduce reliance from polluting thermal generators.

3.3 Drainage and Sewer Networks

It was observed that a network of storm water drains is well developed within the hospital compound connected to the main NCWSC storm water drainage system within and around the project area. There was no pre-treatment of the waste water before its release to the main NCWSC system. The HCF has never carried out any waste water sampling, testing and analysis, thus not in compliance with applicable waste water and effluent discharge limits. It was also noted that the HCF do not have any records on quantity of waste water daily discharges. The HCF and most of the neighbouring residential areas are served by the public sewer system through the NCWSC. The hospital has not experienced any drainage challenge since the terrain is gently sloping and all the drainage networks are constructed with a slope towards the main network.



Figure 17: One of the well-constructed drainage channel within the hospital compound (Source: Field work)

3.4 Fire Safety and Fighting

Although there are no reported fire outbreak incidences within the HCF, the hospital has an elaborate fire safety and emergency response procedures in place for fire-fighting among other types of man-made emergencies. These include fire-fighting equipment for example serviced extinguishers placed at strategic points within the facility. There is also a dedicated basement pressurized fire-fighting water storage tank of 200,000 litres within the hospital. The hospital management reported that fire drills are carried out every four months. It was observed that the facility has well marked fire exit emergency doors on each and every building as well as fire assembly points.



Figure 18: One of the well-marked fire management points within the hospital premises (Source: Field work)

3.5 Workers Health and Safety

As noted in 3.4 above, the HCF has elaborate mechanism in place to address any risk including risks to worker health and safety. There is no health and safety plan, however, the HCF has elaborate procedure in place to address any health and safety events. Some of the health and safety measures include restricting human traffic

away from the excavated areas, use of appropriate signages, provision of personal protective equipment and first aid kit among other health and safety measures. It's important to note that there has been no any serious OHS accidents or worker deaths since the HCF started operations in the last 1 year.

3.6 Transport and Communication

The project site is easily accessed from the Northern bypass road. Most of the roads within Kahawa West Ward are murrum road. There is a tarmac road from Thika Superhighway through Githurai- Progressive route. Most of the access routes within the project site are paved and tarmacked while most of the parking areas are paved using cabro blocks. The area is well covered by most communication facilities i.e., mobile services. All these will facilitate communication throughout the project cycle. Different departments in the hospital are covered with internal communication system through telephone and internet-based communication.

3.7 Local Land Uses

The two project sub-components are located within the KUTRRH compound which is a parastatal. The hospital sits on an average of 100 acres of land, which is located in a highly developed urban locality exhibiting mixed land uses such as residential, businesses premises, government offices and industrial establishments.

The land ownership is vested in the Kenyatta University, which is a government institution developed the KUTRRH. The land registration number is 11026/2². There were no active land ownership disputes registered with the ESIA experts during the scoping exercise. The public and stakeholder exercise did not reveal land ownership dispute either.

3.8 Cultural and Historic Sites

There were no cultural sites or sites of historic importance identified in the project site or within the PIA. The observations were however made on the superficial environment. Should such sites or artefacts be found during excavation works (especially when constructing the ash pit) the proponent, hospital management and contractor should immediately sanction the Chance Find Procedure (CFP) and act within the guidelines of the CFP Annexed to this Project ESIA as Appendix 11. 3.

3.9 Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities

There were no indigenous peoples or traditional communities identified near the project site or within the PIA. This is attributed to the fact that the PIA is highly developed and the environment altered because of urbanization.

3.10 Security

The hospital has a well-planned 24-hour security provided by deployment of guards at all entrances given that the hospital is well fenced. Proper identification of any one to the premise has to be done before access is granted as such, a proper security check in and checkout with utilization of security scanners and staff cards is used. The contracted security firm is supported by armed police officers at strategic positions especially the main entrance. Officers seconded to the hospital by the National Youth Service assist in keeping order within the hospital.

3.11 Gender Based Violence/Sexual Exploitation and Abuse

The Hospital, being in the midst of residential settlements, receives cases of GBV. The hospital has a GBV desk recovery centre and various means of communication for workers and patients in case of a GBV risk. At the hospital desk handling GBV complaints, there are particular officers trained on GBV offering guidance and counselling services in case of reported complains. The facility is largely compliant with the gender consideration in workplace. There is clear separation of male and female wards and sanitary facilities. However, the children wards are not marked by gender since women caregivers are only permitted to take care of children in the wards. The hospital has formed Gender Main-streaming Committees to handle all the gender-based violence issues and grievances from hospital workers. Issues of GBV, SEA, matters touching on disabilities and conflict resolutions should be incorporated in the entire project life-cycle. Accessibility to enrolment, information, service provision and employment should be factored in the project as cross-cutting issues.

²Appendix 14: KUTRRH Land LR No.

3.12 Grievance Redress Mechanisms

The hospital has a well laid structure from the CEO to the casual workers and each department has a well laid hierarchy and protocol which is normally followed in case of any communication and feedback has to be done between departments, hospital and patients and the hospital and the surrounding community. The grievance management system is responsible for managing grievances including a suggestion box, Telephone and email dedicated for complaints and a WhatsApp platform for workers.

The hospital has patient feedback forms on the website to allow complainants to lodge concerns or provide feedback on-line. In addition, and depending on the complains, there is a social worker employed by the hospital to receive complains from the patients or any notable form of social issues like child labour, assault, sexual harassment, gender-based violence. Complains are managed through the social worker's desk and escalated to the various departments for resolutions. Worker complaints are managed through the human resource office with the help of the hospital administration.



Figure 19: A suggestion box in one of the hospital premises (Source: Field work)

4 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

4.1 General Overview

This section describes the administrative and legal framework relevant to the C-HERP project in terms of applicable standards (including World Bank Environment and Social Standards and World Bank Group EHS Guidelines), legal instruments and, stakeholder institutions as summarized in various subsections such as the following:

- i. Policy Framework (Table);
- ii. Legal Framework (Table);
- iii. Institutional Framework (Table);
- iv. Social Statutes (Table4);
- v. WB ESF (
- vi.
- vii. Table5); and
- viii. Other relevant Good International Industry Practice.

4.2 Policy Framework

Table 1: Policy Framework

#	Policy	Provision	Relevance
1.	National Environmental Policy, 2013	The policy promotes the use of environmental and social 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.	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.
2.	The National Occupational Safety and Health Policy, 2012	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.	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 Contacts at the site and workplace registration.
3.	Kenya Health Policy 2012 – 2030	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.	The Policy calls for the provision and distribution of healthcare services to all people that is commensurate with that of a middle-income country without segregation.
4.	National Plan on Healthcare Waste Management 2016-2021	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.	The renovation of the wards to provide for COVID-19 treatment at KUTRRH has a potential to generate more infectious waste posing danger to the workers, public and environment; thus, the critical need for proper handling and management of healthcare waste associated with C-HERP project.
5.	National Guidelines for the Management of COVID-19 Wastes, 2020	The Environmental Management and Coordination (Waste Management) Regulations of 2006, has clear provisions on the management of Biomedical waste. The provisions relate to segregation of biomedical waste, securing, packaging, storage and disposal of all generated medical waste within the country, to ensure proper waste disposal the main methods used are incineration, shredding, and chemical disinfection. To help implement the regulations, NEMA developed the guidelines to manage COVID-19 wastes.	The increased use of the safety materials against COVID-19 has led to massive generation of waste that can be considered as infectious waste (15%). These protective and safety materials are used in the isolation unit at KUTRRH especially the face masks and other critical facility level PPEs, which are single use resulting in increased waste generation which if not well addressed could pose both cross infections and environmental risk.
6.	Proposed guidelines on Planning and Design of COVID-19 Quarantine and Treatment Centers, and Long-Term Infrastructural Interventions for the Kenyan Context, 2020	The objective is to provide quick and innovative infrastructure guidelines to public and private health care sector players in response to COVID-19. It gives the space consideration, site selections, planning considerations and innovative solutions for the quarantine / isolation areas. It further emphasizes the need to provide housing that meets the minimum public health requirements for habitation in both formal and informal settlements in order to meet social distancing.	The design for the COVID-19 treatment unit will adopt the space consideration, site selections, planning considerations and innovative solutions for the establishment of the quarantine / isolation areas.

4.3 Regulatory Framework

Table 2: Regulatory Framework

#	Legislation	Provision	Relevance
1.	The Constitution of Kenya, 2010	Article 42 of the Bill of Rights of the Kenyan Constitution provides that <i>'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.'</i> 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.	The project should ensure compliance with the Constitution on issues of protection of the environment, and safeguard of public health through provision of more comprehensive health services to every citizen.
2.	National Infection Prevention and Control (IPC) Guidelines for Health Care Services, 2018	Provides comprehensive standardized information regarding the prevention and control of transmissible infections. It acts as a central reference for all HCF and Health Care Workers. The guideline is intended to provide administrators and Health Care Workers with the necessary information and procedures to implement IPC core activities.	The guidelines shall be reference for all health care facilities and workers with the necessary information and procedures of managing, which include segregation, handling, transporting, treating and disposal of health care wastes to avoid risk of infections and contamination of the environment. The operationalization of the MWTI will help in the effective treatment of HCW at source
3.	Environmental Management and Coordination Act, 1999 (Amendments 2015)	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.	The project shall comply with the provisions of this regulation on issues related to, environmental assessment, solid waste and wastewater management, air emissions, noise and vibrations among others.
4.	Environmental (EIA and EA) Regulations, 2019	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	Environmental Assessment is being carried out for the project and appropriate mitigation measures shall be proposed commensurate with the scale of the project E&S aspects.
5.	Environmental Management and Coordination (Waste Management) Regulations, 2006	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.	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 HCW 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.
6.	Environmental Management and Coordination (Air Quality) Regulations, 2014	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). Section 33 prohibits any person from causing/allowing emissions of particulate matter during demolition of structures. Section 34 prohibits any person from allowing stock piling of material to cause effect to ambient air quality, section 35 prohibits operators of the incinerators to cause emission of air pollutants as set out in second schedule in excess of mass emission rates indicated in third schedule of the act	The project contractor during the construction or renovation and operationalization of the MWTI will abide with sections 33,34 & 35 of these regulations. The Management of KUTRRH will apply for the licenses to own and operate the MWTI. During operational phase of the MWTI, no waste will be left for long at the temporary waste storage area so as to start producing bad odour. In addition the health facility will be required to undertake periodic air quality measurements around the incinerator as well as change of scrubbers installed on a periodic basis

#	Legislation	Provision	Relevance
7.	Environmental Management and Coordination (Water Quality) Regulations, 2006	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.	The proponent will ensure that the appropriate measures to prevent pollution of underground water and surface water sources are implemented in all project phases such as channelling all wastewater effluent from the COVID-19 centre and the waste treatment area to the sewer system and undertake periodic monitoring of the waste effluent from the health facilities to ensure compliance with the acceptable standards. Necessary water supply or wastewater discharge permits, and compliance with such permits shall also be sought,
8.	EMCA (Noise and Excessive Vibration Pollution) Regulations, 2009	Part II section 3(l) 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 the noise is recurrent/constant, level/intensity of noise.	The contractor shall ensure construction activities are carried out within the permissible noise levels. The contractor will also be required to take into consideration monitoring of the noise and vibrations levels within the hospital during construction and renovation and operational period to ensure compliance.
9.	Public Health Act (Cap 242) revised 2012	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 renovation of the KUTRRH HDU and ICU 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 risks. The contractor is required to abide by these provisions throughout the project cycle. COVID-19 Prevention, Control and Suppression of Covid-19, measures shall be adhered to by all the workers.
10.	Occupational Safety and Health Act, 2007	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 at (MWTI and the neighboring communities are not exposed to Safety and Health risks during project construction, operation and decommissioning phases. 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 with DOSHS and screening off active construction / renovation site among other safety measures are as provided in the ESMP.
11.	Physical Planning Act, Cap 286 (Revised 2012)	The County Governments are empowered under Section 29 of the Act 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 KUTRRH is required to seek developments approval from the Nairobi County Physical planning departments for the civil works (construction and renovation activities).
12.	Work Injuries Benefits Act, 2007	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 KUTRRH 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.
13.	HIV/AIDS Prevention and Control Act, 2006	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 renovation / construction phase, the contractor is expected to create awareness to the employees and local community on issues related to HIV/AIDS.
14.	The County Government Act No. 17 of 2012	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 KUTRRH is required to seek development approval/permits from the Nairobi County Physical planning departments for the civil works (construction and renovation activities).
15.	National Construction Authority Act, 2011	The National Construction Authority Act 2011 seeks to regulate the construction industry and coordinate its development	The management of KUTRRH shall liaise with NCA to ensure licensed contractors are the ones to be awarded contract to renovate and construct the needed amenities for the operationalization of the MWTI

#	Legislation	Provision	Relevance
16.	The National Council for Disability Act, 2003	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 interest including access to the HCF will be catered for including the ramp, ablution and WASH facilities, as well as access to employment and healthcare services.
17.	The Employment Act 2007	The Act stipulates that no person shall use or assist any other person, in using forced labour. The Act further states that it shall be the duty of the Cabinet Secretary/ Minister, Labour officer, the National Labour Court and the subordinate labour courts to; Promote equality of opportunity in employment in order to eliminate discrimination in employment Promote and guarantee equality of opportunity for a person who, is a migrant worker or a member of the family of the migrant worker lawfully within Kenya. Other clauses include the right and Duties of employment including the basic minimum and condition of contract including the Maternity Leave.	The proponent, contractor and the employees to be engaged in the proposed project stands guided on labour relations that at times have negative and detrimental impacts on project implementation if poorly handled.
18.	The climate Change Act, 2016	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 should always function optimally and especially its scrubber to ensure no release of greenhouse gases into the atmosphere. In this case, it should be subjected to periodic stack emission testing and analysis for the necessary advice on remedies that should be undertaken to avoid air pollution
19.	State Corporation Act, Cap 446, Legal Notice No. 4 of 2019)	The legal notice establishes Kenyatta University Teaching, Referral and Research Hospital (KUTRRH) as a state Corporation.	KUTRRH is a legally established institution.
20.	The Penal Code (CAP 63)	Section 192, prohibits persons from voluntarily foiling water for public use and in polluting the atmosphere in any place to make it noxious to health of a person. This statute controls public nuisance including; safety and security from construction activities	The contractor and the hospital management are expected to comply with the provisions and prevent on environment pollution

4.3.1 Specific EHS Permits/Authorizations/Reporting Needed for the Construction/Renovation Activities at KUTRRH

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

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

- Apply for the annual licenses to own and operate the MWTI From NEMA
- Carry-out periodic stack emission testing and analysis as provided for by the Air Quality Regulations of 2014
- County Government to acquire the necessary insurance for health workers as per the provisions of the WIBA, 2007
- KUTRRH management to report any accident to the Directorate of Occupational Health and Safety Service within 7 days from the date of occurrence or receiving notice.

4.4 Institutional Framework

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

Table 3: Institutional Framework

#	Legislation	Provision	Relevance
1.	National Environment Management Authority (NEMA)	The responsibility of NEMA is to supervise and co-ordinate all matters relating to the environment and to be principal instrument of government in the implementation of policies relating to the environment.	The renovation of the wards to provide for COVID-19 treatment unit is a major construction activity and thus it shall be subjected to ESIA and the report submitted to NEMA for review and necessary advice. NEMA also has the mandate for solid waste management, including hazardous waste and medical waste management as well as the licensing of the waste transportation vehicles, operation and use of the MWTI.
2.	Ministry of Health	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.	The Ministry, through the hospital management shall prepare periodic reports, which shall be submitted, to the World Bank for review.
3.	County Government of Nairobi	The County Government of Nairobi has powers to control or prohibit all businesses, factories and other activities including the proposed project which by reason of smoke, fumes, gases, dust, noise or other cause, maybe or become a source of danger, discomfort or annoyance to the neighborhood and to prescribe conditions subject to which such activities shall be carried.	The County Government of Nairobi 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 neighborhood. The relevant county departments will be responsible in the issuance of the approvals (architectural design and drawings) and necessary permits for the proposed project activities.
4.	Directorate of Occupational Safety & Health Services (DOSHS)	The mandate of the Directorate is to ensure compliance with the provisions of the Occupational safety and health Act 2007 and promote safety and health of workers.	The occupier (KUTRRH) shall need approval from DOSHS. Note that the hospital is already in use and it has the occupation certificate for the premises. The contractor will also be required to register the work site with DOHS and obtain the required permits
5.	The National Construction Authority (NCA)	The NCA is responsible for issuing permits to construction sites and advising the government of Kenya on construction.	The management of KUTRRH shall liaise with NCA to ensure licensed contractors are the ones to be awarded contract to carry out the project activities

4.5 Relevant Social Statutes

The key social aspects of this project include inclusion, including the GBV/SHEA prevention, stakeholder engagement and feedback mechanism including GRM.

Table 4: Relevant Social Statutes

Social element	Legal/Regulatory framework	Institutional framework	Relevance
Gender-based violence and SEA	<ul style="list-style-type: none"> - Sexual Offences Act, 2006 - Penal Code - HIV/AIDS Prevention and Control Act 2000 - Protection Against Domestic Violence Act, 2015 - Prohibition of Genital Mutilation Act, 2011 - National Gender and Equality Act, 2011 	<ul style="list-style-type: none"> - The State Departments of Gender in the Ministry of Public Service and Gender - National Gender and Equality Commission (NGEC) 	<p>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</p> <p>Lack of access to services to address SEA, stigma, corruption.</p>
Public participation and consultations	<ul style="list-style-type: none"> - CoK, 2010, Article 10(2) a, b - County Public Participation Guidelines³ 	<ul style="list-style-type: none"> - Every state actor is required to apply the national values and principles whenever they formulate, implement or interpret laws and policies - A complementary right is the right to access information in Article 354 	<p>The project will put measures in place to consult communities on the project. The use of alternative means of consultation such as call-in will to be used to engage communities. CoK 2010 confers all the sovereign power to the people of Kenya and it is exercised through delegated power by the State actors⁵</p>
Grievance redress mechanism	<ul style="list-style-type: none"> - Employment Act in Part XII - Employment and Labour Relations Court Act - Labour Relations Act 	<ul style="list-style-type: none"> - State Department of Labor (MLSP) - National Employment Authority - Kenya National Labor Board - Wages Council(s) - Directorate of Occupational Safety and Health 	<p>There is need have an elaborate GRM that will allow the PMT to manage grievances related to the project especially for the workers. However, in case the complainant is dissatisfied with the</p>

³ County Public Participation Guidelines, pg. (vii)

⁴ Article 35(1)(a) and (b)

⁵ Article 1 of the Constitution of Kenya

		<ul style="list-style-type: none"> Services - National Council for Occupational Safety and Health (NACOSH) - Commission for the Administration of Justice - Ministry of Health 	decision made, he/she can make use of any of other institutions with a mandate to address disputes.
Inclusivity	<ul style="list-style-type: none"> - Disability Act 2003 - National Gender and Equality Act, 2011 	<ul style="list-style-type: none"> - National Council for Persons with Disabilities - Department of Social Development - National Gender and Equality Commission 	There is need to ensure that refurbishment/civil works is sensitive to the accessibility rights for PWDs
Child protection	<ul style="list-style-type: none"> - The Children's Act - Constitution of Kenya (Art 53 (b) and Art. 260) 	<ul style="list-style-type: none"> - The Department of Children Services - Department of Labour 	There is need to verify workers' ages to ensure prevention of child labour risks in the project

4.6 World Bank Environmental and Social Standards (ESSs)

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

Table 5: World Bank ESS's relevant to the project

#	ESSs	Relevant		Reason
		No	Yes	
1.	ESS1: Assessment and Management of Environmental and Social Risks and Impacts		X	<p>Environmental Assessment (EA) is used in the WB to identify, avoid, and mitigate the potential and actual negative environmental and social impacts associated with Bank lending operations. The current environmental and social risk associated with the project is 'Substantial' following overall improvement; however, it was initially rated as "High Risk" since Kenya has limited experience in managing the highly infectious medical waste.</p> <p>The project could also cause significant environment, social, safety and health risks due to the dangerous nature of the pathogens (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 OSH standards can lead to illness and death among health and laboratory workers.</p> <p>The proposed COVID-19 treatment centre is a high-risk area with regard to social interactions and occupation and health of all that will be involved in daily management of the facility. 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 COVID-19 treatment Centre project. The same relevance will be accorded to the waste treatment areas because the MWTL is meant to manage infectious and highly infectious wastes from the COVID-19 centre as well as from the entire hospital operations.</p> <p>Environmentally and socially sound healthcare waste management 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 patients, appropriate chemical and infectious substance handling.</p>
2.	ESS2: Labour and Working Conditions		X	<p>Most activities supported by the project will be conducted by health workers, i.e., civil servants employed by the Kenyatta University and 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.</p> <p>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 the HCF. 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. The workers will also be sensitized about the project GRM for use if they need to channel complaints outside of the workplace GRM.</p> <p>OHS risks related to medical waste management including; thermal injuries while operating incinerators, sharps-inflicted injuries & disease infections are expected, the waste handlers and incinerators operators will be provided with adequate and appropriate personal protective equipment, provision of sanitation facilities (toilets and wash areas), provision of fire-suppression equipment guidance on operation and maintenance of the equipment, training and capacity building on OHS measures, infection prevention and control and medical waste management to healthcare workers, waste handlers and MWI operators</p>
3.	ESS3: Resource Efficiency and Pollution		X	<p>Medical and chemical waste (including wastewater, reagents, infected materials, etc.) from the COVID-19 treatment 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 sharps, waste used in diagnosis and</p>

	Prevention & Management			treatment. This ESIA has been prepared and identified the possible ways to prevent and mitigate the potential pollution to the environment see Table 9 (ESMP).
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 the COVID-19 treatment centre 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 SEA by relying on the WHO Code of Ethics and Professional conduct for all workers in the COVID-19 treatment facilities as well as the provision of gender-sensitive infrastructure such as separated toilets and enough light. The project will also ensure via the above noted provisions, including stakeholder engagement, that isolation centre at the hospital is operated effectively without aggravating potential conflicts between host communities and patients.
5.	ESS10: Stakeholder Engagement and Information Disclosure		X	The project being implemented by the MoH which has established a structured approach to engagement with stakeholders (see Stakeholder Engagement Plan for the C-HERP) that is based upon meaningful consultation and disclosure of appropriate information, considering the specific challenges associated with COVID-19. Stakeholder engagement was done bringing together key stakeholders and the outcome was positive with regard to support to establishment of the Isolation and treatment Center and improving the HCWM at KUTRRH by operationalizing the MWTI (see Section 5.2 Stakeholder Consultation).

4.7 The World Bank Group 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 and renovation of the isolation and treatment centre at KUTRRH and the operationalization of the MWTI. Among the applicable guidelines include the following.

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 operationalizing the MWTI 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,
- 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 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. In addition Kenya currently has an Environmental Management and Coordination (Air Quality) Regulations, 2014 applicable to this project. Air emissions from incineration depend on the specific waste composition and the presence and effectiveness of air pollution control systems. Polluting emissions may include carbon dioxide (CO₂), CO, NO_x, Sulfur dioxide (SO₂), particulate matter, ammonia, amines, acids (HCl, HF), VOCs, dioxins/furans, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), metals (Hg), and sulfides, etc., depending on the waste content and combustion conditions. The following measures are recommended to prevent, minimize, and control air emissions:

- Conduct waste segregation and/or presorting to avoid incineration of wastes that contain metals and metalloids that may volatilize during combustion and be difficult to control through air emission technology (e.g., mercury and arsenic);
- Follow applicable national requirements and internationally recognized standards for incinerator design and operating conditions, mainly rapid quenching of the flue gas after leaving all combustion chambers and before entering any dry particulate matter, air pollution control device but also combustion temperature, residence time, and turbulence. Standards for stationary incinerators which include temperature and after burner exit gas quenching (i.e. rapid temperature reduction) requirements are preferred in order to nearly eliminate dioxins and furans;
- Introduce wastes into the incinerator only after the optimum temperature is reached in the final combustion chamber.
- The waste charging system should be interlocked with the temperature monitoring and control system to prevent waste additions if the operating temperature falls below the required limits;
- Minimize the uncontrolled ingress of air into the combustion chamber via waste loading or other routes;
- Implement maintenance and other procedures to minimize planned and unplanned shut-downs;
- Avoid operating conditions in excess of those that are required for efficient destruction of the waste;
- Use flue gas treatment system/air scrubber for control of acid gases, particulate matter, and other air pollutants

c) WBG EHS Guidelines: Noise

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

d) WBG EHS Guidelines : Occupational Health and safety

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

e) EHS Guidelines -Construction and Decommissioning.

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

f) World Bank Group EHS Guidelines - Healthcare Facilities

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

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

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

h) Guidelines on Prevention of GBV/SEA

The WB Guidance Note on GBV/SEA in civil works describes GBV/SEA as an ‘umbrella term for any harmful act that is perpetrated against a person’s will and that is based on socially ascribed gender differences.’⁶ 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 favours, and other unwanted verbal or physical conduct of a sexual nature. SH differs from SEA in that it occurs between personnel/staff working on the project, and not between staff and project beneficiaries or communities. The distinction between SEA and SH is important so that agency policies and staff training can include specific instructions on the procedures to report on both. Both women and men can experience SH.

The WB Guidance Note defines four key areas of GBV/SEA risks:

1. SEA - exploitation of a vulnerable position, use of differential power for sexual purpose; actual or threatened sexual physical intrusion;
2. Workplace sexual harassment - unwanted sexual advances; requests for sexual favors, sexual physical contact;
3. Human trafficking - sexual slavery, coerced transactional sex, illegal transnational people movement; and
4. Non-SEA - physical assault, psychological or physical abuse, denial of resources, opportunities or services and IPV.⁷

4.8 World Health Organization Guidelines for COVID-19 Prevention and Management

This section provides the highlights of the 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.
- ii) **WHO rights, roles and 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.
- 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.

⁶World Bank Group, Good Practice Note. Addressing Gender Based Violence in Investment Project Financing involving Major Civil Works, September 2018, p.5.

⁷ WB 2018, p.3

- iv) **WHO Rational use of personal protective equipment (PPE) for 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 COVID-19:** Aimed to offer guidance to WHO Member States on implementing quarantine measures for individuals in the context of COVID-19 outbreak.
- 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.

It's worth to note that the WHO guidance apply across board during the renovations of the isolation facility and the MWTI, as all phases requires maintenance of the highest level of infection control and sanitation including hand hygiene and rational use of PPEs among other standard precautions. The applicable requirements in the WHO guidance and World Bank's EHS requirements provide guidance to this assessment.

5 STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION

5.1 Introduction

In line with project SEP, public and stakeholder consultation was undertaken whereby identified stakeholders were given room to air their views/opinions on the proposed project. The Kenya Constitution, 2010 has given premium to participation of the public in decision making on development projects that are bound to affect their lives. In addition, the World Bank ESF, Legal notice no. 101, the Environmental (Impact Assessment and Audit) Regulations, 2003 (revised in 2016) and the Legal notice number 31 and 32 of 2019 requires that the views of persons who may be affected by a proposed project be sought during the process of conducting an ESIA. Public participation is a key component of an ESIA and is used to integrate citizens into the environmental and development decision-making process. Traditional decision-making approaches such as closed-door discussions between politicians and experts are no longer appropriate (Barrington et al., 2003).

A stakeholders meeting was conducted on 23rd October, 2020 at the TRI building in KUTRRH. A tour of the wards and a visit to the MWTI was undertaken prior to the consultations to familiarize with the project sites with a view of having grounded consultations. The meeting, which was organized with assistance from the office of KUTRRH community liaison and the Area Chief, was well attended by members of the public, opinion leaders, environmental group, hospital stakeholders and a representative from the local administration with a total of 27 participants attending. See attached minutes (Appendix 12) with a list of attendance. A second consultation meeting was held on 19th July 2021 at the PHOs office. This was a technical meeting attended by the ESIA experts, hospital PHOs, hospital engineer and incinerator operators. The agenda was on proposed change of site for the COVID-19 treatment centre from the proposed training research and innovations building to the HDU and ICU wards' building. The summary of discussion is presented in Appendix 13.

5.2 Goals of Consultations

The primary goals of the consultation process were to:

- Ensure transparency and involvement of stakeholders in assessing and managing the potential environmental and socio-economic impacts of the project;
- Help manage risks, concerns and public expectations through ongoing dialogue with stakeholders; and
- Improve decision-making and build understanding by actively involving key project stakeholders in two-way communication. Through this process, the implementing agencies will better understand the concerns and expectations of stakeholders, beneficiaries and the opportunities to increase project value to the local community.

5.3 Objectives of Stakeholder consultation

The consultations with stakeholders and communities were carried out to specifically achieve the following objectives:

- To provide information about the project and to obtain stakeholder information on key environmental and social baseline information in the project area;
- To provide opportunities to stakeholders and communities to discuss their opinions and concerns respectively and get a full appreciation of their expectations
- To solicit the stakeholders' views on the project and discuss their involvement in the various project activities;
- 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;
- To identify specific interests and to enhance the participation of the poor and vulnerable groups; and
- To inform the process of developing appropriate mitigation measures as well as institutional arrangements for effective implementation of the project.

Table 6: Issues/views of stakeholders (Meeting held on 23rd October 2020)

Name of stakeholder	Issue raised	Response given
George Muchiri PHO	Need to License the proposed renovations and the MWTI- The PHO pointed out that there was need to operationalize the MWTI to enable the hospital stop outsourcing HCW treatment services	The ESIA Experts informed the meeting that the ESIA was important to help in Licensing of the Incinerator and the proposed renovation of the HDU and ICU wards by NEMA so that the incinerator and the renovations would be officially commissioned.

James Kiiru Nganga, Chairman, Kamae	Why Was the HDU and ICU building Being Renovated: He wanted to know the reason behind the renovation and modification of the HDU and ICU building	The representative from the Infectious Diseases Department underscored the need for the proposed COVID-19 Centre detailing that the expanded space for COVID-19 management at the HDU and ICU building would greatly boost in the capacity and treatment of COVID-19 patients by increasing the number of bed spaces in the country at large
Rose Nteere, a community member	Why operationalize the incinerator: She sought clarification of why the MWTI has remained unused for so long and why the hospital wanted to put it to use now?	<p>The lead expert informed the meeting that the proposed project was important from environmental, social and economic point because it would address challenges and impacts arising from poor disposal of HCW especially with the increasing amounts of healthcare waste from treatment and the management of COVID-19 cases.</p> <p>The PHO also informed the meeting that the hospital incinerator had not been licensed by NEMA since the hospital had not undertaken the due legal process as required by NEMA that requires an EIA study to be conducted. They also did not have an incinerator operator thus, not able to use the incinerator. Due to the increasing quantities of waste generated and higher risk involved in off-site transportation and treatment of HCW, the Ministry of Health through CHERRP is supporting the hospital to undertake the study in order to legally operationalize the incinerator.</p> <p>Treating the waste onsite will reduce the dangers involved in off-site transportation, which may result to waste spilling along the way including going against the proximity principle which requires that health care waste be treated within the area being generated.</p>
Kennedy Ochieng Odhalo, Chairman, Environment Group	What is the current status of HCWM in the Hospital: He wondered how the hospital has been managing its HCW if they have not been using the MWTI?	<p>The PHO informed the meeting that the HCWM system started from points of generation (Labs, Consultation Rooms, wards, Theaters and all wastes from the hospital compound), transportation of the HCW within the hospital to the final point of disposal (incinerator). The PHO informed the meeting that segregation of wastes is done from the identified sources as guided by HCWM guidelines issued by the MoH and in line with acceptable international standards and that this was important because it also assists in the appropriate mode of treatment and disposal for the different types of the HCW. The PHO was positive about the proposed project because it would enable HCW treatment and disposal within the facility in a more environmentally friendly manner compliant with the waste management regulations and in the long run leading to sustainability in HCWM.</p> <p>The PHO disclosed that, as at the ESIA Consultation Meeting, the KUTRRH was contracting HCW disposal services from NEMA licensed private firm located in Athi River of Machakos County because the incinerator currently installed at the hospital had not been licensed hence it could not be commissioned, thus a successful ESIA would unlock its licensing by NEMA and consequently its commissioning.</p>
Margret Njura, a community member	She sought to know how the hospital will ensure a secure management of COVID-19 cases within the hospital without endangering the health of other patients	The PHO explained that the management of the hospital was planning to renovate and had fenced off the proposed site to provide for a COVID-19 treatment unit coupled with adequate security around its operations.
Bernard Mbugua Ngarwa, Chairman, Community Policing	He wanted to know if there are any applicable laws that govern the proposed project sub-components	The ESIA Expert explained that there exists Laws that are applicable to the proposed project. Some of the laws highlighted included; the Environmental Management and Coordination Act (EMCA, CAP 387, 2015), Waste Management Regulations (2006), Environmental Impact Assessment and Audit Regulations (2003-Revised in 2016), Air Quality Regulations (2014), Gender Policy 2011, Sexual Offences Act 2006, Child Rights Act (Amendment Bill) 2014, Public Health Act, and National Gender and Equality Commission Act 2011 including the State Corporation Act that establishes KUTRRH. The experts informed the local community that several compliance levels have to be met and the proponent would be issued with the necessary approvals as stipulated in the respective laws and regulations.

Catherine Nkatha, a member of the environment group in the area	Air Pollution- She informed the meeting that she had observed that the incinerator had been put on several times during the weeks preceding the meeting and that it was producing very thick dark smoke though it used to run for short durations, a concern that the community felt should be addressed before the incinerator is commissioned.	The PHO informed the meeting that this was happening during the test running of the incinerator, which was being done by officials from the Bio-med Department in conjunction with officials from the Department of Public Health during the weeks preceding the public meeting. The PHO informed the meeting that the test runs were meant to fine tune the incinerator machine to the acceptable operating standards. Mitigation measures suggested to address this concern included the following: <ul style="list-style-type: none"> ✓ Making sure the incinerator was in good operating condition all the time, hence operating at the recommended temperatures and proper functioning of the scrubber ✓ Appropriate segregation of healthcare waste at the points of generation ✓ NEMA licensing of the incinerator to ensure it has attained all the set standards ✓ Employing competent MWTI operator (trained and qualified) ✓ <i>Construction of Ash pit</i> ✓ Contract servicing of incinerator by the supplier (regular servicing of the machine) ✓ Air quality monitoring of emissions from the incinerator to ensure within the recommended air quality regulations and guidelines ✓ Retraining the incinerator operators on best management practices and following the equipment standard operating procedures
Stephen Kibathi, a community member	Incinerator Capacity: He was concerned that the Incinerator might not have the capacity to handle HCW generated at the hospital when the hospital shall be operating at full capacity.	The PHO informed the meeting that the incinerator design and projected capacity had been considered before procuring it and that the incinerator had the capacity even to handle HCW from other health facilities within the area. He disclosed that it had a capacity to incinerate an average of 100kg of HCW per hour, hence if operated for 8hours in a day, it can incinerate a total of 2.4tonnes of HCW which is adequate for the facility
Beth Wanjiru Kamiri, a community member	Disposal of Bodies and Body Parts: She had fears that incinerator could be utilized in the disposal of bodies and body parts.	The PHO informed the meeting that the incinerator was meant to treat HCW ONLY . Cremation of bodies depending on the will of the deceased or cultural practices was the responsibility of the family/ relatives and is done at the designated cremation centres licensed by the government for that purpose. Disposal of unclaimed bodies was done at the designated cemeteries through the set procedures by the government (Legal Process). In addition, the disposal of body parts and still births were the prerogative of the affected person/family.
John Mugambi Mwangi, a community member	Organic Wastes Disposal: He felt that the organic wastes (food leftovers) had residual value and that the community could utilize it for pig farming.	The PHO warned that despite the fact that the organic wastes (food leftovers) are not incinerated but carted away for proper disposal, it is not advisable to reuse the food wastes because it is also contaminated and a huge risk to public health. Hence, such organic waste should be disposed-off accordingly.
Irene Wangari Ndichu, a community member	Local Community Benefits: Through her, there was feeling that the local community (neighboring households, business owners, institutions and general public) had little benefits in terms of outpatient services since the facility was purely a referral and handling high level cases.	The community was informed by the PHO that KUTRRH was a level six facility under MoH guidelines and that it was strictly meant for referral cases. The community was also informed that local emergency cases were admitted without referrals. To further benefit the local community, the meeting was informed that the hospital management was looking at modalities of how best the hospital can be of benefit to them. The community was encouraged to seek outpatient services at the county healthcare facilities within the area.
Charity Wangui, a community member	Employment Opportunities: She felt that the available employment opportunities were not benefiting the local communities as they should.	The community liaison officer (CLO) assured the community leaders that the management will continue to strive to ensure that contractors offer the local communities the first preference when recruiting especially for non-skilled labour. It was agreed that such an undertaking should be exercised during the proposed renovations where there will be need for several unskilled persons.
Pauline R. Babu, a community member	Feed Back Mechanism: She felt that correspondences with the hospital management are key to addressing any matters arising.	The CLO reported and noted that his office is always open and ready to receive any communication from the community (Indeed some of the community leaders confirmed that they were in regular communication with the CLO).

John Waweru, a community member	Insecurity: He reported that incidences of insecurity especially outside the hospital Main Gate (Snatching of phones and valuables by men in motor bikes) were reported to be on the rise.	The Hospital Staff through the PHO requested the local leaders (Nyumba Kumi) to address the security issue in partnership with local security agencies. The local administration representative promised enhanced security surveillance by all concerned parties (Nyumba Kumi, Local Security Agents) and encouraged personal precaution while using mobile phones and carrying valuables outside the hospital main gate as also necessary preventive measures.
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Consultations at the project site



Project site visit

Figure 20: Consultations and project site visit (Source: Field work)

5.4 Conclusion of the Stakeholder Consultation

The two stakeholder consultation sessions were useful in seeking consensus on the proposed support and in affirming the siting for the IDU. In the first stakeholders' consultation meeting held on 23rd October 2020 those present reaffirmed their support for the proposed project owing to its value in addressing the inadequate capacity in the country for effective management of COVID-19 cases and in resolving the present waste management challenges including infectious COVID-19 wastes in KUTRRH. The stakeholders indicated the need to fast track the operationalization of the MWTI especially due to the escalating cases of COVID-19 infections. The second meeting with technical teams held on 19th July 2021 was beneficial in obtaining insights pertaining to the proposed change of site for the COVID 19 treatment centre from the earlier proposed training research and innovations building to the HDU and ICU wards' building.

All the stakeholders involved in the consultations underscored the need for a functional feedback and grievance redress mechanism within the facility to allow all stakeholders raise their concerns.

6 PROJECT ANALYSIS OF ALTERNATIVES

6.1 Overview

The team analyzed the project alternatives in terms of project site, technology and waste management options. The findings and recommendations are based on the proposed site, materials and the proposed technologies to be used in implementation of the proposed project.

6.2 Relocation

Relocating the proposed project sub-components to alternative sites is not a viable option. This is because the proposed operationalization of the MWTI is targeting an already installed incinerator meant to assist in the efficient management of HCW from the operations at the hospital. The siting of the MWTI is within the hospital compound, hence aligns with the hospital layout plan. This is a site that can be properly fenced off from the other hospital activities, hence being the most appropriate location.

Relocating the COVID-19 Centre will also not make environmental and social sense in that its operations will rely on the existing hospital set up such as the already installed electricity, water supply, close proximity to the oxygen plant internet and security considerations. The current site is already fenced off, so there is proper containment of the COVID-19 patients not forgetting that the targeted building is already constructed, hence only renovations with few modifications will be needed.

6.3 Zero or No Project Alternative

The No Project option in respect to the proposed project sub-components implies that the status quo is maintained. This option will however escalate the already existing challenges being experienced in treatment and management of COVID-19 patients requiring hospitalization and treatment and disposal of HCW at KUTTRH especially due to potential increase of HCW to be generated from the current treatment of COVID-19 patients and other hospital operations including the long distances covered, additional transport costs and transport related ESHS risks associated with off-site treatment of healthcare waste. The No Project Option is the least preferred from the public health, socio-economic and environmental perspectives due to the following factors:

- The environmental and public health risks associated with poor treatment and disposal of HCW will persist;
- Impacts arising from environmental degradation and resultant social-economic impacts are costly to reverse; and
- The capacity to manage infectious diseases in the country shall remain compromised and this will derail the efforts to contain the spread of the infectious and contagious diseases such as the COVID-19.

From the analysis above, it becomes apparent that the 'No Project' alternative is not a viable option to the proponent and to the country.

6.4 Waste Management Alternatives

6.4.1 Liquid Waste

a) Connection to the sewer system

The possibility of a connection to a sewer system was explored. The experts noted that the area is currently served by a sewer line.

b) Septic Tank System

The study team examined the option of constructing septic tanks. This involves the construction of underground concrete-made tanks to store the sludge with soak pits. This option requires regular monitoring and record keeping ensuring timely exhaustion in order to avoid leaks and spills.

c) Bio-digesters

The team examined this option and noted that it is an environmentally friendly alternative and can be used for waste-water recycling. Methane is also produced through this option, widening the energy options.

d) Constructed wetland

This is one of the powerful tools/methods used in raising the quality of life and health standards of local

communities in developing countries. Constructed wetland plants act as filters for toxins. The advantages of the system are the simple technology, low capital and maintenance costs required. However, they require space and a longer time to function. Long term studies on plant species on the site will also be required to avoid weed biological behavioral problems. Hence it is not the best alternative for this kind of project.

e) Wastewater Treatment Plant

This refers to the use of a series of ponds/lagoons which allow several biological processes to take place, before the water is released back to the environment, preferably a river channel. The lagoons can be used for aquaculture purposes and irrigation. However, they occupy a lot of space but are less costly. No chemicals are used/heavy metals sink and decomposition processes take place. They are usually a nuisance to the public because of smell from the lagoons/ponds in case of failure of the system. Lagoon systems usually comprises of open ponds. Selection of this alternative would require close monitoring to avoid air pollution (offensive odour), overflowing during rainy season and subsequent proliferation of vermins and rodents in the project area.

It is the experts' recommendations that all the project components be connected to the existing sewer line for ease of handling liquid waste from the project activities and a pre-treatment chamber be installed prior to release to the public sewer system.

6.4.2 Solid Waste

The proposed project will generate considerable amounts of solid wastes both during construction and operational phases. An integrated solid waste management system is recommended. The proponent will give priority to reduction of the materials at source. This option will demand a solid waste management awareness programme to be effected by the management and the entire workforce. In addition to that recycling, reuse and composting of waste will be an alternative in priority. This issue calls for a source separation programme to be put in place-the proponent/ hospital management should introduce separate and adequately marked skips/dustbins for sorting the recyclable wastes, organic matter and the other waste.

a) Contracting Private Waste Handlers

The team surveyed the possibility of commissioning waste handlers from the private sector to dispose of the waste. This is the alternative being utilized currently as some of the HCW is taken to Athi River for incineration. It is a very expensive way of handling HCW with risks of spilling along the way/ESHS risks including going against the proximity principle which requires that health care waste should utmost be treated within the area being produced. Thus, the hospital should endeavour to ensure commissioning of the installed incinerator to enable the facility to handle its waste within the hospital compound.

b) Recycling

The study team analysed the practicability of implementing this option. Waste segregation is a requirement through providing labelled waste-specific litter bins. The study team recommended that the proponent contracts the services of NEMA-registered private waste handlers, who meet all MoH and WHO relevant guidelines.

c) Landfill

Upon gauging this option for its viability, the team noted that the possibility of using this option requires adequate land to be used.

The best way of ensuring safe management of solid wastes from the project is via segregation at source so as to make sure that all hazardous waste /healthcare /medical waste is taken for treatment, which in this case is incineration using the installed incinerator within the hospital compound, if it gets operationalized. The resultant contaminated incinerated ash should therefore be disposed appropriately into an ash pit or to NEMA approved landfill.

6.5 Alternative Schedule

The team examined the option of having an alternative schedule. This option entails carrying out the project proposal at a later time thus offsetting its impacts to that time. The only benefits that would be accrued by undertaking it at a later date would be depended on the improvements in baseline conditions and technologies that may be involved with the proposal. However, these are not guaranteed and it may only lead to delays in

development, therefore carrying out the proposed project now with mitigation would be a preferred option due to this uncertainty. In addition, carrying out the proposed project at later time may lead to more operational and logistic costs due to increasing inflation and standards of living.

6.6 Medical Waste Treatment Microwave Versus Land-filling, Autoclaving and Incineration

a) Open Uncontrolled, Non-Engineered Dump Sites

Generally open dumping of wastes is an option though has proved to be the most environmentally and socially unfriendly method of waste disposal. Discharging HCW into open dumpsites either within the HCF or in the municipal facilities is not an acceptable solution and may lead to environmental pollution not forgetting the social disturbance that it may cause leading to unnecessary conflicts between the hospital and members of the public. As a last resort where other methods of disposal are not available the HCW if disposed of on open dump sites must be heavily covered immediately with inert material such as soil.

However, this method could not be considered because it does not protect the environment neither does it assure social cohesion between the hospital and the public nor does it advocate for environmental and public health protection.

b) Sanitary landfill

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

c) Incineration

Incineration is a high-temperature dry oxidation process that reduces organic and combustible waste to inorganic, incombustible matter and result in very significant reduction of waste volume and weight. This process is usually selected to treat waste that cannot be recycled, reused or directly disposed off in sanitary landfill. All types of incinerators if operated properly in line with the Stockholm Convention guidelines on incineration eliminate pathogens from the waste and reduce waste to ashes. As is the case with most modern incinerators such as the installed one, the high temperatures and cleaning of exhaust gases (via the fixed air scrubbers in the incinerators as is the case with the existing incinerator) limit the atmospheric pollution and odours produced by the incineration process.

i. Advantages of incineration include:

- Accept the greatest variety of waste;
- Treated waste is burnt to unrecognizable ash;
- Significant volume reduction (90%);
- Energy recovery if fitted with energy recovery system;
- Waste totally sterilized so safely eliminates pathogens;
- Trained personnel readily available in Kenya; and
- Existing guidelines in place.

ii. Disadvantages include:

- Acid gases in air emissions;
- Problematic disposal of fly ash and bottom ash, which generally is toxic as it contains leachable heavy metals, dioxins, furans and other organics;
- May release pathogens into air if combustion is ineffective;
- Major source of dioxin and furan emissions;
- Release of carbon monoxide, particulate matter;
- Incineration with no energy recovery option undermines recycling;
- Incineration in the long run is expensive to maintain and operate;
- High investment costs for the incinerator flue gas treatment system; and
- Incineration undermines materials recovery and recycling as it totally burns all the waste into unrecognizable particles.

Because of the many advantages of incinerators including that they accept the greatest variety of waste, significant volume is reduced, trained personnel are readily available and that the incinerator is already installed, so available, this method is considered as a viable option provided the mitigation measures in this ESIA report are fully implemented

d) Open Burning of HCW

Burning HCW at low temperatures in the open should be discouraged because this is an illegal practice and the release of toxic pollutants into the air is harmful to health and environment. This method is totally discouraged and should be avoided at all costs just the same way as is the case of open dumping.

e) Microwaving

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

i. Advantages of Microwaving include:

- Reduces HCW volume by up to 80%;
- Waste totally sterilized;
- Microwaved waste is a feedstock for energy recovery plants;
- Environmentally friendly due to lack of release of smoke and other pollutants such as dioxins, hence its emissions, if any are minimal;
- No liquid effluents;
- No danger of explosion as is the case with autoclaves as it does not make use of pressure;
- Is the cheapest treatment technology in terms of operating and maintenance cost (UNEP (2012), Compendium of waste treatment technologies); and
- Easy to operate as most microwaves come with inbuilt automated weighing electronic system, easing its operation.

ii. Disadvantages include:

- Its investment cost for sophisticated microwave is high;
- Volatile and semi-volatile organic compounds, chemotherapeutic waste, mercury, other hazardous chemical waste and radiological waste should not be treated in a microwave,
- Offensive odours produced within the temporal waste holding sheds; and
- 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 dump-sites regardless of whether it is treated hence leading to conflicts.

Repair of the microwave shredder system bears contamination risks to the service personnel if not well protected. This method could have been considered given its environmentally friendly among other many advantages. However, its investment cost, which is higher and since the hospital already has installed incinerator, it will be expensive and makes no economic sense for the hospital to invest in other waste treatment equipment in the immediate future, given that the existing system has high capacity (100kg/hr) and has not been put into use.

f) Autoclaves

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

systems are equal to those treated in autoclaves.

i. Advantages of Autoclaves:

- Steam treatment is a proven technology with a long and successful track record,
- The time-temperature parameters needed to achieve high levels of disinfection are well-established,
- Autoclaves are available in a wide range of sizes, capable of treating from a few kilograms to several tons per hour,
- Environmentally friendly: If proper precautions are taken to exclude hazardous materials, the emissions from autoclaves are minimal.
- Many autoclave manufacturers offer many features and options such as programmable computer control, tracks and lifts for carts, permanent recording of treatment parameters, autoclavable carts and cart washers, and shredders.
- Reduces HCW volume by up to 80%,
- Autoclaved waste is a feedstock for energy recovery plants
- No danger of explosion as is the case with autoclaves as it does not make use of pressure
- Is a cheap waste treatment technology in operating and maintenance cost
- Easy to operate as most autoclaves are automatically operated including some coming with automated inbuilt weighing electronic system.

ii. The disadvantages include the following:

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

Though modern, this method was found to be too expensive to install; autoclaves are not common, and that they require highly trained personnel to implement who are hard to find. This, in addition to the above disadvantages rendered the technology not a viable option for consideration. However, if the hospital in future decides to invest in non-burn waste treatment technologies as additional waste treatment equipment other than the installed incinerator, autoclave with its many advantages, will still be an option together with the microwave.

6.7 Comparison of Alternatives

Implementing the proposed operationalization of the MWTI project is the best alternative since it will provide efficient hazardous waste management facility for the hospital. Besides, the renovations/modification of the wards to a COVID-19 Treatment Centre is timely especially during this time when the country is facing the COVID 19 scourge.

7 PROJECT POTENTIAL E&S IMPACTS AND MITIGATION MEASURES

7.1 Introduction

In assessing the project in relation to the environment and socio-economic aspects, the ESIA delved into various parameters that define environmental and social performance of the two sub-components in the face of delicate environmental resources use and social balancing. Through the ESIA, the experts endeavoured to ensure that applying the aims and objectives incorporated in the following statements optimizes the development potential of the proposed project:

- i. To maximize the social, economic and ecological benefits of the project;
- ii. To minimize the socio-economic and ecological costs of the project;
- iii. To ensure that the functioning of vital ecosystems or critical habitats is not irreversibly disrupted; and
- iv. To ensure that where damages or costs occur, every reasonable measure is taken to ameliorate or compensate for such damages or costs.

To achieve the aims and objectives, the ESIA experts applied the principles of integrated environmental and social management. Thus, the overall evaluation of the potential environmental and social-economic impacts associated with the project has been carried out using the principals of efficiency, equality, safety and sustainability.

7.2 Potential Impacts during the Planning and Design Phase

7.2.1 Potential Positive Impacts During Planning and Design Phase

i. Employment Opportunities

The planning and design phase involved professional preparatory activities that entail the services of different professionals from various backgrounds such as architects, engineers, quantity surveyors, environmentalists, public health and sociologists. The professionals are important at actualizing the proposed project and are tasked with giving the necessary recommendations for incorporation to the proposed project designs. This led to the provision of various employment opportunities to the contracted professionals where consultancy fees are earned.

ii. Creation of Awareness

Project planning entails creation of awareness on a proposed project of which awareness is a strong pillar in the consultations process. Informed persons make informed decisions and therefore the awareness sessions are a plus in ensuring a conflict free implementation and management of a project such as the proposed commissioning of the incinerator installed at KUTRRH and the proposed renovation of the identified wards to cater for COVID-19 treatment centre. This is because most of the uncertainties associated with such projects are addressed early enough as was witnessed by clarifying that the black smoke from the incinerator was being produced as it was being tested and tuned to ensure its optimal functioning once it is fully commissioned.

7.2.2 Potential Negative Impacts During Planning and Design Phase

i. Heightened Expectations and Speculations

The planning and design phase is bound to create heightened expectations and unwarranted speculations. It is expected that before all persons living within the PIA are well informed on the objectives of the proposed project, a lot of speculation, lies and half-truths are peddled. This in return creates a lot of heightened expectations.

Mitigation Measures:

- There has been undertaken adequate awareness through a public meeting held within the project site by the ESIA experts.
- Other professionals (engineers, architects, and surveyors) should be keen to listen and document any issue that requires to be addressed all through the project implementation cycle.

ii. Inadequate Project Designs

The MWTI shelter as it is designed now lacks some provisions such as washrooms/sanitary conveniences, temporary waste storage area, office space, equipment/material store and ash pit.

Proposed mitigation measures

- Liaising with the relevant technical government department in modifications of the designs to have a

- standard MWTI shelter and an ash pit,
- The design and functional layout of the COVID-19 treatment centre should ensure adoption to the standard healthcare setting building designs to the extent possible,
- The design contracts should include sustainability considerations related to use of energy and water and include selection of easily cleaned building materials that do not support microbial growth and/or are slip resistant, and
- Ensure all the legally required permits are obtained prior to undertaking the construction activities and renovations works.
- The contractor bidding documents should contain clauses on Environmental Social Health and Safety (ESHS) requirements to guide the contractor on the key requirements

7.3 Potential Impacts during Construction Phase

As earlier noted, the proposed project will involve some construction works, which will involve the renovations and modification of the identified wards. As well, the operationalization of the MWTI will include modification of the MWTI shelter so as to provide the missing necessary amenities and a standard ash pit. This construction phase will be associated with both positive and negative impacts. The potential impacts are as discussed below:

7.3.1 Potential Positive Impacts during Construction Phase

i. Source of Short-Term Employment Opportunities

The construction works will require several human resources from equipment operators to other skilled and unskilled labourers. Several workers including casual labourers, plumbers, electricians and engineers and health and safety experts 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. In addition, the project will offer a source of income to the women through sale of food items to the workers there by enabling them earn additional source of income to support their families though this is to be a medium positive impact of short-term nature.

It is estimated that about 50 people will benefit in the project in terms of short-term employment opportunities. This would be positive to the local community but short-term in nature. To have more people being aware of the project, publicizing available short term project work opportunities in public areas such as administrative centers (sub-counties and trading centers) will be enhanced.

ii. Source of Income from Sale of Construction Materials

The project will provide a source of income through supply of construction materials such as cement, sand, rock-based materials and hardware items. Through these, the locals stand to benefit from the project. It is recommended that extractable construction materials be sourced from suppliers who will be responsible for restoration of the sites.

7.3.2 Potential Negative Impacts during Construction Phase

i. Interference with the Physical Setting

Modification of the MWTI shed and renovation of the identified wards will involve minimal site clearance and excavation works that may interfere with the physical setting as all activities will fit within the already constructed and paved areas around the two sites. It is advisable that the construction site is secured prior to undertaking any excavation activities.

Construction of the ash pit may lead to clearance of some vegetation and deep excavation interfering with the physical setting of the project site.

Proposed Mitigation Measures:

- Priority should be given to converting rooms next to the MWTI shelter to operator's offices, material/equipment stores with only the temporary waste storage area and wash rooms to be constructed
- The contractor should ensure that there is minimal disturbance to the project site area;
- The excavation activities should not interfere with local drainage or introduce physical changes that are not in harmony with the physical setting of the project area;

- 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 environment in cases of prolonged storage or access of the waste by scavengers with appropriate signage provided
- 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 reconstruction of the MWTI shelter and associated structures as well as in the renovation should be provided with appropriate PPE such as helmets, safety boots, hand gloves and face masks and enforce use.
- The excavated spoil should be disposed-off appropriately through reuse in landscaping and backfilling.

ii. Vegetation Loss

The proposed MWTI project sub-component is expected to be implemented at the designated hospital waste treatment area given that it is an existing shelter to be redesigned. The ground is already paved and it is expected that the proposed structures will fit in the paved section, and especially if only a temporary waste storage area and wash rooms are the only structures to be constructed.

Therefore, the significance of vegetation loss during site preparation is minimal because only an ash pit will be constructed in an area vegetation is likely to be cleared. To mitigate on potential impacts, the following measures are recommended;

- The contractor will ensure proper demarcation of the project area to be affected by the reconstruction works to limit vegetation removal at the project site;
- Strict control of construction vehicles to ensure that they operate only within the area to be disturbed and designated access routes;
- Retention of grass, herbaceous plants, shrubs and trees, to the extent possible on the project site;
- Restoration of vegetation in the disturbed surfaces should be done after completion of works.

In relation to renovation of the identified wards to cater for COVID-19 treatment centre, there will be no vegetation removal as the building housing the wards already exists and fenced off, and nothing external will be changed.



Figure 21: The already paved waste management area around the MWTI area (Source: Field Work)



Figure 22: The rooms next to the MWTI shelter that could be converted to operator's office and store area (Source: Field work)

iii. Noise and Vibration Generation

Construction and renovation activities of the proposed project will most likely result in minimal noise emissions and vibration as a result of the machines that will be used, e.g., excavation equipment, construction vehicles delivering materials to site, activities during renovation of the COVID-19 treatment centre and noise from construction workers.

Proposed Mitigation measures

The contractor shall put in place several measures that will mitigate noise pollution during the construction phase to include the following:

- 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 installing portable barriers to shield compressors and other small stationary equipment,
- 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 and any other person visiting the construction and renovation 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.

iv. Air Pollution (Dust and Emissions)

Dust could most likely be emitted during excavation, renovation activities, from construction material stock piles and related earthworks which could potentially lead to air-borne particulate matter pollution. Gaseous emissions are also expected from the construction vehicles. This is likely to affect site workers, staff in the hospital and the neighbouring community members, in extreme situations leading to respiratory problems.

Proposed Mitigation measures

To mitigate on these, the following measures are proposed:

- Contractors should wet the surfaces, use dust screens/nets during demolition/renovation 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 pre-determined routes;
- Periodically service all the equipment and machinery to ensure they are 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.

v. Increased Spoil Material Generated

Construction works, especially of the ash pit, will involve minimal earthworks and excavation hence spoil is expected to be generated. The waste spoil may affect the surrounding environment if not properly disposed. This can be mitigated by observing the following measures:

- 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
- 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 spoiling/ degrading land that could otherwise be used for productive purposes.

vi. Accidental Spills and Leakages

Some of the potential sources of the possible leakages used at the site include the fuel, lubricants, oil and grease, paint and pest control substances to be applied on the wooden structures and foundations. Spillage of such compounds is likely to have an immediate impact upon the local water resources (storm water). There are also potential leakages such as oxygen during installation of medical gases in the critical care areas this can be checked by observing the following measures:

- Temporal storage in specifically designated areas 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 and away from storm water runways or exposure to weather elements such as rains and for use only for construction works
- 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 enforce use;
- Provide adequate signage and communication of risks to workers, health staff/ patients;
- All precaution should be taken to avoid oxygen leakage such as switching off its supply pipes before initiating a renovation/connection process.
- Ensure adequate venting according to SOPs and international standards to avoid possible oxygen enrichment.
- 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

vii. Increased Extraction , Use, management of Solid waste from Construction Materials

- Construction materials that will be used include; timber, building blocks, ballast, sand and cement 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 wastes generated, 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 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, and
 - Waste disposal by burning shall not be permitted and signage should be erected,

viii. Increased Water Demand

During the construction phase of the proposed project, both the construction workers and the proposed works will create increased demand for water in addition to the existing demand given that the construction water is to be sourced from the hospital connection, hence from the Nairobi Water and Sewerage Company. Water will mostly be used during construction for mixing materials (concrete casting) wetting surfaces or cleaning/curing completed structures. It will also be used by the construction workers to wash and drink. To check on its sustainable use, the following mitigation measures have been proposed:

- 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 water 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 COVID-19 Centre and the MWTI, the hospital management will be required to supply water to the two facilities at their cost for normal operations. The hospital is already connected to piped water supply and has large water reservoir tanks.

ix. Archaeological and Other Cultural Properties

From the field visits there are no known archaeologically protected monuments and cultural properties in the proposed project area. Therefore, there will be no impacts on them. Should any archaeological or culturally important artefact be discovered during the construction/excavation process especially on construction of the ash pit, the contractor should implement *the Chance Find Procedure* attached as **Appendix 11.3** to this ESIA report.

x. Occupation/Public Health and Safety Impacts

The construction works unavoidably expose workers to OHS risks. Such risks include among others, accidents and injuries resulting from accidental falls and injuries from working at heights or due to wet surface, burns from welding, electrocution and use of faulty hand tools and construction equipment. In relation to public safety, the

most serious threats will be on use of heavy equipment at the construction site as well as construction materials storage areas. There will also be an increased risk of traffic related accidents from vehicles transporting construction material. The list below is not fully complete and additional measures are listed in the ESMF, ICWMP, LMP, and WBG EHS general guidelines. Such hazards and risks can be mitigated by observing or putting in place the following:

- To reduce on the worker's accidents and hazards, the contractor is expected to comply with OSH rules and regulations as stipulated in the OSH Act, 2007. Ensure the workplace is registered by the DOSHS;
- 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/renovation activities and meet all OHS requirements in Kenya laws and regulations, WB ESS2, and project 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,) and enforce on use of the PPE's;
- 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 renovation sites;
- 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,
- Electrical works and installations should be done by a trained certified, experienced personnel;
- 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

xi. Increase in Prevalence of Communicable Diseases and other Infections

During the construction phase there is a risk of spread of communicable diseases such as tuberculosis and pulmonary infections like COVID-19. Aspects of the physical environment that promote transmission of diseases include: poor disposal of wastes and inadequate 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 spread of diseases such as typhoid, tuberculosis, diarrhoeal diseases, dysentery, and cholera and, respiratory diseases like the COVID-19. Proposed mitigation measures include the following:

- Treat affected workers to control the spread of disease;
- 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.

Mitigation measures against COVID-19 on sites

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

- 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.
- 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 COVID-19 control measures such as respiratory hygiene, cough etiquette, hand hygiene and use of PPE;
- Place signs and posters in areas around the project site to create awareness to project workers on COVID-19;

- Regularly assess work force characteristics and adjust work practices such as avoiding concentration of more than 15 workers per site when more than one person is gathered maintain social distance of at least 2 meters;
- Clean up the tools and equipment used on site with soap and water or use sanitizer as appropriate;
- Provide an easily accessible GRM to raise workplace concerns relating to COVID-19; such as encouraging reporting of co-workers if they show outward symptoms.

xii. Increase in HIV/AIDS Prevalence and other Sexually Transmitted Infections

As the project is going to bring in a significant population of new people in the project area it is possible to have new infections of HIV/AIDS and other Sexually Transmitted Infections (STIs). This is due to the fact that the contractors, traders and workers will have money to attract women/men from the project area resulting to increased social interactions which become fertile ground to solicit for sex. This may create 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.

It is recommended that the project proponent and the contractor should ensure that prevention and management of STIs as a result of social interaction between immigrant workers and local populations is conducted through:

- Hiring workers from the local community to prevent social challenges associated with labour camps;
- Education and sensitization of workers and the local communities on STIs, HIV/AIDS's and risks of contracting or spreading of sexually transmitted diseases;
- Provision of condoms to the project team and the public;
- The contractor has to institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g., erect and maintain HIV/AIDS information posters at prominent locations,
- Contractor should sign CoC to guide on promoting behavior change among the workers.
- HIV/AIDS Awareness Program and other communicable diseases to be instituted and implemented as part of the Contractor's Health and Safety Management Plan to be enforced by the Public Works Engineer.
- This will involve periodic HIV/AIDS and other communicable diseases awareness workshops for Contractor's Staff
- Contractor to provide standard quality condoms to personnel on site.

xiii. Child labour, Labour Influx and other Labour Related Impacts

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

- i) Strain on various resources especially water resources, electricity and roads;
- ii) Grievances from local community members over job opportunities;
- iii) Sexual Exploitation and Abuse;
- iv) Unwanted Pregnancies

Proposed Mitigation Measures to labour related impacts

- The Contractor will ensure effective community engagement and strong grievance mechanisms on matters related to labour with a discrete mechanism for safely and confidentially reporting issues of SEA and GBV at the community level triggered by the Project
- Effective contractual obligations for the contractor to adhere to the mitigation of risks against labour influx, the contractor should engage a local community liaison person who is also trained in PSEA.
- The contractor will ensure proper records of labour force on site while avoiding child and forced labour
- The Contractor will ensure compliance with provisions of the Work Place Injuries and Benefits Act (WIBA) 2007
- The Contractor will develop and implement a Child Protection Strategy; this strategy will ensure that no person under the legal age of 18 years is employed in the project.
- The contractor will ensure SEA is addressed in all employment contracts and a COC is signed by all

workers;

- The contractors will develop training and sensitization of workers on SEA and ensure specific signage on SEA zero tolerance in all work sites;
- The contractor will ensure signage on SEA-related rights and safe and confidential reporting mechanisms at the community level.
- The contractor shall comply with the International Labour Organization Standards ratified in Kenya which include but not limited to: Prohibition of forced labour (ILO No 29) and Abolition of forced labour (ILO No 159).
- The contractor shall comply and prohibit servitude, forced and bonded labour, equal remuneration ILO No 100 and Discrimination (Employment and Occupation) and Freedom of Association and Right to collective Bargaining Convention No 98.
- The contractor shall comply with affirmative action that it will employ persons and make employment-related decisions without regard to an individual's race, color, religion, sex, age, creed, ancestry, marital status, sexual orientation, gender identity, disability, medical condition, genetic information, or any other characteristic protected by law.
- The contractor shall comply with the Kenya's persons with disabilities PWDs Act. The contractor will make reasonable accommodations for qualified individuals with known disabilities. This policy governs all aspects of employment, including selection, job assignment, compensation, discipline, termination and access to benefits and training.
- It is the contractor's responsibility to provide all employees with a workplace free of harassment, intimidation, coercion and retaliation as provided by Kenya's Employment Act Cap 226 of 2007
- All employees, officers and directors are responsible for conducting themselves so that their actions are not considered sexually harassing, demeaning or intimidating.
- Any employee(s) who witness or believe they have been subject to discrimination, harassment, retaliation is encouraged to notify their supervisor
- All employees are required to attend an induction-training course prior to commencing work on site to ensure they are familiar with the CoC they should sign before commencement of work. The CoC should include promotion of workers' rights, including gender equality and equity in employees, 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.
- Prevention of SEA: including CoCs and ongoing sensitization of staff on responsibilities related to the CoC and consequences of non-compliance; project-level IEC materials;

xiv. Gender Inequalities

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

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

Women face greater economic vulnerability as their labour participation is often highly informal, without social protection. Low-income women and women migrant 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.

Proposed Mitigation measures on gender issues

- The contractor will mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by the Gender Policy of 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 rights, including gender equality and equity in

Employees CoC

- Ensure safe employment for women, including training for all staff on 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 in the work site, the work site surroundings, or at worker's camps (if any). Prosecution of those who commit to be pursued.
- Treat women and children (persons under the age of 18) with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Do not use language or behavior 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 defense
- Exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading or exploitative behavior is prohibited.
- Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the workplace that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding, promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered “non-consensual” within the scope of this Code.
- Where an employee develops concerns or suspicions regarding acts of GBV by a fellow worker, whether in the same contracting firm or not, he or she must report such concerns in accordance with Standard Reporting Procedures.
- All employees are required to attend an induction-training course prior to commencing work on site to ensure they are familiar with the GBV Code of Conduct.
- All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV Code of Conduct.

xv. Conflict and Insecurity

There could be conflict between the contractor or the facility and the surrounding communities due to: labour recruitment, shared resources (road, etc.) and behaviour of workers. There may also be conflict between construction and hospital workers though less likely, hence the need to ensure a responsive security management system.

Proposed Mitigation Measures

- The contractor, in conjunction with the hospital management, should ensure the security personnel are well inducted 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 hospital staff;
- Contractor security personnel should sign the CoC that discourages the use of force unless for defensive purposes.

xvi. Sexual Harassment, Exploitation and Abuse

This impact refers to sexual exploitation and abuse committed by project staff against communities and represents a risk at all stages of the project, especially when employees and community members are not clear about prohibitions against SEA in the project. During the construction phase, the interaction between construction workers and other project stakeholders such as hospital staff and community could lead to SEA as senior workers may seek sexual favors from the juniors. Sexual harassment can occur between workers, particularly male workers against female workers, when there is insufficient sensitization of workers against prohibitions for sexual harassment, as well as the absence of reporting and disciplinary measures.

Proposed Mitigation Measures to risk sexual exploitation and abuse

- Develop and implement a SEA action plan with an Accountability and Response Framework as part of the

C-ESMP. The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).

- The contractor provides a mechanism where workers are free to report any sexual advances and abuse to the senior management without fear of intimidation;
- Ensure clear human resources policy against sexual harassment that is aligned with national law
- Integrate provisions related to sexual harassment in the employee COC
- Ensure appointed human resources personnel to manage reports of sexual harassment according to policy
- The SEA action plan will include how the project will ensure necessary steps are in place for:
 - **Prevention of SEA:** including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;
 - Response to SEA: including survivor -centered coordinated multi-sectorial referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management;
 - Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; main-streaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA- related rights;
 - Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistleblower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained CLOs.

xvii. Grievance arising from the sub-project activities

This is the procedure and mechanism through which relevant stakeholders specifically the project affected persons (PAPs) and hospital community members express their concerns against the project and the implementing staff. Grievances will be expressed through completion of the grievance redress form while others will be expressed verbally or through letters brought to the attention of the project works engineer (PWE) and the representatives through the contractor. Once the complaint/grievance is received, it should be logged in the complaints register, the contractor instructs the staff or the CLO to visit the location and verify whether what has been documented is correct. Once verification is done, the contractor should in conjunction with the PWE advice on the way forward. Some corrective measures are immediate while others take quite a while to resolve and others call for the attention of the other authorities. The LMP and SEP for this project provide an elaborate GRM requirement that should inform setting up or strengthening of GRM for the contractor and the Facility.

All the project workers and communities should be sensitized on the Project GRM which they should be encouraged to use if they want an alternative redress system.

7.4 Potential Impacts during Operation Phase

7.4.1 Potential Negative Impacts during Operation Phase

i. Improper Healthcare Waste Management

During their operation, the hospital will generate medical waste through several clinical activities including; from COVID-19 treatment centre, sample collection from COVID-19 suspected patients, laboratory practices and procedures (performing and handling of specimen and chemicals) from activities in isolation and treatment area; which need to be treated in an appropriate medical waste treatment facility. Improper disposal of medical waste would have environmental and public health impacts: for example, open burning of medical wastes can result in harmful emissions of dioxins, furans and particulate matter, and result in unacceptable health risks.

Proposed Impact mitigation⁸

In addition to WHO guidelines and recommendation in operation of MWTI and the COVID-19 treatment centre and the specific measures identified in the Operation Manual for this project the following are some of the

⁸ IFC Environmental Guidelines for Health Care Facilities, 2007.

recommended impact mitigation measures:

- The hospital shall prepare, operate and maintain an Infection Control and Waste Management Plan (ICWMP) adequate for the scale and type of activities and identified hazards consistent with the National regulations, project 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: a) assignment of responsibilities including designate waste management officer; b) waste classification (including quantities of waste generated); c) waste minimization, reuse and recycling; d) waste segregation; e) on-site handling, transport and storage practices (including containerization, color coding, labelling and signage); f) waste-treatment and disposal options (on-site and off-site); g) record keeping and documentation, h) training and monitoring; i) costs relating to waste management, including capital, operational and maintenance costs; j) Training; procedures for segregation, storage and handling of wastes requiring special arrangements, l) 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, 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 fractions (typically waste items contaminated with body fluids and used sharps); Staff 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. 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.
- 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 good drainage, and designed for cleaning / disinfection with available water supply;
 - Fenced, 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, rain 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.
 - Labelled/marked in accordance with the hazard level of the stored waste
- 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 centers should be made available to the waste handlers.
- Ensure safety and health of the health care waste handlers through provision of appropriate PPEs, vaccination against Hepatitis A, B, polio and tetanus as well as provision of post-exposure prophylaxis (PEP) and ensure periodic maintenance of the waste treatment equipment,
- 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 managing health care wastes contaminated or suspected to be exposed with infectious waste should include: The use of appropriate / full PPEs (***N95 respirators, apron, heavy duty gloves, eye protection, boots and long-sleeved gown***), Hand hygiene practices, Waste segregation strategies and clean up procedures, On-site Handling, Collection, Transport and Storage, Exposure to COVID-19 infections and diseases transmission, Exposure to radiation, Air emissions control and Fire safety measures
- Train treatment plant operators on 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 (incinerated ash),
- Seek operational licence of the MWTI from NEMA to ensure compliance with the Waste management regulations, 2006.

ii. Fire Risk

Without provisions for fire safety, there is a risk of fire outbreak at the project site or the hospital with disastrous life and financial impact. Fires can start from chemical spills, ignitable materials within the hospital, accidents/elevated emissions associated with the incinerator oxygen enrichment from accidental leakages during renovations, cigarette smoking in non-designated places or defective electrical connections. Oxygen gas is not flammable by itself but if released to fire it can combust more readily.

Proposed Mitigation Measures

- Provide fire extinguishers to healthcare facilities during their renovation/operation at strategic positions at the MWT area and ensure timely servicing is done.
- Key healthcare staff shall have basic training in fire control.
- Fire emergency telephone numbers should be displayed in communal areas.
- The hospital management shall update/prepare a fire emergency response plan and train staff.
- Undertake regular fire drills at the HCF, targeting the isolation centre and the MWTI operators to test on emergency response and use the results to improve on the response mechanism.
- Strict maintenance schedules are needed to prevent malfunctions of oxygen supplies to the wards and ensure carried out by trained and competent personnel.
- Ensure all the electrical equipment, oxygen supplies are off when not in use

iii. Risk Of Explosion

The project will undertake activities on increased supply of oxygen to the ICU and HDU wards. There is a likelihood of increased risks of explosion from the oxygen infrastructure which may endanger hospital workers, patients and the neighboring community. These risks may result from oxygen enrichment of the atmosphere from leaking equipment, use of materials not compatible with oxygen, use of oxygen in equipment not designed for oxygen service, incorrect or incautious operation of oxygen equipment, Improper disposal of pressurized containers.

Mitigation Measures

- Carry out risk assessments and enforce strict adherence to the safe working procedures around oxygen hazards i.e. liquid spills and vaporised leakages;
- Undertaking air quality test while working in areas of high risk of oxygen leakage
- Ensure proper and safe handling, transportation, storage, use, servicing and disposal of empty containers

and other related appliances,

- Personnel operating and maintaining oxygen plants and supply must undergo specialized training on installation, operation and maintenance of the equipment,
- Careful selection of materials used in maintenance
- Training of the medical personnel on safe use of oxygen, potential risks (with oxygen and fires) and maintenance
- Ensure all the electrical equipment are off when not in use and the oxygen equipment is used correctly and turn off when not in use.
- All the health facility wards should be kept clean and tidy,
- Strict maintenance schedules are needed to prevent malfunctions of oxygen supplies to the wards and ensure carried out by trained and competent personnel.

iv. Occupational Safety and Health Risks

a) Healthcare Workers

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 equipment or services introduced after renovation or 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. 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.

Below is a list of OSH risk sources for healthcare staff:

- i Biological hazards (body fluids with potential to cause diseases);
- 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 Misuse of equipment and materials for functions they are not designed;
- vii Electrical hazard;

Likelihood of the impact occurring is high unless control measures are instituted. Although it is a cumulative impact, the risk to human health is significant. With increase in COVID-19 cases, the COVID-19 Centre staff can be under immense and unprecedented pressure, putting their physical, mental and social well-being at risk not to forget the exposure to the corona virus. Exposure to excessive stress, for prolonged periods can also have many harmful consequences on the emotional and mental well-being of COVID-19 Centre workers. This can in turn:

- Lead to burnout;
- Trigger the onset of common mental disorders such as depression and anxiety or post-traumatic stress disorder (PTSD);
- Result in unhealthy behaviors like using tobacco, alcohol or other substances, which may lead to substance use disorders;
- Result in frequent absence from work or reduced productivity while at work; and
- Increase the risk of suicide among front-line workers, particularly health care workers.

Proposed Mitigation measures

- Ensure the implementation of standard precautions and transmission-based precautions in line with national guidelines for IPC in healthcare facilities taking into account guidance from WHO and/or CDC on COVID-19 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.
- Train the healthcare workers on the potential OSH risks in relation to COVID-19,
- 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.
- Ensure availing of Safety Data Sheet (SDS) for all chemical use in the lab to the lab technicians,
- All employees working at the COVID-19 centre should be provided with appropriate PPE such as overalls, gumboots or closed shoes, hand gloves, eye protection and face-masks and trained on their proper use.
- Limit access to the treatment centre only to authorized persons;
- Warning and safety signage to be placed at appropriate areas within the treatment centre;
- All personnel involved in running of the COVID-19 centre should be subjected to periodic medical surveillance; and
- Regular cleaning and disinfection at the COVID-19 treatment centre

b) Healthcare Waste Handling Operators and Workers

While working at the MWTI, the operators will face daily health and safety risks as a result of uneven walkways during on-site transport of HCW; dust; handling and transportation of contaminated wastes; sharps inflicted injuries, toxic exposure to mercury and dioxins, thermal injuries while operating incinerators, electrocution from 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. In this regard, plant operators/ healthcare workers handling waste should be trained on OSH and expected to implement the prevailing National Health Care Waste Management Plan (2016-2021) applicable to HCW treatment to avoid and minimize injuries or fatalities on their premises.

Proposed Mitigation Measures:

- The MoH waste management plan, guidelines and IPC measures should be applied, observed and customized through the development of the facility specific instruments. This should be augmented by guidelines issued by WHO and those that will be provided in Operational Manual and Procedures for the MWTI equipment as provided by equipment company
- All the operators should be in the appropriate PPE during operations of the MWTI. Each of the MWTI operators should be provided and equipped with: an approved unused disposable overall, safety gumboots, sight grade hand gloves, the recommended goggles, helmet, right grade respirators and ear plugs and enforce on use
- Limit access to the waste treatment area only to authorized persons and provide warning and safety signage to be placed at appropriate areas within the MWT site;
- 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 kit to be placed at strategic locations to allow ease access by workers on-site;
- Continue providing serviceable fire safety equipment and continue training workers on their proper 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.
- The temporary waste holding area should be well sheltered from direct rainfall and strong winds but should be adequately aired and ensure regular cleaning and disinfection at the waste treatment area;
- 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 the MWTI operators;
 - Maintenance of equipment and control measures ;
 - 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,
 - Accident and incident s occurred in the handling, treatment and disposal of healthcare waste

v. Community Health and Safety Risks

Improper waste disposal can cause public health risks due to environmental pollution from impaired air quality from rotting HCW and smoke from the incineration process, especially at times when the MWTI malfunctions or not operating optimally, storm water contamination or when people and scavenging animals and birds rummage through raw waste stockpiles. Unless mitigation recommendations are implemented, this impact may occur at the hospital. Air pollution can be exacerbated if open air burning of waste is practised. There could be community health and safety risk if COVID-19 patients are not well contained and if waste from the COVID-19 treatment centre is left to find its way into the surrounding community prior to its proper treatment.

Impact management

- Ensure regular monitoring of solid, liquid waste management practices and waste treatment, and especially waste from the COVID-19 treatment centre;
- Install appropriate drainage channel within the health facility. All cleaning wastewater from the COVID-19 centre and the MWTI should be directed into the sewer system and not left to run into the open;
- 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 on wastewater;
- The MWTI should be secured and out of reach from unauthorised persons;
- Community should be sensitized on infection prevention and control measures related to COVID-19 and healthcare waste;
- There should be continuous monitoring of the COVID-19 treatment centre to ensure that COVID-19 patients do not escape prior to completing their treatment process;
- Ensure the SOPs from the incinerator supplier are followed. Regularly monitor and maintain the incinerator to ensure it is working appropriately in accordance with the SOP and change the scrubbers;
- Train the incinerator operators on best operational practices to reduce on emissions from the incinerator;
- Undertake periodic air quality monitoring of the stack emissions.

vi. Increased Water Use and Liquid Waste Generation

Once the COVID-19 treatment centre at the hospital is completed, there will be an increased demand and or water use as well as increased liquid wastewater generation. However, it is worth noting that KUTRRH is served by water mains and the sewer line by the NCWSC.

Proposed Mitigation measures

- The MWTI will be connected to the existing sewer line at the hospital during the reconstruction.
- Designs have to provide for the facilities to be fitted with easy to clean tiles on their walls as well.
- Put roof gutters to collect rainwater from the facility roofs during the rainy season for use in cleaning and landscaping,

- 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 large water reservoir tanks.
- 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 pre-treatment, reuse and recycling

vii. Increased Energy Use

The construction of the COVID-19 treatment unit within KUTRRH will lead to the increased demand for energy in form of the additional energy required to run medical equipment as well as the lighting of the entire new facility. There will also need for electricity to run the MWTI.

Proposed Mitigation measures

- Use load shedding on lighting system and other equipment to avoid creating peaks in demand,
- Turn lights off using automated sensors or a building automation system,
- Install sub-meters throughout the hospital, and especially at the MWTI to monitor power usage, and
- Secure a backup generator for the hospital to be used during the power outages.
- Install solar energy resources to provide for additional security lighting within the waste management area in case of power outages

viii. Increased Material Consumption at the MWTI

There could be unsustainable consumption of resources such as spare parts, electricity, water and diesel. Sustainable use of resources should be practised all the times by ensuring the following.

- The incinerator machine should be switched off when not in use. Manufacturer's guidelines on machine operations should be strictly followed
- A competent supplies/ store keeper should be employed to manage supplies store professionally with updated records
- In-house trainings on sustainable resources (electricity, diesel, water) use should be undertaken periodically or on need basis

ix. Water contamination and Storm Water Management

Wastewater from the MWTI shelter and COVID-19 treatment cleaning process could contain contaminates from the HCW. It is recommended that such wastewater is directed to the hospital sewer line and wastewater treatment system but not released directly into the environment.

x. Handling of Diesel and management of Accidental Spills

Diesel is a hydrocarbon; a substance classified as hazardous to the environment and its resources. It should therefore never be allowed to flow into the environment. The following measures could be applied to prevent its release into the environment.

- Take steps to prevent leaks and spills by being careful when refilling the diesel tank. Have sorbent materials available on site.
- The MWTI shelter floor should be cemented to prevent diesel spills from seeping into underground water and soil
- Do not discharge diesel to sewers, drainage ditches, septic tanks, or streams.
- Do not dispose of diesel in landfills or mix them with wastes that will be disposed of in landfills.
- Keep storage containers closed when not actively adding or diesel-When storing diesel drums keep an aisle space between them to allow for inspection for leaks and damage.

- Have good plans of emergency management in-cases of spills,
- Train all staff on hazard recognition, response plan implementation, safety, and clean up procedures, and reporting

xi. GBV/SEA within the Operations of the COVID-19 Treatment Centre and the MWTI

The operations at the COVID-19 treatment center and the MWTI could lead to exposure of gender inequalities, sexual harassment such as sexual favors to get attention from staffs working at the center, indiscrimination of workers working at the isolation center. During the C-HERP implementation period, the project will continue to monitor SEA risks in the supported healthcare sites including KUTRRH Hospital. The hospitals will be required to report any SEA cases affecting sub-project workers to the PMT within 24 hours of the incidence.

Proposed mitigation measures

- Continued sensitization of staff on SEA risk management
- Provision of GRM channels for reporting SEA cases that ensures workers are free to report any sexual advances and abuse to the senior management without fear of intimidation;
- Ensuring that the GBV/SEA one pager is placed on strategic points of the facility
- Document and avail GBV/SEA referral pathways for victims' information and support to ensure survivor-centered coordinated multi-sectorial referral and assistance
- Develop an Action plan of all GBV/SEA incidences to avoid recurrence
- Ensure the facility is well lit to avoid hiding places for SEA perpetrators
- Provision of separate helping places for men and women
- The hospital will continue to mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 Gender Rule.
- To include prohibition of GBV/SEA in Employees Code of conduct e.g. discouraging the use of inappropriate language or behavior, harassing, abusive, sexually provocative, demeaning or culturally inappropriate language towards women or children.
- Prohibit sexual activity with children less than 18 years old, including through digital media and promoting respect to the rule of law in respect to children's rights.

xii. Conflicts and Insecurity Concerns

There could be cases of conflicts between patients or with staff in the isolation center. This could also arise due to patients escaping from the isolation center or from nearby communities dissatisfied with some services in the hospital e.g., poor waste management practices.

Proposed Mitigation

- The hospital should recruit adequate security personnel including request for public police as necessary
- Ensure a proper security surveillance system including implementing check in and check out systems
- Use of staff cards and vehicle parking stickers
- The hospital will install CCTV cameras at strategic point to enhance security
- The hospital will train the MWTI operators periodically to enhance proper maintenance of the microwave
- The hospital suggested to employ more police force to improve on the security situation at the hospital
- Monitoring activities of security personnel including the use of force.
- Implement the Security Management Plan developed for the project.

xiii. Child Welfare and Protection Issues

Children within project areas will be exposed to risks associated with interaction between them, Project Workers and other adult patients. This includes sexual abuse which coherently leads to teenage pregnancies and exposure to communicable diseases such as HIV/AIDS. The HCF should put in place following mitigation measures.

Proposed Mitigations

- The hospital management to develop and/or implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the Project including on SEA.
- All surge capacity staff must sign a contract which clearly defines what constitutes acceptable and

unacceptable behavior and committing to protecting children,

- Persons under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.
- Ensure the presence of parents/guardians to take care of child patients in wards and that they are accompanied all the time
- Handle child patients with dignity and use language appropriate to the child's age
- Ensure that the channels for channeling complaints related to children are displayed in children ward e.g the child helpline 116.
- 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

xiv. Grievances arising from sub-projects operations

During operations of the COVID-19 Isolation Centre there is likelihood that different forms of grievance might arise. These include: patients not being handled professionally, discrimination, soliciting of sexual favors, negligence, sexual abuse, delay in provision of services or materials for health workers, health and safety risks related to healthcare waste treatment and disposal disagreements over working conditions and terms of service etc.

The Proposed Mitigation Measures include the following:

- The hospital should create awareness about the GRM mechanism in place to all workers and patients
- Provide affected people with avenues for making complains or resolving any dispute that may arise during the course of stay or working at the COVID-19 center-displaying in visible places within the facility
- Ensure appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants
- Provide for a mechanism where people can lodge complain securely and confidentially-especially regarding GBV/SEA and worker's complaints
- Ensuring that there is a workable mechanism of opening complaints reported through suggestion boxes
- Develop and implement patient satisfaction feedback tools
- Ensure timely payment of wages
- Avoid overburdening the workers by having dedicated operators of the MWTI

7.5 Potential Impacts during Decommissioning Phase

The project sub-components will definitely degenerate with use over time calling for their decommissioning. 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 or renovations will be done, creating 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 restoration of the site to near its original state.

The earth moving works during topsoil 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.

7.5.1 Project Machinery, Structure and Waste

- i. The proponent to employ integrated solid and liquid waste management system including recycling, re-use or selling of scrap materials;
- ii. The proponent together with the relevant county department will identify the appropriate disposal locations based on properties of particular wastes generated; and

- iii. All handling and disposal of waste generated should be done according to the Waste Management, Regulations 2006.

7.5.2 Rehabilitation of Project Site

- i. Re-vegetation of the site to restore the aesthetic value of the environment;
- ii. Proper erosion control measures during re-vegetation;
- iii. Proper monitoring and inspection of the site for indications of erosion; and
- iv. Fencing and signs restricting access to minimize disturbance.

7.5.3 Socio-Economic Impacts

- i. Offer advice and counselling to employees on other livelihood opportunities;
- ii. Assist with re-employment and job-seeking of the involved workforce; and
- iii. Compensation and suitably recommend the project workers in seeking employment opportunities elsewhere.

Table 7: Other Potential Negative Impacts During the Decommissioning phase

Dust Emissions	The demolition process will likely generate dust and particulate matter to the vicinity. This will affect the visibility of the area and may lead to an increase in respiratory problems. The impact will be short term and will last within the duration of the demolition process.
Noise	There is likely to be a considerable increase in noise owing to the demolition process. This will be a short-term impact and will be felt throughout the demolition process
Solid Waste	Waste in the form of demolition debris and pieces of metal and wood will arise. Thus, creating a need of disposing off the waste and all the disadvantages associated with waste mismanagement will arise such as spread of diseases. It is hoped that this phase will be implemented only under unavoidable circumstances for instance aging of the building and/or pertinent rights arising.
Dismantling of Equipment and Fixtures	All equipment will be dismantled and removed from the site on decommissioning of the project. Priority should be given to reuse of this equipment. This being an infectious waste management facility, all materials/ machines deemed fit for further use MUST be disinfected thoroughly before being put into any other use.
Site Restoration	Once all the waste resulting from demolition and dismantling works is removed from the site, the site should be restored through replenishment of the topsoil and re-vegetation using indigenous plant species.
Occupational health and safety risks during demolition	Upon decommissioning, the project maybe be demolished if it cannot be considered for any other use. The overriding concerns for the demolition phase will be safety and minimization of environmental impacts. This will include the safety of the operatives, safety of the other workers on the site and safety of the general public as well as protection of adjacent facilities and minimization of nuisances. The Contractor will during the course of demolition, ensure and verify that all utilities and services (such as water and electricity supply systems) have been disconnected and rendered safe. During demolition of the oxygen components, care should be taken to ensure proper management of the compressed cylinders to reduce risks of fire explosions To ensure safety of all parties, Typical hoardings will be provided along the site boundaries of the project site. Portable barricades could be used to cordon off different work zones where demolition is in progress with manned entrances. No members of the public or unauthorized person would be allowed to enter the site. Only contractors' personnel and government officials concerned with the demolition will be allowed within the project site. All workers involved in the demolition exercise should be provided with appropriate PPE including safety boots, overalls, helmets, hand gloves and dust masks.

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

8.1 Introduction

The MoH developed the project ESMF 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 ESMF 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 ESF⁹. The project ESMF forms the basis of the ESIA prepared for KUTRRH for the proposed sub-projects. 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 and the wider public. Thus, the focus will be on minimizing/mitigating the negative impacts and enhancing the positive impacts associated with the project activities through a program of continuous improvements. Environmental and social management and monitoring plans (ESMMPs) are important tools developed to assist in guiding the proponent/contractor in mitigating potential environmental, social, health and safety risks and impacts of the 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 regular periodic reviews on need basis. A number of activities will be carried out during the various phases of the proposed project to ensure adequate E&S impact management. These include, but are not limited, to the following.

8.2 Project Preparation

- i. Training of the relevant project staff in E&S management;
- ii. Review and appreciation of project design details, layout and specifications; and
- iii. Inclusion of environmental health and safety clauses in Tender Documents, and development of CoC for the Contractor.

8.3 Construction Phase

- i. Implementation of mitigation measures, through development of contractors' E&S Management Plan (C-ESMP) that shall include the following: Occupational Safety and Health Plan/community safety and health plan HIV/AIDS management Plan, labour management plan, update of the health facility Emergency Response Plan, COVID-19 management plan during project construction, phase to be reviewed and approved by the PIU and HCF prior to start of any construction works
- ii. Enforcement of Environmental and OHS requirements (conditions at the Contractor's Yard, materials storage, condition of equipment, use of PPE, etc.) as provided in the ESMP by the MoE E&S specialist
- iii. Implementing corrective actions to ensure the existing incinerator and waste storage area are fully operational according to all applicable specifications and requirements, including re-mediation of any contaminated soils
- iv. Environmental monitoring on air quality, noise and vibration levels by contracted Air Quality Specialist as per the provision of the Air Quality Regulations of 2014 and noise and vibration levels consultant as per the Noise and Excessive Vibration Pollution) (Control) Regulations, 2009; ;
- v. Disposal of construction solid, liquid and sanitary wastes in an acceptable manner and in conformance with regulations;
- vi. Ensuring that the Contractor is following the CoC and environmental health and safety specifications as provided in the ESMP;
- vii. Training the Contractor's workforce in environmental and social awareness and responsibility (including COVID-19, STD/HIV/AIDS awareness);
- viii. Liaison with local administration and community leaders in matters of disturbance to the public, security issues, and other matters arising from the project; and Ensure engagement with the key stakeholders during construction phase

8.4 Operation Phase

- i. Development (or updating existing) and implementation of Health Safety and Environmental Management Plan, Waste Management Plan (for all hospital wastes), and Emergency Response Plan ,
- ii. Establish written agreement with other HCFs related to accepting and treating their HCF wastes,
- iii. Implementing corrective actions to ensure the existing incinerator and waste storage area are fully operational according to all applicable specifications and requirements, including re-mediation of any contaminated soils
- iv. Operation and maintenance, calibration and checking of all equipment as specified in respective manuals or as

i. ⁹ MoH (2020). *Environmental and Social Management Framework for Kenya COVID-19 Emergency Response Project*. GoK, Nairobi.

- required by the regulations;
- v. Monitoring of emissions, discharges, waste management (generation, treatment, disposal), HSE incidents (leakages and spills, accidents, etc.;
- vi. Disposal of solid and sanitary wastes in an acceptable manner and in conformance with the regulations;
- vii. Compliance with OHS manual to be prepared by project proponent/ hospital management during the project operational phase;
- viii. Environmental performance reporting (based on evaluation of data collected, investigations especially air quality monitoring especially once the incinerator is operational and when working in areas of high-risk oxygen levels
- ix. Observing Standard Operating Procedures (SOP) designed for proposed COVID-19 isolation, quarantine and treatment centre as well as for the MWTI;
- x. Monitoring the implementation of the LMP, SMP and the ESMMP; and
- xi. 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 bearing of these interactions.

Table 9 below describes how each of the main mitigation measures proposed should be implemented, the frequency, and the responsible party during the construction and operation phases. Monitoring indicators and means of verification have also been included in the ESMMP. 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 his own 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. The responsibility of supervision of the implementation of all the proposed mitigation measures during construction and the defects liability period will lie with the MoH E&S specialist, public health officers, PWE, while the Contractor will be responsible for day-to-day operational matters of construction, which will include implementation of mitigation measures that s/he is responsible for. After the defects liability period, responsibility for the operation and maintenance of the facility will rest with the hospital management and the County Government. Table 10 also presents an estimate of the costs of implementing the proposed environmental and social management and mitigation.

8.5 Decommissioning

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the end of the project lifespan. During this phase the proponent will be required to prepare a decommissioning management plan that will guide the decommissioning process and seek approvals/ permits from all the relevant government agencies such as NEMA, DOSHS, MoH, among others. Any concerns that may emanate from the decommissioning activities must be addressed appropriately.

8.6 Monitoring Team

The primary role of monitoring and supervision of project environmental and social compliance will fall squarely in Nairobi County Government since they have the mandate and institutional framework enshrined in the County Government Act of 2012: Key players in the monitoring of compliance in the project will include:

- i. MoH project E & S Specialists
- ii. KUTRRH health facility administrator and the public health officer
- iii. Public Works Engineer
- iv. External monitoring from Nairobi County Administration staff which include County Director for Environment; County director for Physical Planning; Labour Officer; Community Development Officer; Physical Planner; Public Health Officer/Inspector; Public Works Engineer; Occupational Safety and Health Officer

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 a contractor -environmental and social management plan to facilitate self-monitoring of impacts and implement recommended mitigation measures, during the construction and the defects liability phase. Under these phases, the contractor shall hire/employ an Environmental, Health, Safety (EHS) and Social Specialist as part of its employees. During the operation phase hospital administrator, County Director for Health, County Engineer / PWE, County Director for Environment and Lands Officer will play a greater role to ensure the mitigation measures are implemented.

Table 8: Roles and Responsibilities of personnel's directly implementing the project

Entity	Roles and Responsibilities
MOH Environment and Social Specialists	<ul style="list-style-type: none"> ➤ Ensure the project is screened including coordinating the impact assessment and audit. ➤ Support in 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 ESMMP. ➤ Required to provide monthly, quarterly environmental & social status of the project progress to feed into the overall project progress reports ➤ Advice on implementation of corrective actions wherever necessary. ➤ Report immediately to the WB upon occurrence of any significant environmental, social, or health and safety incident
County government of Nairobi Housing, Lands urban Renewal, urban Planning and Projects Management	<ul style="list-style-type: none"> ➤ 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 Nairobi Technical Team health, Labour / Probation Officer, Labour Officer, Engineer, others	<ul style="list-style-type: none"> ➤ Mainly to ensure that respective activities are being done in compliance with the relevant laws, regulations and guidelines; ➤ The Hospital Administration with assistance from Nairobi County Technical Team and the PMT will ensure that Contractors have access to construction sites; Mobilisation of the communities to keep project on track; Monitoring of the project works with regard to the technical issues; ➤ Monitoring project's compliance implementation with the mitigation measures set out in the ESMMP 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.	<ul style="list-style-type: none"> ➤ Develop the Contractor ESMP focusing on social Issues with reference to the relevant documents i.e., client ESMP, NEMA certificate and any contractual conditions etc. ➤ Display and educate the workers on the workers' CoC, ➤ Work with the Clerk of Works to address worker's and community concerns in a timely manner, ➤ Liaise with the HIV/AIDs service provider, undertake HIV/AIDs sensitization and organize Special clinic days for the workers and the community adjacent to the site. ➤ Create awareness on importance 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, code of conduct, stakeholder engagement/ communication plan and report regularly on progress ➤ Educate the communities on the site operations and the Grievance Redress System, ➤ Make available the telephone to facilitate community liaison. ➤ Establish a grievance handling committee; create awareness on mechanism/committee/process. ➤ Manage the complaints log and act as a secretary to the Grievance Committee, and ➤ Manage the environmental and social impacts and implement mitigation measures as stipulated in the ESMP ➤ Provide information to PIU and HCF related to HSE performance, and immediately report any significant environmental incident or worker accident
Contractor's HSE personnel	<ul style="list-style-type: none"> ➤ Develop the Contractor ESMP based on the Client ESMP, NEMA licence and any contractual conditions ➤ Develop traffic management plan, ➤ Ensure safe storage of the materials on site, ➤ Prepare a waste management Plan for the site and ensure its implementation ➤ Prepare safety management plan for the site and ensure safety on site ➤ Ensure staff regular orientation on environment management and safety drills, and ➤ Display of the ESMP and Safety information. ➤ Ensure availability and access of drinking water at the work site by all workers. ➤ Develop an Environment, Health and Safety Checklist, and report regularly on progress.

	<ul style="list-style-type: none"> ➤ Take responsibility for mitigation and management of potential environmental and social issues on site; ➤ Organize and maintain briefing session records and mitigation and monitoring documentation on all matters of HSE; ➤ Respond to site inspection findings; ➤ Receive and respond to any complaints from external parties on project issues on HSE ➤ Institute management of accidents (if they occur), keep a log book/ sheet and report on the same ➤ Follow up on the health insurance requirements including compensation of workers 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 accidents
Public Works Engineer	<ul style="list-style-type: none"> ➤ 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 project 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, , MoH Project Management team and ➤ Clear contractors' compliance with managing Environment and social risks before hand over of site to the health facility administrator.
DOSHS	<ul style="list-style-type: none"> ➤ 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 implementation of the conditions in the certificate.
The National Construction Authority (NCA)	<ul style="list-style-type: none"> ➤ 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)	<ul style="list-style-type: none"> ➤ Issuance of the EIA 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 EIA conditions of approval.
World Bank	<ul style="list-style-type: none"> ➤ 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 and project approved ESIA/ESMP

8.6.1 Key Monitoring Indicators

Key monitoring indicators proposed include:

- i. Vegetation loss and remedial restoration measures instituted;
- ii. Air quality and Noise pollution control measures in place and how they operate;
- iii. Erosion control measures
- iv. Control measures for traffic related accidents
- v. OHS measures for workers and the hospital staff
- vi. Community health and safety
- vii. Public health observance
- viii. Waste management measures and performance
- ix. Water Supply and Waste-water
- x. Energy Use
- xi. Material storage
- xii. Employment opportunities
- xiii. HIV/AIDS and STIs interventions and related sexual behaviours among workers

- xiv. Labour recruitment by gender and age
- xv. GRM including number of complaints received and resolved within the project time-line
- xvi. Number of stakeholders consulted during the sub-project period
- xvii. Number of staff inducted on safeguards requirements and those who have signed the CoC
- xviii. Security incidences and systems
- xix. GBV/SEA prevalence reported in the facility
- xx. COVID-19 control strategies

Table 9: Environmental and Social Risks and Mitigation Measures during Planning and Designing, Construction and Operation Phase

Key Activities	Potential Environment & Social Risks and Impacts	Proposed Mitigation Measures	Responsibilities
Planning and Designing Phase			
Designs for the MWTI shelter	Improper designs of MWTI shelter that lacks basic provisions, poor ventilation, inadequate capacity for waste storage area may result to health and safety risks	<ul style="list-style-type: none"> ✓ 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, wash-rooms, hand washing basins, office, store, fire exit route, fire suppression system and emergency alarm system. 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH
Designs for the COVID-19 treatment Centre	Non-adherence to GoK MoH guidelines/ specification on the design of infrastructure may compromise IPC leading to increased infections	<ul style="list-style-type: none"> ✓ Liaise with the relevant technical government department in development of the appropriate renovation designs. ✓ Ensure all the legally required permits are obtained prior to undertaking any activities, ✓ Renovation contracts should include sustainability consideration related to use of energy and water for service providers, ✓ An option of isolated ensuite rooms with wash room facilities is preferred. ✓ Ideally be under negative air pressure (neutral pressure may be used, but positive pressure rooms should be avoided); ✓ Have dedicated equipment for the patients (for example blood pressure machine, peak flow meter and stethoscope), but should avoid excess equipment or soft furnishings; ✓ Have signs on doors to control entry to the room, with the door kept closed; ✓ Have an ante-room for staff to put on and take off PPE and to wash/decontaminate before and after providing treatment. ✓ Selection of easy to clean building materials that do not support microbial growth and/or are slip resistant 	MoH E&S Expert, CPHO, PWE, County Government / NMS KUTRRH,
Construction Phase			
	Interference with the Physical Setting	<ul style="list-style-type: none"> ✓ Conversion of the rooms next to the MWTI shelter to office and store should be given priority ✓ Try to fit all new structures related to the MWTI within the paved area except the ash pit ✓ The contractor should ensure that there is minimal disturbance to the project site area; ✓ The excavation activities should not interfere with local drainage or introduce physical changes that are not in harmony with the physical setting of the project area; ✓ The MWTI and associated structures should be aesthetically acceptable to blend in with the surrounding environment; ✓ Construction of the waste storage area should have adequate capacity to accommodate peak waste generated due to increased patient intake as a result of COVID-19 compared to normal average monthly medical waste 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH

		<p>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 environment in cases of prolonged storage or access of the waste by scavengers with appropriate signage provided</p> <ul style="list-style-type: none"> ✓ 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; 	
	Vegetation Loss	<ul style="list-style-type: none"> ✓ The contractor will ensure proper demarcation of the project area to be affected by the construction works to limit vegetation removal to project site; ✓ Strict control of construction vehicles to ensure that they operate only within the area to be disturbed and designated access routes; ✓ Retention of grass, herbaceous plants, shrubs and trees, to the extent possible on the project site; ✓ Restoration of vegetation in the disturbed surfaces should be done after completion of works. 	MoH E&S Expert, CPHO, PWE, County Government / NMS KUTRRH,
	Noise and Vibration Generation	<ul style="list-style-type: none"> ✓ 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 & any other person visiting the construction and renovation site especially in work areas with heightened noise levels; ✓ Limit construction activities during day time i.e., between 8am and 5pm; ✓ Construction workers should be made aware of the sensitive nature of the work place and advised to limit verbal and other forms of noise. 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH
	Air pollution (Dust and Emissions)	<ul style="list-style-type: none"> ✓ 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 solid waste materials should be permitted at project site. ✓ Fine earth materials (sand and murrum) should be covered using tarpaulins during haulage to prevent spillage, dust and particulate matter emission. 	MoH E&S Expert, CPHO, PWE, County Government / NMS KUTRRH,
	Increased generation of Spoil Material	<ul style="list-style-type: none"> ✓ 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 murrum 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, 	MoH E&S Expert, CPHO, PWE, County Government / NMS KUTRRH,

		<ul style="list-style-type: none"> ✓ Properly disposing off the spoil in an area identified by the contractor team and approved by the land owners, hospital management as well as by NEMA; care should be taken to avoid spoiling/ degrading land that could otherwise be used for productive purposes. 	
	Accidental Spills and Leakages	<ul style="list-style-type: none"> ✓ Temporal storage in specifically designated areas 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 and away from storm water runways or exposure to weather elements such as rains and for use only for construction works ✓ Ensure proper storage of chemicals / materials, and if possible in secondary containers just in case of accidental puncturing; and ✓ 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, ✓ Provide adequate signage and communication of risks to workers, health staff/ patients ✓ 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 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH
	Increased extraction, Use and management of Solid waste from of Construction Materials	<ul style="list-style-type: none"> ✓ 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 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 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, and ✓ Waste disposal by burning shall not be permitted and signage should be erected, 	MoH E&S Expert, CPHO, PWE, County Government / NMS KUTRRH,
	Increased Water Demand	<ul style="list-style-type: none"> ✓ 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 water 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 Covid-19 Centre and the HCWI facility, the hospital management will be required to supply water to the two facilities at their cost for normal operations. The hospital is already connected to piped water supply and has a large water reservoir tank. 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH

	Archaeological and Other Cultural Properties	<ul style="list-style-type: none"> ✓ Prepare and implement a Chance Finds Procedure as provided in appendix 11.3 to be approved by the NMK as necessary. 	MoH E&S Expert, KUTRRH, DASM Office
	Occupation/Public Health and Safety Impacts	<ul style="list-style-type: none"> ✓ To reduce on the workers accidents and hazards, the contractor is expected to comply with OHS rules and regulations as stipulated in the Occupational Safety and Health Act, 2007. Ensure the work place is registered by the DOHS; ✓ The contractor shall prepare an OSH plan for the construction works and should include input from the HCF management on potential health and safety risks associated with the construction/renovation activities and meet all OHS requirements in Kenya laws and regulations, WB ESS2, and project 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 renovation sites; ✓ 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, ✓ Electrical works and maintenance of the medical waste incinerator should be done by a trained certified, experienced personnel; & ✓ 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. 	MoH E&S Expert, CPHO, PWE, County Government / NMS KUTRRH,
	Spread of Communicable Diseases and Other Infections	<ul style="list-style-type: none"> ✓ Treat affected local and migrant workers which will control the spread of disease vectors (through contaminated water and between people); ✓ Provision of adequate and accessible sanitation facilities in good condition with adequate water supply; and ✓ Create awareness to workers on proper sanitation and personal hygiene to promote proper health ✓ To mitigate risk from food related contamination amongst construction workers, food supplies will be from the vendors with public health certificate, <p>Mitigation measures against COVID-19 on sites:</p> <ul style="list-style-type: none"> ✓ 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. ✓ 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 signs and symptoms of COVID-19 such as respiratory hygiene, cough etiquette, hand hygiene and use of PPE ✓ Place signs and posters in areas around the project site to create awareness to project workers on COVID-19; ✓ Regularly assess work force characteristics and adjust work practices such as avoiding concentration of more than 15 workers per site when more than one person is gathered maintain social distance of at least 2 meters; ✓ Clean up the tools and equipment used on site with soap and water or use sanitizer as appropriate; 	MoH E&S Expert, CPHO, County Government / NMS KUTRRH,

	<ul style="list-style-type: none"> ✓ Provide an easily accessible GRM to raise work place concerns relating to COVID-19; such as encourage reporting of co-workers if they show outward symptoms. 	
Increase in HIV/AIDS Prevalence and other STIs	<ul style="list-style-type: none"> ✓ Hiring workers from the local community to prevent social challenges associated with labour camps; ✓ Education and sensitization of workers and the local communities on STIs, HIV/AIDS and risks of contracting or spreading of sexually transmitted diseases; ✓ Provision of condoms to the project team and the public; ✓ The contractor has to institute HIV/AIDS awareness and prevention campaign amongst workers for the duration of the contract e.g., erect and maintain HIV/AIDS information posters at prominent locations; ✓ Contractor should sign CoC to guide on promoting behavior change among the workers 	MoH E&S Expert, CPHO, KUTRRH
Labour influx	<ul style="list-style-type: none"> ✓ 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; ✓ The contractor to ensure that the hiring process is done with fairness and gender sensitivity; ✓ The contractor complies with provisions of WIBA 2007 for all the workers engaged; ✓ 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. 	MoH E&S Expert, County Labour Officer, KUTRRH
Gender Inequalities	<ul style="list-style-type: none"> ✓ During recruitment of workers there will be no discrimination against one gender either by design or oversight; ✓ There will be compensation for excess working hours; ✓ Contractors not to overlook provision of sanitary, health and safety facilities such as PPE; ✓ Ensure equal pay for men and women; ✓ Contractor to engage an expert to conduct training/create awareness on GBV; ✓ The contractor to ensure provision of the necessary basic sanitary facilities in relation to gender – provide separate sanitary facilities; ✓ Treat women, children and men with respect regardless of race, colour, language, religion, or other status; ✓ Report any violations of the CoC to workers' representative, HR or grievance redress committee and ensure that no employee who reports a violation to the code of conduct in good faith will be punished in any way; and ✓ Comply with the National Gender and Equality Act, 2011 	MoH E&S Expert, KUTRRH, County Gender Officer, NGEC
Conflict and Insecurity	<ul style="list-style-type: none"> ✓ 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 ensure the security personnel are well inducted to address security related issues as they arise. ✓ Prepare labour management plan to guide recruitment of the workers in conjunction with local leaders, ✓ Limit workers interaction where possible with community members, and 	MoH E&S Expert, Project manager, KUTRRH Hospital administrator
Gender based Violence/Sexual Exploitation and Abuse	<ul style="list-style-type: none"> ✓ The contractor should develop a code of conduct which should encompass clear warning to workers on any kind of sexual exploitation and abuse. ✓ Ensure clear human resources policy against sexual harassment that is aligned with national law ✓ Ensuring that the GBV/SEA one pager is placed on strategic points of the facility ✓ Document and avail GBV/SEA referral pathways for victims' information and support to ensure survivor-centered coordinated multi-sectoral referral and assistance ✓ Develop an Action plan of all GBV/SEA incidences to avoid recurrence 	MoH E&S Expert, County Gender Officer, NGEC, KUTRRH

		<ul style="list-style-type: none"> ✓ Ensure the facility is well lit to avoid hiding places for SEA perpetrators ✓ Provision of separate helping places for men and women ✓ The hospital will continue to mainstream Gender Inclusivity in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 Gender Rule. ✓ Prohibit 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 ✓ 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. 	
	Grievance arising from the sub-project	<ul style="list-style-type: none"> ✓ 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. 	MoH E&S Expert, KUTRRH CLO,
	Child labour	<ul style="list-style-type: none"> ✓ The contractor will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project including on SEA. ✓ All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behavior ✓ Children under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014. ✓ Ensure that children are accompanied by adults ✓ Not invite unaccompanied children to workers home, unless they are at immediate risk of injury or in physical danger. ✓ Refrain from physical punishment or discipline of children). ✓ Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury. ✓ Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation 	MoH E&S Expert, KUTRRH CLO
Potential impacts during Operational phase			
	Improper Healthcare Waste Management	<ul style="list-style-type: none"> ✓ The hospital shall prepare, operate and maintain a Health Care Waste Management Plan (HWMP) adequate for the scale and type of activities and identified hazards consistent with the National regulations, ICWMP and the WBG EHS guidelines. ✓ Waste should be identified and segregated at the point of generation. Non-hazardous waste, such as paper and cardboard, glass, aluminum and plastic, should be collected separately and recycled. Food waste should be segregated and composted. Infectious and / or hazardous wastes should be identified and segregated according to its category using the colour-coded system. ✓ Prevention and minimization of the production of waste (integrating systems and practices to avoid the creation of waste into facility design and management and equipment and consumables purchasing). ✓ Reuse or recycling of wastes to the degree feasible, 	
		<ul style="list-style-type: none"> ✓ 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. 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH

	<ul style="list-style-type: none"> ✓ All healthcare waste generated during care of COVID-19 patients should be treated as infectious waste and managed in accordance to WHO guidelines on Water Sanitation, Hygiene and Waste Management for COVID-19. ✓ Instructions on how to handle the infectious waste from isolation and treatment centers should be made available to the waste handlers. ✓ 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 PEP. ✓ Waste storage areas should be located within the waste treatment area and sized to the quantities of waste generated 	
Fire risk	<ul style="list-style-type: none"> ✓ Provide fire extinguishers during the renovation/operation at strategic positions and ensure servicing is done. ✓ Key healthcare staff shall have basic training in fire control. ✓ Fire emergency telephone numbers should be displayed in communal areas. ✓ Undertake regular fire drills at to test on emergency response and use the results to improve on the response mechanism. ✓ Ensure all the electrical equipment, are off when not in use 	MoH E&S Expert, CPHO, PWE, NMS County Government /, DOSHS, KUTRRH
Risk of Explosion	<ul style="list-style-type: none"> ✓ Carry out risk assessments and enforce strict adherence to the safe working procedures around oxygen hazards i.e. liquid spills and vaporised leakages; ✓ Undertaking air quality test while working in areas of high risk of oxygen leakage ✓ Ensure proper and safe handling, transportation, storage, use, servicing and disposal of empty containers and other related appliances ✓ Careful selection of materials used in their maintenance ✓ Training of the medical personnel on safe use of oxygen, potential risks (with oxygen and fires) and maintenance ✓ Ensure all the electrical equipment are off when not in use. ✓ All the health facility wards should be kept clean and tidy, ✓ Ensure the oxygen equipment is used correctly and turn off when not in use. ✓ Strict maintenance schedules are needed to prevent malfunctions of oxygen supplies to the wards and ensure carried out by trained and competent personnel. 	MoH E&S Expert, CPHO, PWE, NMS County Government /, DOSHS, KUTRRH Medical Engineers
Occupational Safety and Health Risks for Healthcare Workers at the treatment centre	<ul style="list-style-type: none"> ✓ Ensure the implementation of standard precautions and transmission-based precautions in line with national guidelines for IPC in healthcare facilities taking into account guidance from WHO and/or CDC on COVID19 infection control, ✓ 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. ✓ Train the healthcare workers on the potential OSH risks in relation to COVID-19. ✓ 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. 	MoH E&S Expert, CPHO, PWE, County Government / NMS and DOSHS, KUTRRH

		<ul style="list-style-type: none"> ✓ Ensure availing of Material Safety Data Sheet for all chemical use in the lab to the lab technicians, and ✓ All employees, those working at the COVID-19 centre 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 COVID-19 isolation and treatment area only to authorized persons; ✓ Warning and safety signage to be placed at the areas within the MWTI site; ✓ All personnel involved with running of the COVID-19 treatment area should be subjected to medical surveillance; ✓ Ensure regularly cleaning and disinfection at the COVID-19 centre ; ✓ Air quality monitoring should be done regularly by qualified experts within 100m of the MWTI; 	
	Community Health Risk	<ul style="list-style-type: none"> ✓ 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; and ✓ Community should be sensitized on infection prevention and control measures related to COVID-19. 	MoH E&S Expert, CPHO, KUTRRH CLO, PWE, County Government / NMS and DOSHS
	Occupational Health and Safety Risk to Waste Handling Operators/workers	<ul style="list-style-type: none"> ✓ 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 each of the MWTI operators should be provided and equipped with: an approved unused disposable overall, safety gumboots, sight grade hand gloves, the recommended goggles, helmet, right grade respirators and ear plugs and enforce on use ✓ Limit access to the waste treatment area only to authorized persons and provide warning and safety signage to be placed at appropriate areas within the MWT site; ✓ 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 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, <ul style="list-style-type: none"> ○ Ensure good documentation and inventory on waste received and treated, ○ Maintenance of an accident incident log book on site. ○ The temporary waste holding area should be well sheltered from direct rainfall and strong winds but should be adequately aired and ensure regular cleaning and disinfection at the waste treatment area; ○ 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 the MWTI operators ; ○ Maintenance of the incinerator and control measures; ○ Daily health care wastes inventory; ✓ Training given to employees in terms of HCWM and machine maintenance for as long as the employee remains at 	MoH E&S Expert, CPHO, PWE, County Government / NMS and DOSHS, KUTRRH

		the workplace in which he is being exposed to HCW.	
	Increased Water Use and Liquid Waste Generation	<ul style="list-style-type: none"> ✓ The facility once constructed will be connected to the sewer line at the hospital ✓ Designs have to provide for the COVID-19 centre and the MWTI to be fitted with easy to clean surfaces as well. ✓ Install water storage tanks to harvest rainwater from the roofs during the rainy season, ✓ 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. ✓ 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. Pre-treatment chambers should be installed prior to release of effluent to the public sewer system; ✓ wastes generated from maintenance of MWTI facility should be collected and disposed as per the management and handling guidelines of medical waste including pre-treatment, reuse and recycling 	MoH E&S Expert, CPHO, PWE, County Government / NMS, KUTRRH
	Increased energy Use	<ul style="list-style-type: none"> ✓ 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 throughout the property to monitor power usage, 	MoH E&S Expert, CPHO, PWE, NMS
	Increased Material Consumption (Spare Parts/ power/ water/ Consumables)	<ul style="list-style-type: none"> ✓ The machine should be switched off when not in use. Manufacturer's guidelines on machine operations should be strictly followed ✓ A competent supplies/ store keeper (on use of diesel, electricity and water vis-à-vis HCW treated) should be employed to manage supplies store professionally with updated records ✓ In-house trainings on sustainable resources (electricity, diesel, water) use should be undertaken periodically or on need basis 	KUTRRH, CPHO, PWE, NMS
	Water pollution/ Water Resources contamination/ Water erosion and storm water management	<ul style="list-style-type: none"> ✓ Control run-off and leachate infiltration ✓ Proper management of runoffs and any contaminated waters. ✓ Proper maintenance of storm drains ✓ Ensure all storm water from the waste treatment facility is directed towards the established water drains 	MoH E&S Expert, CPHO, PWE, NMS
	GBV/SEA	<ul style="list-style-type: none"> ✓ 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 rights, including gender equality and equity in Employees Code of conduct ✓ Ensure safe employment for women, including training for all staff on 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 worker's camps. Prosecution of those who commit to be pursued. 	KUTRRH Hospital management, County Gender Officer, HCF GRM Focal Person, MoH E&S Experts

		<ul style="list-style-type: none"> ✓ Treat women and children (persons under the age of 18) with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. ✓ Do not use language or behavior 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 defense. 	
	Security and conflict	<ul style="list-style-type: none"> ✓ The hospital will install CCTV cameras at strategic point to enhance security ✓ The hospital will train the incinerator operators periodically to enhance proper maintenance of the micro wave ✓ The hospital suggested to employ more police force to improve on the security situation at the hospital ✓ Raising the walls on the lower side of the hospital to reduce security threat to the hospital ✓ The security guards should ensure proper surveillance of the facility ✓ Security guards should be sensitized on the CoC and the provision of the Security management plan 	PHO, Hospital Management, Security team, HCF GRM Focal Person, MoH E&S Experts
	Child welfare and protection impacts	<ul style="list-style-type: none"> ✓ The hospital will develop and implement a Children Protection Strategy that will ensures minors are protected against negative impacts associated by the Project including on SEA. ✓ All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behavior ✓ Children under the age of 18 years should not be hired on site as provided by Child Rights Act (Amendment Bill) 2014. ✓ Wherever possible, ensure that another adult is present when working in the proximity of children. ✓ Not invite unaccompanied children to worker's home, unless they are at immediate risk of injury or in physical danger ✓ Refrain from physical punishment or discipline of children) ✓ Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury. ✓ Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act Cap 226 of 2007 Part VII on protection of children against exploitation 	County Children's Officer, Hospital Management, HCF GRM Focal Person, MoH E&S Experts
	Grievances arising from project operations	<ul style="list-style-type: none"> ✓ The hospital should create awareness about the GRM mechanism in place to all workers and patients ✓ Provide affected people with avenues for making complains or resolving any dispute that may arise during the course of stay or working at the COVID center- displaying in visible places within the facility ✓ Ensure appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants ✓ Ensure those providing services the health care workers, uniformed services providers etc. can lodge complain securely and confidentially ✓ Provide for a mechanism where people can lodge complain securely and confidentially-especially regarding GBV/SEA and worker's complaints ✓ Ensuring that there is a workable mechanism of opening complaints reported through suggestion boxes ✓ Develop and implement patient satisfaction feedback tools ✓ Ensure timely payment of wages ✓ Avoid overburdening the workers by having dedicated operators of the MWTI 	Hospital Management, , HCF GRM Focal Person, MoH E&S Experts
Potential impacts during decommissioning phase			
Equipment/ Machine decommissioning	Soils Degradation	<ul style="list-style-type: none"> ✓ All machinery, equipment, structures and partitions that will not be used for other purposes must be removed, fumigated, containerized for disposal by NEMA licensed waste handler. ✓ All machinery, equipment, structures and partitions that will be used for other purposes must be removed, fumigated, packaged and containerized for relocation 	MoH, KUTRRH, DOSH, MoH E&S Expert, CDE, and NMS CPHO, PWE,

		<ul style="list-style-type: none"> ✓ 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 	
Structures decommissioning	Soils degradation / water Resources pollution / air pollution	<ul style="list-style-type: none"> ✓ All structures on site should be disinfected/ decontaminated before decommissioning ✓ All foundations must be removed and recycled, reused or disposed of at a licensed disposal site ✓ All anchorages plinths must be removed, recycled, reused or disposed by NEMA licensed waste handler. ✓ Use dust screens and nets to mitigate on dust/particulate matter 	MoH E&S Expert, CDE, and NMS CPHO, PWE KUTRRH,
Demolition Wastes	Soils pollution / air pollution / water resources pollution	<ul style="list-style-type: none"> ✓ Use an integrated solid waste management system i.e., through hierarchy of options 1. Source reduction 2. Recycling, 3 Composting and reUse 4. Combustion. 5 Sanitary land-filling ✓ Provide appropriate waste skips that encourage waste segregation ✓ Ensure proper waste collection, storage and disposal of waste generated ✓ Donate reusable demolition waste to charitable organizations, individuals and institutions ✓ Properly dispose of the demolition debris when no longer considered useful 	MoH E&S Expert, CDE, and NMS CPHO, PWE KUTRRH,
Project Decommissioning	OHS/ Public Safety	<ul style="list-style-type: none"> ✓ The decommissioning Contractor should have a well-developed EHS plan for the decommissioning exercise certified by a Qualified EHS Officer. ✓ A qualified EHS officer should be stationed at the decommissioning site during the entire decommissioning period to ensure compliance to Health and safety plan. ✓ Ensure the workers are provided with adequate and appropriate PPE (dust mask, ear plugs, helmets, gloves) on site and enforce on use ✓ While working at height provide safety harnesses and scaffolding equipment ✓ Fence off/ barricade the site prior to demolition to minimize health and safety risks ✓ Restrict demolition activities during day time between 0080hrs to 1700 hrs. ✓ Provide adequately well stocked first aid kit and ensure one of the workers can administer first aid. 	MoH E&S Expert, CDE, and NMS CPHO, PWE KUTRRH,
Site Rehabilitation	Soils pollution/water resources pollution/ Air pollution	<ul style="list-style-type: none"> ✓ Proper treatment of the site should be carried out (Decontamination) 	MoH E&S Expert, KUTRRH, CDE, and NMS CPHO, PWE
	Backfilling excavation sites	<ul style="list-style-type: none"> ✓ Ensure the contractors backfill and rehabilitate excavated sites before final payment 	
Re-vegetation	Soils degradation/ water resources pollution/ air pollution	<ul style="list-style-type: none"> ✓ Implement an appropriate re-vegetation programme to restore the site to its original status ✓ Consider use of native plant species in re-vegetation ✓ Trees should be planted at suitable locations so as to interrupt sight lines (screen planting), between the adjacent residential area and the development. 	
Social concerns during project decommissioning	Grievances arising from project decommission	<ul style="list-style-type: none"> ✓ Ensuring that 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 	Hospital Management, PHO, County and Facility GRM Focal Persons MoH E&S Expert

Table 10: General Environmental and Social Management and Monitoring Plan

Risks/Impacts	Proposed Mitigation	Monitoring Indicators	Frequency	Responsibility	Costs (KShs)
Construction Phase					
• Soil					
Via Soil erosion	<ul style="list-style-type: none"> Re-vegetation through grassing Soil erosion control measures such as provision of silt traps as necessary 	<ul style="list-style-type: none"> Vegetation cover 	Continuous	Contractor, MoH E&S Expert and KUTRRH CPHO, PWE	100,000.00
Via Soil compaction	<ul style="list-style-type: none"> Compaction of open spaces to Engineers specification 	<ul style="list-style-type: none"> Type of machinery and equipment 	As per engineers specification		
Paving	<ul style="list-style-type: none"> Reduction of paved/compacted areas 	<ul style="list-style-type: none"> Percentage of compacted area 			
• Water Quality and Resource use efficiency					
Surface run-off and waste water management	<ul style="list-style-type: none"> Re-vegetation, proper drainage systems Efficient use of water resources/install meter to monitor on water use Spill prevention procedures and response plan 	<ul style="list-style-type: none"> Records of water consumption Appropriate waste water management 	Continuous	Contractor, MoH E&S Expert and KUTRRH CPHO, PWE	150,000.00
Pollution of surface and ground water	<ul style="list-style-type: none"> All liquid waste from the MWTI and the COVID-19 centre should be directed to the sewer system Installation of pre-treatment chambers before discharge to public sewer system 	<ul style="list-style-type: none"> Composition of water water released Appropriate waste water management Pre-treatment chambers installed 	Continuous		
Building materials	<ul style="list-style-type: none"> Efficient sourcing and use of building materials Optimize materials reuse 	<ul style="list-style-type: none"> Records of building materials tracking Financial savings in subsequent bills 	Monthly		
Air Quality (Dust and Emissions)					
Dust	<ul style="list-style-type: none"> Wetting of project site to reduce dust when necessary 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 	<ul style="list-style-type: none"> Air quality measurement to determine amounts of dust at site Visual observation Complains received from staff 	Continuous	Contractor, MoH E&S Expert and KUTRRH PHO, PWE	100,000.00
Emissions from construction activities	<ul style="list-style-type: none"> Use of low emission machinery that use electricity as source of power or use manual labour; Periodic service all the equipment and machinery used during construction phase 	<ul style="list-style-type: none"> 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					
	<ul style="list-style-type: none"> Planned schedules for Construction during day time; Using silencers in heavy machines, Use of PPE such as ear muffs 	<ul style="list-style-type: none"> Planned schedules of activities Increased noise and vibrations measured in Decibels 	While at site and during operation of	Contractor, MoH E&S Expert and KUTRRH PHO, PWE	50,000.00

	<ul style="list-style-type: none"> Operation and maintenance of equipments on site 	<ul style="list-style-type: none"> Complains from workers and staff Records of machine operation and maintenance 	heavy machines		
Waste Management					
Solid waste generation including of hazardous and non hazardous waste	<ul style="list-style-type: none"> 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 Discourage open burning of solid waste on site 	<ul style="list-style-type: none"> 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 KUTRRH PHO, PWE	50,000.00
General Health and Safety					
Occupational and public health risks	<ul style="list-style-type: none"> Provision of appropriate sanitary facilities/water to workers 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 Ensure observance of public and community health and safety Barricade the active work sites / Install safety signage/warning signs on site Have accessible grievance redress mechanism 	<ul style="list-style-type: none"> Visual observations to check on proper use of PPEs, Display of OHS policy Well stocked first aid kit No. of trainings on health and safety First aid training records, list of first aiders and those of health and safety committee members. Statistical records and safety reports Visual inspection and observation Warning Signboards Serviced fire extinguishers 	Continuous	MoH E&S Expert, KUTRRH CLO, PHO, PWE, Contractor	250,000
Social Concerns during construction and operational phases					
Insecurity / public safety	<ul style="list-style-type: none"> Having guards dedicated to the project sites and fencing off the project sites 	<ul style="list-style-type: none"> Presence of a security Personnel; fences around the project sites 	Continuous	The proponent KUTRRH/MoH, PWE	30,000.00
Exclusion (ethnicity, gender, age, location and disability)	<ul style="list-style-type: none"> Public awareness of the project requirements, Stakeholder engagement and collective reasoning, Implementation of the requirements of the LMP, and the GBV Action Plan. 	<ul style="list-style-type: none"> Minutes of public awareness/stakeholder engagements carried out Signed code of conduct 	Continuous	MoH E&S Expert, KUTRRH PHO/CLO	30,000.00
Gender based Violence/Sexual Exploitation and Abuse	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Code of conduct for workers Grievance redress mechanisms 	Continuous	MoH E&S Expert, KUTRRH PHO/CLO	30,000.00

Lack of access to grievance redress mechanism	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Grievance logs No of resolved cases No of escalated cases 	Continuous	MoH E&S Expert, KUTRRH CLO, PHO, PWE Contractor	30,000.00
Labour influx	<ul style="list-style-type: none"> effective community engagement and strong grievance mechanisms on matters related to labour, including sexual exploitation and abuse comply to provisions of WIBA, 2007 	<ul style="list-style-type: none"> Copies of employment contract segregated by gender 	Continuous	MoH E&S Expert, KUTRRH CLO, PHO, PWE Contractor,	30,000.00
Child labour	<ul style="list-style-type: none"> Ensure no child of below 18 years is seen on site Ensure contractor sign a CoC for child protection 	<ul style="list-style-type: none"> The work force registry with details of age Signed code of conduct 	Continuous	MoH E&S Expert, KUTRRH CLO, PHO, PWE, Contractor	30,000.00
Operational Phase					
Water quality/ Efficient use of resources					
Surface run-off and waste water management	<ul style="list-style-type: none"> Embankment, re-vegetation, proper drainage systems Efficient use of water resources Spill prevention procedures and response plan 	<ul style="list-style-type: none"> Appropriate waste water management Records of water consumption 	Continuous	KUTRRH management PHO	150,000.00
Pollution of surface and ground water	<ul style="list-style-type: none"> All liquid waste from the MWTI and the COVID-19 centre should be directed to the sewer system Installation of pre-treatment chambers before discharge to public sewer system Ensure appropriate functioning of ash pit 	<ul style="list-style-type: none"> Composition of water water released Appropriate waste water management Pre-treatment chambers installed 	Construction	KUTRRH management PHO	
Increased use of Energy and indoor air pollution	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Power consumption records Installed alternative renewable energy sources 	Continuous	KUTRRH management, PHO	
Air Quality (Dust and Emissions)					
Emissions from the incinerator including hydrocarbons, Nitrogen oxide, Sulphur oxide, furans and dioxins	<ul style="list-style-type: none"> Use of air pollution control devices through installation of scrubbers/filters to the incinerator to remove particulate matter and other gases Train the incinerator operators on best operational practices Periodic operation and maintenance of the incinerator Conduct periodic air quality monitoring of the stack emissions Ensure the incinerator chimney heights is of the recommended height 	<ul style="list-style-type: none"> Air quality monitoring reports Periodic operation and maintenance reports of the incinerator Scrubbers installed and replaced in the incinerator No of trainings carried out to incinerator operators 	Continuous	KUTRRH management Hospital PHO & Biomedical Engineer	50,000
Waste Management					
Healthcare Waste generated from the health facility	<ul style="list-style-type: none"> Ensure appropriate and adequate segregation of HCW waste at source Ensure appropriate on-site transportation of HCW to Waste treatment area, Ensure good documentation and inventory of waste received from the immediate health facility and other health facilities, 	<ul style="list-style-type: none"> Availability of waste receptacles that encourage waste segregation Appropriate on-site waste transportation trolleys Appropriate waste storage areas 	Continuous	Health facility manager, KUTRRH PHO, Biomedical engineer	200,000

	<ul style="list-style-type: none"> • Appropriate health care waste storage area free from vermins • Ensure efficient treatment of healthcare waste • construction of ash pit for disposal of incinerated ash • Ensure adequate Operation & maintenance of the MWTI 	<ul style="list-style-type: none"> • Trainings on proper HCW management • No open burning of healthcare waste • Final disposal location/ash pit • Records on HCW generated • Records on equipment O & M performed 			
General Health and Safety					
Occupational and public health hazards	<ul style="list-style-type: none"> • Ensure provision and appropriate use personal protective equipment • Install warning and safety signage at the MWTI area • Regular medical check-up for healthcare waste handlers and vaccination against Hepatitis A, B, polio, tetanus and COVID-19, • Provision of appropriate sanitary facilities and water, • Provision of well stocked first aid kits • Undertake awareness creation on OHS to the health care workers and incinerator operators on HCWM, COVID-19 and first aid training • OHS policy strategically displayed • SOPs for incinerator 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 incinerator operators on operation and maintenance of incinerator following the standard SOP's. • Maintenance of accident and incident log book 	<ul style="list-style-type: none"> • PPE provision including visual observations to check on proper use of PPEs, • Warning Signboards • Displayed of OHS policy and SOPs for running the incinerator • Medical check-up reports • Well stocked first aid kit • No. of trainings on health and safety • First aid training records, list of first aiders and those of health and safety committee members. • Statistical records and safety reports • Adequate ventilation at the incinerator shed • Provision of fire extinguishers • Accident and incident logs • Sanitation facilities provided • Records on O&M of incinerator 	Continuous	Proponent, KUTRRH PHO, CLO, biomedical-engineer	1,500,000
Fire preparedness Operation of health facilities and incineration plant	<ul style="list-style-type: none"> • Conduct regular drills on fire emergency response and evacuation. • Conduct regular inspection of fire-fighting equipment. • Provide adequate number of fire-fighting equipment and systems including portable fire extinguishers and hose reels 	<ul style="list-style-type: none"> • Serviced fire fighting equipment • Records of fire drills undertaken • Trained fire marshals • Display fire emergency telephone numbers 	Continuous		

9 CONCLUSION AND RECOMMENDATIONS

9.1 Conclusions

The World Bank - International Development Association (IDA) has granted credit to the Government of Kenya to carry out renovations of two wards to cater for increased capacity for COVID-19 treatment and operationalization of a MWTI of 300kg/hour rating. This is intended to provide for an up to standard COVID-19 treatment centre within the hospital as well as improve on HCWM of wastes generated from the COVID-19 centre and other hospital activities as well as from other HCF located in the surrounding areas of Kahawa Sub-County.

Based on the nature of works in the project as well as magnitude and duration of anticipated environmental and social impacts arising from the implementation and operations of the hospital, the project after screening was rated at the risk category of "High" in accordance with the World Bank and Government of Kenya environmental and social risk rating (EMCA). However, with overall project mechanism put in place to address the project risks, the project has now been rated as substantial according to the World Bank ESF. The renovation of the ICU and HDU to increase capacity of the COVID-19 treatment unit and the operationalization of the MWTI at KUTRRH are likely to have environmental and social impacts. In order to proceed with implementation of this project without adverse impacts on the environment, the project prepared this ESIA to ensure that the construction, renovation and or the implementation of the project is in line with World Bank Environmental and Social Standards as well as other National requirements.

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. As per the above analysis on the aspects of both positive and negative environmental and social impacts of the project development and operations, we, the experts found **NO SIGNIFICANT NEGATIVE IMPACTS** that could pose adverse effects to the extent of barring the proposed project from being implemented assuming the project is designed, constructed/renovated, monitored and operated in compliance with all applicable design and ESHS requirements.

The potential positive impacts include: employment opportunities, additional infrastructure to the hospital, improved medical care for COVID-19 patients, source of income from sale of construction materials, capacity building for the hospital human resource. Possible negative impacts during construction phase include: Interference with the physical setting of the area including the loss of vegetation, increased noise & vibration, air / dust emission, increased waste generation, accidental spillages, increase use and extraction of construction materials, possible encounter with physical cultural resources, OHS risks, spread of communicable diseases and other infections including COVID-19, increase in HIV/AIDS prevalence and other STIs, labour influx, cases of violation of people's rights and gender inequalities, possible cases of conflict and insecurity, sexual exploitation and abuse, cases of work related and community grievances.

Potential impacts during operation phase include: improper HCWM, fire risk, occupational safety and health risks for healthcare workers, air pollution from potential prolonged holding of waste (either treated or untreated), community health risk from the isolation center, occupational health and safety risk to waste handling operators/health workers, increased water use and liquid waste generation, and increased energy use. Other pertinent issues of concerns will largely rotate around management of HCW, protection of workers and the public from such waste. This ESIA report outlines appropriate and cost-effective mitigation measures for the anticipated environmental and social negative impacts such as re-vegetation of open patches of the site, putting in place proper drainage channels for discharge of storm water, rain water harvesting, restricted vegetation clearance to minimize vegetation loss, sprinkling of water on bare/open surfaces to suppress dust. Hazardous medical waste shall be managed by NEMA licensed waste handler. It is important to install lightning arresters on buildings to manage risks of lightning on buildings. Detailed mitigation measures for all the potential impact are summarized on Table 9 (ESMP) and the monitoring options have been suggested on Table 10.

9.2 Conclusion

The identified potential negative impacts of the proposed project could be mitigated with the suggested environmental and social mitigation measures provided. Having considered the data collected, analyzed and collated information that is available, it is the experts' considered opinion that:

- i. The project does not pose any serious environmental and social concerns, other than those of a moderate scale that accompany similar projects;
- ii. The positive impacts 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 urgently needed to address the gaps in medical care especially with respect to improvement in delivery of health services in particular treatment and the management of COVID-19 pandemic including other infectious diseases,
- iv. MoH has put appropriate measures for the management of medical waste in most of health facilities (including KUTRRH). There is need for a robust monitoring and supervisory framework for its service providers contracted to manage medical waste. There should be routine monitoring of medical waste collection, transportation and validation of functionality / operations of disposal sites, and
- v. As such, the project could be allowed to commence, and activities be in compliance with the ESMP and sound environmental and social management practices that are locally and internationally recognized.

9.3 Recommendations

The following are recommended going-forward with the project:

- a. Though the anticipated negative environmental impacts of the project are considered moderate, localized and can be easily mitigated, the ESMP needs to be operationalized to ensure safe and 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 treatment / waste treatment facilities' staff to continue to benefit from continuous capacity building especially on aspects of safety and emergency preparedness.
- d. There should be very close supervision of the MWTI operations by the public health and biomedical departments

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11 APPENDICES

Appendix 1: Copy of NEMA practising certificate for the consulting firm

Appendix 2: The eight components of C-HERP

Appendix 3: Chance Find Procedure

Appendix 4: KUTRRH environmental and social screening checklist

Appendix 5: Code of Conduct for all staff and project workers on Kenya C-HERP project

Appendix 6: Terms and Conditions for Employment

Appendix 7: MWTI repair report

Appendix 8: Layout designs for the IDH and ICU building housing the wards to be renovated

Appendix 9: Ash pit design layout and BQs

Appendix 10: NEMA license of the waste collector

Appendix 11 EHS guidelines for waste treatment facilities (MWTI)

Appendix 12: Minutes of public participation meeting and list of attendants

Appendix 13: Minutes of 2nd consultation meeting – technical consultations

Appendix 14: KUTRRH Land LR No.

11.1 Appendix 1: NEMA License for the Consulting Firm

FORM 7



(r.15(2))

**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/16337

Application Reference No: NEMA/EIA/EL/21308

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: **1/13/2022**

Expiry Date: **12/31/2022**

Signature.....


(Seal)
Director General
The National Environment Management
Authority

P.T.O.



ISO 9001:2015 Certified

11.2 Appendix 2: The Eight Components of C-HERP

The C-HERP project entails seven components as stated below:

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;

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

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;

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

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.

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, e.tc. Further, at this time when people are less likely to go out, donations will fall which endangers the whole system.

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.

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

11.3 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.

11.4 Appendix 4: KUTRRH Environmental and Social Screening Checklist

Annex I: 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.

Sub-project Name	KUTRH
Sub-project Location	Kiambu wunty
Sub-project Proponent	
Estimated Investment	
Start/Completion Date	

Questions	Answer		ESS relevance	Due diligence / Actions	Probing/Observation Notes
	Yes	No			
Does the sub-project involve civil works including new construction, expansion, upgrading or rehabilitation of healthcare facilities and/or waste management facilities?			ESS1	ESIA/ESMP, SEP	
Does the sub-project involve long-term, permanent and/or irreversible adverse impacts (e.g. loss of major natural habitat);	*		ESS1	ESIA/ESMP, SEP	
Does the sub-project involve acquisition of assets for quarantine, isolation or medical treatment purposes?			ESS5		

Questions	Answer		ESS relevance	Due diligence / Actions	Probing/Observation Notes
	Yes	No			
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?			ESS3	ESIA/ESMP, SEP	
Is there a sound regulatory framework and institutional capacity in place for healthcare facility infection control and healthcare waste management?			ESS1	ESIA/ESMP, SEP	Request to see the policies/guidelines, structures
Does the sub-project have an adequate system in place (capacity, processes and management) to address waste?				HASP (Health and Safety Plan)	
Does the sub-project have appropriate OSH procedures in place, and an adequate supply of PPE (where necessary)?				HASP (Health and Safety Plan)	
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;	*		ESS4	ESIA/ESMP, SEP	
Is the sub-project located within or in the vicinity of any ecologically sensitive areas?			ESS6	ESIA/ESMP, SEP	
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?			ESS3	ESIA/ESMP, SEP	
Does the sub-project involve land acquisition and/or restrictions on land use?		✓	ESS5	RAP/ARAP, SEP	Unlikely but probe for presence of title deeds/ownership of the land hosting the civil works-As surety for non-displacement

Questions	Answer		ESS relevance	Due diligence / Actions	Probing/Observation Notes
	Yes	No			
Will the activities affect lands or rights of VMGs or other vulnerable minorities;	*	✓	ESS5	RAP/ARAP, SEP	Check for possible displacements
Does the sub-project involve permanent resettlement or land acquisition?	*	✓	ESS5	RAP/ARAP, SEP	Check for possible displacements
Does the sub-project involve recruitment of workers including direct, contracted, primary supply, and/or community workers?	✓		ESS2	LMP,/SEP	<ul style="list-style-type: none"> • Check whether the facility will contract workers, check for possible recruitment of workers by contractors If there will be equipment installations by supply workers
Does the sub-project have a GRM in place, to which all workers have access, designed to respond quickly and effectively?	✓			SEP/LMP	<ul style="list-style-type: none"> • Check for suggestion boxes, • Ask how workers complaints are handled Other mechanisms (committees, service charter, grievance channels, registers and tools
Does the sub-project involve significant adverse social impacts and may give rise to significant social conflict;	*	✓	ESS1	ESIA/ESMP, SEP	<ul style="list-style-type: none"> • Effects to VMGs • Displacement of people • Exposure to pathogens, radiations and harmful substances
Does the sub-project involve use of security or military personnel during construction and/or operation of healthcare facilities and related activities?	✓		ESS4	ESIA/ESMP, SEP	Check for use of security personnel (Police, Military personnel,, NYS and security guards)
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?		✓	ESS7	Indigenous Peoples Plan/other plan reflecting agreed terminology	Ask for presence of any indigenous-probe for understanding

Questions	Answer		ESS relevance	Due diligence / Actions	Probing/Observation Notes
	Yes	No			
Does the sub-project require Free Prior Informed Consent (FPIC);	*	✓	ESS7	Indigenous Peoples Plan/other plan reflecting agreed terminology	Ask for presence of any indigenous community (Probe for understanding)
Is the sub-project located within or in the vicinity of any known cultural heritage sites?	*	✓	ESS8	ESIA/ESMP, SEP	Probe for presence of cultural heritage/graveyard within the facilities to undertake civil works
Does the project area present considerable Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) risk?		✓	ESS1	ESIA/ESMP, SEP	<ul style="list-style-type: none"> • Check for security reinforcements/fencing • Check for separation of facilities for women and men including washrooms • Check for women/men facilities signages • Lighting system within the facility Separation of male and female accommodation
Is there any territorial dispute between two or more countries in the sub-project and its ancillary aspects and related activities?		✓	OP7.60 Projects in Disputed Areas	Governments concerned agree	
Will the sub-project and related activities involve the use or potential pollution of, or be located in international waterways ¹ ?		✓	OP7.50 Projects on International Waterways	Notification (or exceptions)	

* The exclusion list of the sub-projects. If any of these parameters are "Yes", the sub-project is excluded from financing under the program.

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

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

Conclusions:

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

yes.....

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

Substantial.....

3. Proposed E&S Management Plans/ Instruments:

ESIA/ESMP.....

Certification

Reviewed and approved by			
MoH Environment Specialist		MoH Social Specialist	
Name: Catherine Ndiso		Name: FAMILY KIMUSOP	
Date	Signature	Date	Signature
26-08-2020	C.N	20-08-2020	[Signature]

11.5 Appendix 5: 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 unequivocal 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.

11.6 Appendix 6: 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:

- (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 employment Act, 2007 and NEMA Human Resources manual.

11.7 Appendix 7: MWTI Repair Report




Summary of MWTI repair report by Mwatra Engineering Limited

Item	Findings	Recommendations
Fuel Pump	<ul style="list-style-type: none"> Has failed Has high leakage which makes it dangerous to use because it's risky since it can cause an explosion. Ignition and cables needs replacement since they have failed. 	To solve this it needs replacement and installation to prevent hazards.
Fuel Burner	<ul style="list-style-type: none"> Flame sight glass in the burner was unavailable 	Needs replacement.
Thermocouple	<ul style="list-style-type: none"> 2 thermocouple The thermocouples are faulty 	They need replacement both of them for temperature accuracy
Burner	<ul style="list-style-type: none"> The control box has failed 	Control box needs replacement for the burners to work perfectly and automatically.
Scrubber Chamber	<ul style="list-style-type: none"> In the scrubber chamber there should be castable cement to prevent heat from reaching the scrubber walls preventing it from burning as you can see in the picture They had installed lagging which after sometime burns blocking scrubber tubes. There was installation of a pipe to draw away ash which is inappropriate since ash can't pass through a pipe. The flange cap installed is manual which is relatively dangerous, because one has to open it and remove the ash by use of hands. <ul style="list-style-type: none"> The one installed (flange cap) is causing back firing. It is also time consuming and tiresome. 	<p>There should be castable cement to prevent heat from reaching the scrubber walls</p> <p>The pipe should be replaced by a rotary motor to be installed as a discharge mechanism to draw away ash.</p> <p>Should be replaced to reduce the risk of infections of the workers. The flange cap should be replaced using a rotary motor to help in auto ash/dust removal</p>
Circulatory Chamber	<ul style="list-style-type: none"> After cleaning, unclogging blocked tubes and fabricating the worn out part we have obtained a high efficiency working once it started operating. Initially there was cold water output that cools the circulatory chamber but currently there is super hot water to some extent steam output has been obtained. 	Welded all the 4 corner joints since the chamber was cracking.
T Joint	<ul style="list-style-type: none"> T joint in the scrubber chamber is broken 	Needs replacement
Cyclone Filters Chamber	<ul style="list-style-type: none"> Carbon air filters burnt out The hosepipes from the compressor have ruptured due to clogging Bed materials have been worn out i.e. berl saddles, spiral rings and raschig rings to prevent the column from clogging and also to filter vapour before being released to the atmosphere. 	<p>Should be replaced and installed to filter gases before reaching the carbon air filters chimney</p> <p>Both hosepipe and MS pipes need replacement for efficiency because they work together to clean carbon air filters.</p> <p>Needs replacement</p>
Photocell	The photocell was unavailable	Should be installed to stop working manually and work automatically.
Chimney	The chimney has no foundation	Foundation should be made in order to join with the bottom flange to obtain both Good Height and a good resting area.
Fuel Tank	The plastic level gauge needs to be replaced with a sight glass and its valves.	

11.8 Appendix 8: Layout designs for the HDU and ICU building housing the wards to be renovated




nema
Directorate of Environment and Planning

FORM NEMA /WM/5

FORM II

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

LICENSE TO TRANSPORT WASTE

(r.7)

License No: NEMA/WM/CTW/433
Application Ref No: NEMA/WM/TA/1718

Name : December Waste Services
Address : PO BOX 17952-00500 Nairobi

You are hereby licensed to transport waste to
Kamungo Waste Paper, Chandria Industries, Vee, GN Plastics

(Waste Paper/Polythene Waste)

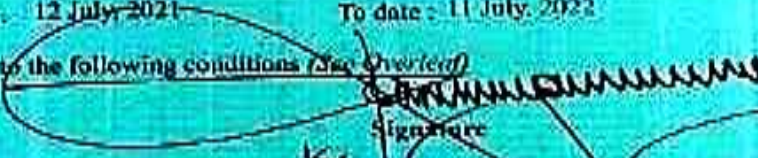
From COUNTRYWIDE

Type and registration number of vehicle: TATA 713 - KIW 855A


This license is valid from date : 12 July 2021 To date : 11 July 2023

This license is granted subject to the following conditions *(See Overleaf)*

Date: 12 July 2021


Signature
Director General
The National Environment Management Authority.

PTO


ISO 9001:2008 Certified

11.11 Appendix 11: EHS Guidelines for Waste Treatment Facilities (MWTF)



EHS Guidelines for
Waste Management f

11.12 Appendix 12: Minutes of Public Participation Meeting

MINUTES FOR THE ESIA MEETING HELD AT KENYATTA UNIVERSITY TEACHING RESEARCH AND REFERRAL HOSPITAL ON 23RD OCTOBER 2020 FOR THE PROPOSED IMPROVEMENT AND UPGRADING OF HEALTHCARE WASTE MANAGEMENT PLANT AT KENYATTA UNIVERSITY TEACHING RESEARCH AND REFERRAL HOSPITAL

MIN1/C-HERP/ESIA/INTRODUCTION

Regulation 17 of the Environmental (Impact Assessment and Audit Regulations, 2003) 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.

The meeting was well attended by the representatives of members of the local communities from Kahawa West Ward; in attendance were the local Community Leaders, Opinion leaders, representatives from the office of the Area Chief, representatives from the Public Health Department, Infectious Diseases Unit, Hospital Community Liaison Officer, Community Health Workers, and the consultants (Environmental and Social experts). The output from consultations were shared with the local community leaders.

The Output of The Public Consultations

The meeting started at 1000hrs by having a site visit for 30 minutes; the current status of the HCW management at the hospital was explained, the underlying challenges in management of HCW that informed the need for the proposed project in the face of the prevailing COVID-19 pandemic. All in attendance were taken through the existing incinerator and the operations of the incinerator explained. The site visit was conducted by the officers from the Public Health Department in conjunction with the officers from the Infectious Diseases Unit. Consultations followed thereafter at the Training Complex.

The consultation session was called to order by the Community Liaison Officer who thereafter handed over the session to the Lead Expert to moderate the discussions and consultations. The Lead expert welcomed in all attendance and led an introduction session whereby all in attendance introduced themselves and the interests represented. After the introductions, the Lead Expert informed all in attendance the importance of attending the meeting and the agenda of the day which was to receive views from all in attendance with regards to the proposed Upgrading and Improvement of the HCW Management Plant.

The PHO opened the consultation session by clarifying that the existing incinerator had not been commissioned and that they were running tests after undertaking maintenance of the incinerator. The PHO informed the meeting that the Incinerator had been lying idle for quite some time and that is why it was being serviced for purposes of making it ready for undertaking incineration of the HCW generated at the hospital. He informed the meeting that the hospital had contracted a private HCW management firm to dispose HCW from the hospital in the meantime.

The site visit and the updates on the status of the HCW management at the hospital was important to inform grounded discussions.

Key Issues Discussed

The consultations dwelt on issues relating to:

- 1) Awareness on the proposed project (Proposed upgrading and improvement of the prevailing Healthcare Waste Management System at KUTRRH);
- 2) Relevant laws and regulations guiding and regulating activities of the subject proposed project;
- 3) Prevailing Environmental and Social Issues
- 4) Proposed Mitigation measures
- 5) Other matters arising
- 6) Acceptance of the proposed project by the project affected persons.

MIN2/C-HERP/ESIA/BACKGROUND TO THE PROPOSED PROJECT

The table below details the outcomes from the consultations.

#	ITEM	Background	Detailed Description
1	Project Awareness	<ul style="list-style-type: none"> Background to the project was done by the PHO and the Lead Expert. The PHO informed the meeting that the ESIA was important to help in Licensing of the Incinerator by NEMA so that the incinerator and the proposed upgrades would be officially commissioned. The lead expert informed the meeting that the proposed project was important from environmental, Social and economic point because it would address challenges and impacts arising from poor disposal of HCW 	<p>-The Lead Expert detailed the proposed upgrading and improvements for the HCW management system. The following proposed improvements will be undertaken in the proposed project:</p> <ol style="list-style-type: none"> Major Repairs and renovations of the existing Incinerator, Construction of secured and sheltered Waste Holding Area, Installation of microwave (Autoclave) for treatment of HCW, Construction of Ashpit Installation of shredder (for glass-based wastes), Construction and equipping of Staff changing rooms, bathrooms, store and office Construction of perimeter fence around the expanded HCW plant Compound (it is important to note that the already existing incinerator is located in a secured compound).
2	Laws and Regulations	<ul style="list-style-type: none"> Laws and regulations regulating the proposed project were highlighted to enlighten all in attendance the legal grounding of the proposed project. 	<ul style="list-style-type: none"> The environmental experts highlighted laws and regulations guiding the implementation of the proposed project. Some of the laws were highlighted that entailed: Environmental Management and Coordination Act (EMCA, CAP 387), Waste Management Regulations (2006), Environmental Impact Assessment and Audit Regulations (2003), Air Quality Regulations (2014), Gender Policy 2011, Sexual Offences Act 2006, Child Rights Act (Amendment Bill) 2014 and National Gender and Equality Commission Act The experts informed the local community that several compliance levels have to be met and the proponent would be issued with the necessary approvals as stipulated in the respective laws and regulations.
3	Status of the HCW management System at KUTRRH	<ul style="list-style-type: none"> The status of the prevailing HCW management system at KUTRRH was highlighted by the Public Health Officer (PHO) 	<ul style="list-style-type: none"> The PHO informed the meeting that the HCW management system entailed all solid wastes and wastewaters generated at the hospital. HCW management system started from points of generation (Labs, Consultation Rooms, wards, Theaters, and all wastes from the hospital the compound), transportation of the HCW within the hospital to the final point of disposal (incinerator). PHO informed the meeting that segregation of wastes is done from the identified sources as guided by HCW management guidelines issued by the MoH and in line with acceptable international standards and this is important because it also assists in the appropriate mode of disposal for the different types of the HCW. The PHO informed the meeting that they were contracting HCW disposal services from NEMA licenced private firm because the incinerator had not been commissioned but the ESIA was one of the study required for licensing of the Incinerator by NEMA. In addition, the PHO informed the meeting that the mandate of the Public Health Department at KUTRRH was strictly within the confines of KUTRRH Hospital and that public Health matters outside the confines of the hospital was the responsibility of Sub-County Public Health Officer.

MIN2/C-HERP/ESIA/ ENVIRONMENT AND SOCIAL ISSUES

#	Environmental/Social Issues	Proposed Mitigation Measure
1	<ul style="list-style-type: none"> Air Pollution (Emissions)-It was observed during the test running of the Incinerator that the smoke from the Incinerator was black, a concern that the community felt should be addressed before the incinerator is commissioned. The PHO informed the meeting that test runs were meant to fine tune the incinerator machine to the acceptable operating standards. 	<ul style="list-style-type: none"> ✓ <i>Making Sure the Incinerator was in good shape all the time (Attained the acceptable standards)</i> ✓ <i>NEMA licensing of the incinerator to ensure it has attained all the set standards</i> ✓ <i>Employing Competent Operator (Trained and qualified)</i> ✓ <i>Contract servicing of incinerator (regular servicing of the machine)</i> ✓ <i>Construction of Ash pit</i> ✓ <i>Air quality monitoring</i> ✓ <i>Retraining the incinerator operators</i> ✓ <i>Fast tracking the proposed project (operationalization of the MWTI and the COVID-19 treatment centre)</i>
2	<ul style="list-style-type: none"> Local Community Benefits-The community felt that there were little 	<ul style="list-style-type: none"> ✓ <i>The hospital management is looking at modalities of how best the</i>

#	Environmental/Social Issues	Proposed Mitigation Measure
	<p>benefits to the local community in terms of outpatient services</p> <ul style="list-style-type: none"> The community was informed that KUTRRH was a level Six Facility under MoH guidelines and that it was strictly meant for referral cases. The community was also informed that local emergency cases were admitted without referrals. 	<p><i>hospital can be of benefit to the local communities. The communities were encouraged to seek outpatient services at the county facilities.</i></p>
3	<ul style="list-style-type: none"> Employment Opportunities-The community felt that the available employment opportunities were not benefiting the local communities as they should. 	<p>✓ <i>The community liaison officer assured the community leaders that the management will continue to strive to ensure that contractors offer the local communities the first preference when recruiting</i></p>
4	<ul style="list-style-type: none"> Bodies and body parts Disposal- The community had fears that bodies and body parts would be disposed at the Incinerator. 	<p>✓ <i>PHO informed the meeting that the incinerator was meant to dispose HCW ONLY.</i></p> <p>✓ <i>Incineration of bodies depending on the will of the deceased or cultural practices was the responsibility of the family/ relatives and is done at the designated cremation centres licensed by the government for that purpose.</i></p> <p>✓ <i>Disposal of unclaimed bodies was done at the designated cemeteries through the set procedures by the government (Legal Process).</i></p> <p>✓ <i>Disposal of body parts and still births was the prerogative of the affected person/ family.</i></p>
5	<ul style="list-style-type: none"> Organic wastes disposal- The community felt that the organic wastes (food leftovers) had residual value and that the community could utilize it for pig farming 	<p>✓ <i>The PHO warned that despite the fact that the organic wastes (food leftovers) are not incinerated but carted away for proper disposal, it is not advisable to reuse the food because it is also contaminated and a huge risk to public health.</i></p> <p>✓ <i>The organic waste should be disposed off accordingly.</i></p>
6	<ul style="list-style-type: none"> Feed Back Mechanism-The community leaders felt that correspondences with the hospital management is key to addressing any matters arising 	<p>✓ <i>The Community Liaison Office is always opened and ready to receive any communication from the community (Indeed some of the community leaders were in regular communication with the Community Liaison Officer)</i></p>
7	<ul style="list-style-type: none"> Community Awareness-Community encouraged more awareness sessions. It was noted that community health officers were always on the ground interacting with the communities and a scheduled annual calendar of activities was being implemented. 	<p>✓ <i>The Community Health Workers were encouraged to continue with the awareness sessions</i></p> <p>✓ <i>The Community Leaders were encouraged to be dedicated trainers of trainers.</i></p> <p>✓ <i>The community was encouraged to utilise the Community Strategy by the government to channel their views/ opinions on several issues affecting the local community.</i></p>
8	<ul style="list-style-type: none"> Incinerator Capacity -The community was concerned that the Incinerator might not have the capacity to handle HCW generated at the Hospital when the hospital shall be operating at full capacity 	<p>✓ <i>The PHO informed the meeting that the incinerator design and projected capacity had been considered before procuring the incinerator and that the Incinerator had extra capacity even to handle HCW from external health facilities.</i></p>
9	<ul style="list-style-type: none"> Security-Incidences of insecurity especially outside the hospital Main Gate (Snatching of phones and valuables by men in motor bikes) The Hospital Staff requested the Local Leaders (Nyumba Kumi) to address the issues in partnership with local security agencies 	<p>✓ <i>Enhanced Security surveillance by all concerned parties (Nyumba Kumi, Local Security Agents)</i></p> <p>✓ <i>Personal precaution while using mobile phones and carrying valuables outside the hospital main gate.</i></p>
10	<ul style="list-style-type: none"> Project Support 	<p>✓ <i>There is full support of the proposed project by all the concerned parties owing to the environmental and social benefits of such a facility to the environment and the community.</i></p>

Summary of the Consultations

The overall conclusions from the consultations led to determination of the following:

- There is total support for the entire project, the proposed project is timely;
- The local community would like to derive more benefits from the hospital in terms of Outpatient services and employment opportunities;
- The local community would like the proponent to ensure that all the necessary measures that will guarantee public and occupation health and safety during the operations of the HCW plant;
- Project activities and operations should guarantee good neighbourhood; and
- There is need to utilize the Community Strategy initiated by government and other stakeholders to address challenges affecting the community.

PICTOGRAPHS



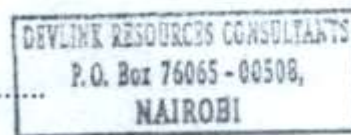
Consultations at the Project site

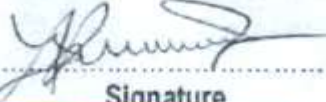
Project Site Visit

Consultations meeting and Project Site Visit

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

Date:



Witnessed by:
 Patrick Kituta (Lead Expert) 
 Signature

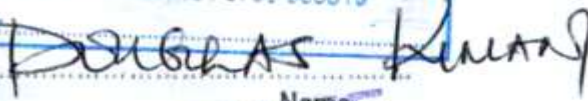

 Date

Witnessed by: Hospital Management Rep: 
 Name




 Sign

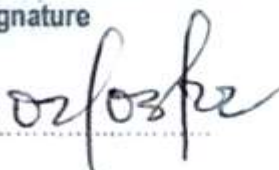
Hospital Stamp: 

Date

Witnessed by:
 Area Chief: 
 Name


 Signature

Chief's Stamp: 
 Date: Sign: 


 Date



Kenya Public Health Centre

Kenyatta University Hospital

A Teaching, Referral & Research Hospital
Office of Training, Research & Innovation

Date: 23/10/2020

Training: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

Department (e.g. Nursing/IT/Finance etc.): PUBLIC HEALTH/ COMMUNITY

S. NO	NAME	DESIGNATION	CONTACTS	EMAIL ADDRESS	ID NO
1.	Margaret Njeri Chege	Forum for Community Environment	0720581998 0724397157	residuary@10dot.com	21744556
2.	Catherine Nkatha Banda	Chairman	0725131347	Bmic@BEN@cosdot.com	10319629
3.	Bernard Bangura ng'ang'o	Members	0725948087	Charity	10863639
4.	Cherily Wangui Jelenge	Members	0722829387		20316736chari
5.	Beth Wangiri Kamiri	Members	072372014	JPWangui	3205380
6.	John Mugambi Mwangi	Members	0722087615		9825804
7.	Stephen Kilesthai Njuguna	Members	0725847680		4877825
8.	Irene Wambui Ndichu	Chairman	0729018009		22219698
9.	Janus Kiiru ng'ang'o	Kamara			6208796

24 *

	NAME	DESIGNATION	CONTACTS	EMAIL ADDRESS	ID No.
10.	Sacktananginyu Kimija		0721577934		13400577
11.	David Mubwadi Mwanoh	Member	0724528636		21082418
12.	Frederick Wanyingi Wajohi		0725565719		30533614
13.	Marian Njoki Mubangi	Member	072573525		21469135
14.	Kenneth Gochieng Odhato	Member	0722906897		13758750
15.	Pauline Muguru Babu	Member	0723454395		14494957
16.	Mothini Githatu	Member	0723996562		3420540
17.	Margaret Nyira	CHU	0721587532		22199027
18.	David Otieno	CHU	0721655519		2933253
19.	Benedict Njiri		0722815832		10895985
20.	John Wamere		0722511254		1963800
21.	Rose Njere	Community Rep	0721929967		Running
22.	Finlay Kanyo	Member	0724694595		2910241
23.	George Mubwira	Member	0721329546		21032441
24.	Stephen Kibelli		0722687615		4877825
25.	Eva Kitui	Public Health	0716671440		3019811
26.	Lucas Mucuna	CHU	0723057091		24597748
27.	Jameson Muthoni	ICC - Coordinator	0731161113		13767891
28.					
29.					
30.					
31.					

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11.13 Appendix 13: Minutes of 2nd consultation meeting – technical consultations

MINUTES FOR THE TECHNICAL ESIA MEETING HELD AT KENYATTA UNIVERSITY TEACHING RESEARCH AND REFERRAL HOSPITAL ON 19TH JULY 2021 FOR THE PROPOSED RENOVATION OF EXISTING WARDS IN THE HIGH DEPENDENCY UNIT (HDU) AND INTENSIVE CARE UNIT (ICU) BUILDING TO CATER FOR COVID-19 TREATMENT AND OPERATIONALIZATION OF A MEDICAL WASTE TREATMENT INCINERATOR AT KENYATTA UNIVERSITY TEACHING RESEARCH AND REFERRAL HOSPITAL

In attendance

1. George Muthoka, ESIA Experts Team Leader
2. Patrick Kituta, ESIA Lead Expert
3. Alice Abuya, Social Safeguards Expert
4. Felix Karani, Hospital Public Health Officer (PHO)
5. Eng. John Wakahora, Hospital Engineer
6. George Muchiri, Deputy Hospital PHO
7. Evans Osiemo, Incinerator Operator
8. James Mulwa, Incinerator Operator

Agenda

- i. The discussion to change the site from the proposed training research and innovations building to two wards located at the HDU and ICU building.
- ii. Operationalization of the MWTI

MIN1/19/07/2021/C-HERP/ESIA/INTRODUCTION

The meeting was called to order at 10am by the ESIA experts team leader. He explained that the meeting was requested to discuss what informed the change of the building to be renovated to cater for COVID-19 treatment from TRI to the two wards located at the HDU and ICU building. He also reported that the ESIA experts needed to understand the level of operationalization of the already installed MWTI at the hospital.

MIN2/19/07/2021/C-HERP/ESIA/CHANGE OF THE BUILDING TO BE RENOVATED TO CATER FOR COVID-19 TREATMENT FROM TRI TO THE TWO WARDS LOCATED AT THE HDU AND ICU BUILDING

The hospital PHO started by stating that the TRI complex was not designed to provide hospital services, but teaching and research services. He stated that after much internal consultation, it had been realized that it would be very expensive to renovate the TRI complex to the standards of enabling it be utilized in the provisions of hospital services. It had also been discovered that oxygen plant was too far from the TRI complex; hence channeling oxygen to it would have been a nightmare. According to the PHO, it was also downing on the hospital management that the predicted number of COVID-19 patients may not be as high as previously thought; hence the need of 440 ICU beds may not be necessary any more considering that some COVID-19 patients are being management from their homesteads. Therefore, a lesser number of 30 ICU beds were thought to be appropriate.

On the other hand, the two wards located at the HDU and ICU building were thought to be cheaper in renovating them to specialized COVID-19 treatment centre given that they had been constructed in design meant for hospital services provision. The wards were already fitted with provisions for vital supplies such as oxygen and negative pressurization system. Also considered in selecting the two wards was that they were already fenced off with lockable gates fully equipped with gate keeper cubicles and that they were very close to the oxygen generating plant. All the paths around the wards are paved, all the way to the MWTI site, meaning that waste transportation for treatment would be easy.

MIN3/19/07/2021/C-HERP/ESIA/ OPERATIONALIZATION OF THE MWTI

The Deputy PHO explained that the idea of acquiring and installing a medical waste treatment microwave (MWTM) had been dropped after considering the investment already done in the purchase of the already

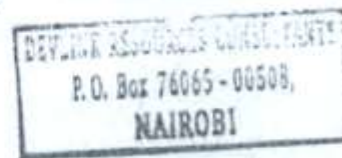
installed MWTI. He went ahead and reported that after studying what is involved in the operations of a MWTM, which was deemed to be more expensive compared to operating a MWTI, the hospital management had settled on operationalizing the MWTI. Given that the hospital was generating an average of 700kg to 1000kg of waste per day, the installed MWTI was also considered to be adequate if operated for at least 10hours each day.

The Hospital Engineer took over and informed the meeting that this informed the test-running of the MWTI. The Engineer went ahead to report that the test running of the MWTI made the hospital realize that there was need to construct a standard ash pit and that designs of the same were at an advanced stage. He clarified that the installed MWTI had a rating of 100kg/hour and that had been fitted with a scrubber. The Engineer reported that the progress in realizing full operationalization of the MWTI was good, but was expecting that funds to construct the ash pit will be availed soonest possible to enable proper disposal of the ashes.

On seeking clarification on how the ashes from the test running were being disposed, the ESIA Experts were informed by the Deputy PHO that they being picked together with the general waste by a newly contracted waste collector, a Youth Group called December Waste.

On enquiring about the challenges so far witnessed in the operation of the MWTI, one of the operators reported that the MWTI building lacked a bathroom and a toilet. The operators also reported that there cases of people climbing over the perimeter wall next to the MWTI and vandalize some equipment vital for the smooth operation of the MWTI, thus there was need to either fit it with a razor wire or be provided with dedicated security, especially during the night. The ESIA Experts implored upon the Engineer to ensure that construction of the ash pit came with the provision for a bathroom and toilet to serve the MWTI.

MIN4/19/07/2021/C-HERP/ESIA/CLOSURE OF THE MEETING
 There being no other business, the meeting was closed at 1230pm



Minutes taken by: [Signature]
 Patrick Kituta: Date:

Witnessed by: [Signature]
 George Muthoka (ESIA Experts Team Leader)
 Signature Date

ESIA Consultant's Stamp:
 Witnessed by:

Hospital Representative: [Signature]
 Name
 Signature
 Hospital Stamp:
 Date 01/03/2022



