Government of the Republic of Malawi

Ministry of Health

**EBOLA PREPAREDNESS PLAN**

Environmental and Social Management Plan for the proposed Construction of an Ebola Virus Diseases Quarantine Centre at Mwanza District Hospital

05 May 2016
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<tr>
<td>DPPD</td>
<td>Department of Policy and Planning Development</td>
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<tr>
<td>DEHO</td>
<td>District Environmental Health Officer</td>
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<tr>
<td>EHO</td>
<td>Environmental Health Officer</td>
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<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
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<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
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<tr>
<td>EVD</td>
<td>Ebola Virus Disease</td>
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<tr>
<td>GoM</td>
<td>Government of Malawi</td>
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<tr>
<td>IPC</td>
<td>Infection Prevention Control</td>
</tr>
<tr>
<td>KCH</td>
<td>Kamuzu Central Hospital</td>
</tr>
<tr>
<td>MGDS II</td>
<td>Malawi Growth and Development Strategy II</td>
</tr>
<tr>
<td>MNREM</td>
<td>Ministry of Natural Resources, Energy and Mining</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NCIC</td>
<td>National Construction Industry Council of Malawi</td>
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<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
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<tr>
<td>NEAP</td>
<td>National Environmental Action Plan</td>
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<td>NCE</td>
<td>National Council for the Environment</td>
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<td>NEP</td>
<td>National Environmental Policy</td>
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<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
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<tr>
<td>TCE</td>
<td>Technical Committee on the Environment</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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ACKNOWLEDGEMENTS

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EXECTUTIVE SUMMARY

Introduction

The Government of Malawi, with support from the World Bank, is implementing Ebola Virus Disease (EVD) preparedness activities which include infection control interventions, particularly provision and use of Personal Protective Equipment (PPEs); and construction of EVD quarantine and/or treatment centres. The project is being implemented in selected border districts and referral hospitals. Mwanza is one of the border districts whereby an EVD quarantine centre will be constructed at Mwanza District Hospital.

The project is important for Malawi as during the Ebola outbreak of 2014, worst hit countries were those with a weak health-care system and poor infrastructure, thus unprepared. In addition, with the Ebola threat still existing in other countries, Malawi is at risk of an Ebola Virus Disease outbreak due to migration.

Objectives of the ESMP

The proposed construction of the Mwanza EVD quarantine centre is likely to result in environmental and social impacts, hence this ESMP. The ESMP is in line with the World Bank’s category B projects, within which this project is classified. The ESMP is also prepared in response to the “Environment Management Act, 1996” and the “Guidelines for Environmental Impact Assessment (EIA) for Malawi, 1997”, which recommend an ESMP for projects with moderate Environmental and Social Impacts. The main objective of this ESMP is to provide measures to minimize adverse effects on the biophysical and socio-economic environment during construction and operation of the EVD quarantine Centre in Mwanza.

Methodology for the study

In order to predict the impacts of construction of the EVD quarantine centre at Mwanza District Hospital, field investigations were conducted at and around the construction site to appreciate the extent of impact of the project activities and determine their environmental and social footprint. The field investigations were also made to collect biophysical and socio-economic data and hold discussions with relevant stakeholders and surrounding local communities. In addition, literature review was conducted including the review of the World Health Organisation Ebola Guidelines for Environmental Management and Infection Control in Ebola Units.

Impacts of the Project

Potential environmental and social impacts for the Mwanza EVD centre will emanate from the project activities during the construction, operation and maintenance and decommissioning phases. The following are identified as potential positive impacts of the project:

i. Increase in knowledge and skills in infection control and prevention
ii. Employment opportunities
iii. Acquisition of skills in construction of prefabricated buildings
iv. Income to material/equipment suppliers
v. Increased rooms for medical services

On the other hand, potential negative impacts that are likely to occur include:

i. Temporary loss of power to some parts of the district
ii. Accidents to workers, staff and public on construction sites
iii. Noise disturbances
iv. Increased costs for electricity
v. Dust nuisance
vi. Waste generation
vii. Removal of trees
viii. Fear of being infected
ix. Increased air pollution from incineration of wastes
x. Water pollution
xi. Occupation safety and health risks
xii. Air, land and water contamination
xiii. Risk of infection from contaminated equipment

Management of the Impacts
In view of the negative impacts outlined above, this document has presented an environmental and social management plan (ESMP) in Chapter 6, which outlines mitigation measures that must be implemented by the Ministry of Health and other key stakeholders in order eliminate or mitigate the impacts on the socio-economic environment. A monitoring plan, which outlines responsibilities for the Ministry of Health and other key stakeholders; along with monitoring verifiable indicators for each of the mitigation measures, has been provided in this ESMP. It is expected that if the ESMP is effectively and efficiently implemented, the negative impacts will be reduced to low or will be eliminated; such that the Mwanza EVD quarantine centre project can be implemented sustainably.
CHAPTER 1 INTRODUCTION

1.1. PROJECT BACKGROUND

Ebola virus disease (formerly known as Ebola haemorrhagic fever) is a severe, often fatal and highly infectious disease. The virus is transmitted to people from wild animals and spreads in humans through direct contact with the blood, body fluids and tissues of infected people. Severely ill patients require intensive supportive care. During an outbreak, those at high risk of infection are health workers, family members and others in close contact with the sick and deceased.

The recent Ebola Virus Disease (EVD) outbreak started in March 2014 in the West African countries of Liberia, Guinea and Sierra Leone. A few cases were also reported in Italy, Mali, Nigeria, Senegal, Spain, United Kingdom and United States of America as a result of migration. Since the outbreak began, there have been approximately 28,602 cases of the virus, causing 11,301 deaths (WHO, 2016). The worst hit countries were Liberia and Sierra Leone due to a weak health-care systems and a lack of infrastructure. The countries have been declared Ebola Free but enhanced surveillance is continuing.

Ebola preparedness and response planning has been in effect since shortly after the outbreak in Western Africa in 2014. Ebola infection prevention and control training has been administered across the entire country based on World Health Organization (WHO) guidance. Training included nurses and clinicians (doctors/clinical officers) and focused on clinical management of Ebola patients based on WHO training materials. A training-of-trainers program was also established by the WHO in Brazzaville, Congo to provide a foundation on which to administer more regular Ebola response training.

With regards to Ebola waste management, specific Infection Prevention and Control (IPC) is built on already existing hospital IPC infrastructure. There is an IPC Unit in the Ministry of Health and the National Focal Officer is part of the team of Trainers on Ebola.

Ebola response equipment is also already in place at all the hospitals where EVD treatment centres are being constructed as part of this project. This includes vehicles (ambulances, double cabin 4X4 utility vehicles and motor cycles) washing machines, patient beds, mattresses and blankets. The different supplies and logistics necessary for IPC personal protective equipment (PPEs - coveralls, aprons, N-95 mask, gumboots, goggles, etc) have also been supplied to all district hospitals.

According to WHO, the introduction of an EVD case into unaffected countries remains a risk, as long as cases exist in any country. With adequate preparation, however, such an introduction can be contained through a timely and effective response. Therefore, the Government of Malawi (GoM), with support from the World Bank, is implementing EVD preparedness activities, which comprise construction of EVD quarantine/Treatment Centres and Infection Control Interventions.

The EVD quarantine centres being proposed at Karonga, Dedza, Mchinji and Mwanza Districts are inside the fences of the respective District Hospitals. In these locations, the major activity will be screening and isolation of suspected cases. Treatment for confirmed cases will be provided at the referral centres to be constructed in the major cities of Malawi – Lilongwe (the capital city), Blantyre and Mzuzu. In Lilongwe the EVD Treatment Centre will be at Kamuzu Central Hospital (KCH). In Mzuzu the Centre will be at Mzuzu Central Hospital and in Blantyre the facility will be at an undeveloped site owned by the government, along the M1 road after Kameza Roundabout, near the Kamuzu College of Nursing complex.

Karonga, Mwanza, Mchinji and Dedza are border districts. Karonga borders with Tanzania to the North of Malawi; Mwanza boarders with Mozambique to the east; and Mchinji and Dedza border with Zambia and Mozambique to the west of Malawi. A map showing the districts for the EVD quarantine and/or treatment centres is provided in figure 1.1.
Figure 0.1: Map of Malawi showing the districts for the proposed EVD Centres
1.2. NATURE OF THE PROJECT

EVD preparedness activities for Malawi aim to develop infrastructure and strengthen the health-care system in readiness of an outbreak. The activities started during the recent outbreak in East Africa. For the projects in Malawi, the World Bank is supporting the following two components:

**Component 1:** This Component will focus on Infection Control Interventions, specifically provision and use of Personal Protective Equipment (PPEs). Under this component, health-care workers will be trained in the use of PPEs, provision of care and treatment to Ebola patients, infection prevention and control and waste management. This component will also provide $20,000 for each of the seven districts where the project’s Ebola component is being implemented to increase capacity for district health authorities and the community to manage infectious disease response, including Ebola. This includes developing and implementing training of trainer programs with district health authorities where the EVD treatment centres are being constructed. Front-line staff are also being recruited and trained as part of this effort to investigate suspected cases, provide early warning and community level response. The community will also be targeted with social behaviour change communication programs to increase knowledge, shift attitudes and cultural norms and produce changes in a wide variety of behaviours. These activities are separate from the project’s Health Care Waste Management Plan (HCWMP).

**Component 2:** Construction EVD quarantine/treatment centres.

**Seven** Ebola Virus Disease quarantine and/or treatment centres are proposed to be constructed in Karonga, Mzuzu, Dedza, Mchinji, Mwanza, Lilongwe and Blantyre districts. Karonga, Dedza, Mchinji and Mwanza have been proposed because they are border districts. In these districts, health-care workers will be working with immigration officers at the borders to identify suspected cases and isolate them in the quarantine centres, in addition to surveillance of cases within the districts. When a suspected case is confirmed to be Ebola infected, the person will be referred to Blantyre, Lilongwe or Mzuzu EVD treatment centre. In Lilongwe the EVD treatment centre is being constructed at Kamuzu Central Hospital (KCH) by the Ministry of Health (MoH).

The scope of the project for all the sites, except Lilongwe include construction of the EVD pre-fabricated structure on a concrete base, construction of septic tanks, installation of incinerators, construction of ash pits and the construction of a safety fence around the treatment centre. For the Lilongwe EVD centre, the scope of work includes construction of a septic tank and an ash pit in addition to provisions for Ebola centre furniture.

As a requirement for all World Bank supported infrastructure development projects; and in consideration of the highly infectious nature of EVD, the project was screened for potential environmental and social impacts. The results showed that the construction activities of the EVD quarantine and/or treatment centres and the activities in the operational and maintenance phases will have moderate Environmental and Social Impacts. Therefore project was assigned to the World Bank’s category B projects. Hence, preparation of the Environmental and Social Management Plans (ESMPs) was recommended for all the seven districts.
sites. The screening and the preparation of the ESMPs are also in line with the “Guidelines for Environmental Impact Assessment (EIA) for Malawi, 1997”.

1.3. OBJECTIVE OF THE ESMP
The main objective of the ESMP is to provide measures to minimize adverse effects on the biophysical and socio-economic environment; during construction and operation of the Ebola Virus Disease (EVD) quarantine centre for Mwanza District. The ESMP predicts and describes impacts of the project; and outlines the enhancement and mitigation measures to be implemented by Ministry of Health and other key stakeholders. These impacts were determined through investigations carried out on and around the site earmarked for erection of the pre-fabricated Ebola quarantine and treatment centres; as well as key stakeholder consultations and input from the surrounding communities.

1.4. SCOPE OF THE ESMP STUDY
This ESMP is specifically for the identification of impacts related to construction and operation activities at the Ebola quarantine centre at Mwanza District Hospital; focusing on waste management during operation and maintenance phases. Preparation of the ESMP included the following activities:

- review of project reports, relevant literature and government regulations;
- identification and analysis of potential environmental and social impacts, which the project activities are likely to trigger and generate within and around the project site;
- determination of appropriate mitigation measures to minimize undesirable effects resulting from the proposed development;
- determination of costs of environmental management activities;
- preparation of an ESMP, which details the negative effects of the proposed project activities on the biophysical and socio-economic environment; and
- recommendations for future environmental protection during operation and maintenance of the EVD quarantine centre.

1.5. ASSESSMENT METHODOLOGY FOR THE ESMP
The following assessment methods were employed in order to prepare the ESMP:

a) field surveys to the construction site for the Mwanza EVD quarantine centre, to appreciate the magnitude of project activities and determine their environmental and social footprint. The surveys facilitated the collection of biophysical and social data, and discussions with relevant stakeholders and surrounding communities;

b) surveys of the waste management facilities at the hospital (septic tanks, incinerators, placenta and ash pits; and solid waste disposal sites) to appreciate the existing waste management and infection control practices;

c) literature review on the policies, regulations and environmental standards for the ESMP preparation. The purpose of reviewing such documents was to develop a comprehensive and guided policy and legal framework so that the ESMP is responsive and aligned with government’s and financiers’ policies;

d) interviews with key stakeholders including Mwanza District Hospital Officer, District Medical Officer, Environmental Health Officer and other officers and support staff at the hospital;
e) a meeting with key informants from the surrounding community; affected directly or indirectly by the project; and
f) review of socio-economic and the health-care systems data and prevailing national regulations, policies and standards.
CHAPTER 2 POLICY AND LEGAL FRAMEWORK FOR THE PROJECT

2.1 POLICIES

In Malawi, the overarching legislation is the 1996 Environment Management Act, currently under revision. The Malawi Guidelines for Environmental Impact Assessment were developed in 1997 and are also under revision. The Environmental Affairs Department determines whether an ESIA is required or not, for all projects. The Technical Committee on the Environment (TCE) reviews environmental impact assessment reports and makes recommendations to the Director, who reports to the National Council for the Environment (NCE). The NCE considers the recommendations and advises the Minister for approval and issuing the environmental certificate for the project to proceed. The Malawi national policies relevant to the activities for EVD preparation include:


The Constitution of the Republic of Malawi is supreme over any legal policy or Act in Malawi. Any Act of Government or any law that is inconsistent with the provisions of this Constitution shall, to the extent of such inconsistency, be invalid (Section 5). Hence the policies and legislation, relevant to the project activities have to be in line with the constitution.

In relation to the project, section 13 (c) dictates the provision of adequate health-care, commensurate with the health needs of the Malawian society and international standards of health-care. This is what the project as well as management of medical waste for the EVD aim to achieve. The proposed project must help improve rural life (section 13e).

Sections 13 (d) defines the role of the State as to manage the resources responsibly in order to prevent degradation of the environment, provide a healthy living and working environment for the people of Malawi, accord full recognition to the rights of future generations by means of environmental protection and sustainable development of natural resources and biodiversity of Malawi.

The proposed project at Mwanza District Hospital must sustainably safeguard the rights to a healthy living environment and protection of natural resources by ensuring that adverse impacts (particularly from medical wastes) on people and natural resources are avoided; and that mitigation measures are implemented for those impacts that cannot be avoided.

2.1.2 Malawi Growth and Development Strategy (2011 – 2016)

The Malawi Growth and Development Strategy II (MGDS II) is a decisive and strategic single reference document to achieve wealth creation through sustainable economic growth and infrastructure development. It acknowledges that a healthy population is key to increased productivity and sustainable economic growth. The following challenges facing the health sector are highlighted in the MGDS II: prevalence of preventable diseases, high mortality
rates, high prevalence of HIV, high incidence of malaria cases, high incidence of TB cases, limited access to maternal health services, low institutional capacity and inadequate supply of essential drugs and health infrastructure.

The project will improve infrastructure in readiness for EVD and improve capacity in infection control and provision of health interventions. All these are in line with the MGDS II.

2.1.3 The National Environmental Policy (2004)

The National Environmental Policy (NEP) developed in 1996 and revised in 2004 advocates for sustainable social and economic development through sound management of the environment and natural resources. Areas of priority include efficient utilization and management of natural resources; through involvement of the private sector, NGOs and communities for sustainable environmental management. The policy empowers communities to protect, conserve and sustainably utilize the nation’s natural resources and advocates for enhancement of public awareness and promotion of public participation.

In line with the requirements of the NEP, the proposed project has included participation of the local communities in the identification of potential impacts and development of appropriate mitigation measures.


The National Environmental Action Plan (NEAP) of 1994, updated in 2002, provides a framework for integrating the environment into all socio-economic development activities of the country. It documents and analyses major environmental issues and measures to alleviate them; promote sustainable use of natural resources in Malawi; and develop an environmental protection and management plan. The NEAP identifies the following as key environmental issues to be addressed, in relation to the proposed project: soil erosion, water resources degradation, air pollution and climate change. The NEAP also outlines actions to be undertaken to ensure adequate environmental protection. Hence the project must aim to protect the environment by avoiding as many of the significant impacts as possible in the first place; and where this is not possible, mitigation measures are to be implemented through management plans and monitoring has to be done effectively.

2.1.5 The National Water Policy (2005)

The overall goal of the National Water Policy 2005 is to provide an enabling framework for sustainable management and utilization of water resources, to provide water of acceptable quality and in sufficient quantities; and to ensure availability of efficient and effective water and sanitation services for every Malawian. In line with this policy, the project developers and administrators must: advocate for efficient utilization and management of water resources; participate or support efforts towards water resources conservation, harvesting and protection; ensure and promote proper management and disposal of wastes; properly
dispose material that can pollute water resources; promote public awareness on guidelines and standards for water quality, public health and hygiene as well as pollution control.

2.1.6 Guidelines for Environmental Impact Assessment (EIA), 1997

The EIA Guidelines of 1997 outline the process for conducting ESIA to ensure compliance with the ESIA process as required in the Environment Management Act 1996. The Guidelines contain a list of prescribed projects for which ESIA is mandatory and those that may require an ESIA; hence they assist in environmental screening. The Guidelines require that no licensing authority issues any license for a project unless the Director of Environmental Affairs (DEA) has given consent to proceed, on the basis of a satisfactory ESIA or non-requirement of an ESIA. The EVD quarantine centre for Mwanza is being developed within the fenced and existing hospital premises. Hence it is an addition to the existing buildings and will comprise a pre-fabricated structure on a small area of land. An ESIA is not necessary in the case of this subproject.

2.1.7 National Construction Industry Policy, 2015

Construction of EVD quarantine centre triggers the Construction Industry Policy, whose broad policy goals include to promote environmental sustainability in implementation of construction projects. In accordance with the policy goal, project implementers must ensure that the contractor protects the environment, in line with national and international policies for environmental sustainability. Other focus areas include disaster risk management; occupational health and welfare; gender; and HIV and AIDS.

2.1.8 Infection Prevention and Control Policy (2006)

This policy was formulated to guide health facility operators in development and implementation of infection prevention and control programs. It emphasises infection prevention and control programs at various levels of health-care delivery system for the public and private sectors. The policy also stipulates that all health-care facilities in Malawi shall have an active IPC program in place; aimed at promoting IPC practices and surveillance focusing on clients, patients, health-care personnel and the environment. Infection control measures to be enforced in the event of EVD must be in line with the existing infection prevention and control programs in the respective hospitals.

2.1.9 National Sanitation Policy (2007)

The policy stipulates the need for delivery of improved sanitation services in Malawi. Some of the strategies for accomplishing this objective include: (1) providing adequate wastewater disposal facilities at all wastewater generation points and (2) ensuring adequate provision of wastewater treatment and disposal facilities for all new piped water supply connections. One of the specific goals in the National Water Policy (NWP), is to ensure water of acceptable quality for all needs in Malawi. Wastewater and solid waste will be
generated in the EVD quarantine centre. The Ministry of Health must therefore ensure that there are adequate wastewater disposal facilities.

2.1.10 Decentralization Policy 1998

The Decentralization Policy was adopted in 1998 to:

- Devolve administration and political authority to the district level;
- Integrate governmental agencies at the district and local levels into one administrative unit, through the process of institutional integration, manpower absorption, composite budgeting and provision of funds for the decentralized services;
- Divert the centre of implementation responsibilities and transfer these to the districts;
- Assign functions and responsibilities to the various levels of government; and
- Promote popular participation in the governance and development of districts.

Through the Decentralisation Policy, some of the roles of the authority at district level are to implement or facilitate development projects; to ensure development projects in their area are implemented in a sustainable manner; and to mobilize masses for socio-economic development at the local level. Therefore, for effective implementation of the project, the MoH must work closely with the Mwanza District Council in the sub-projects’ implementing area. The Decentralisation Policy also provides for provision of environmental services such as refuse disposal, sewage removal and disposal, environmental reclamation, and environmental education. MoH must use the existing environmental services where they are not in capacity.

2.1.11 Revised Decentralized Environmental Management Guidelines, 2012

The Decentralized Environmental Management Guidelines (DEMG) were adopted in 2012 to address gaps and inconsistencies from other previous guidelines including the DEMG, 2002 and help ensure that Councils include emerging and critical environmental issues in the preparation of district plans and actions. The DEMG aims at guiding stakeholders to manage the environment and natural resources in a sustainable manner.

In line with the Decentralization Policy, the DEMG promotes local level environmental management, including planning, implementation, monitoring and evaluation.

2.1.12 Malawi Standards (MS) 615: 2005: Waste within health-care facilities, handling and disposal (code of practice)

This standard provides criteria for segregation, collection, movement, storage and on-site disposal of waste within health-care units and biological research facilities, among others. The standards must be observed at the EVD Quarantine Centre. The hospital incinerators are being procured by the MoH in accordance with established international standards and no permits are required to have them installed or operated.

2.2 LEGAL FRAMEWORK
2.2.1. The Environment Management Act (1996)

The Act is the legal basis for protection and management of the environment; and the conservation and sustainable utilization of natural resources. Section 24, specifies the types and sizes of activities that require an ESIA before implementation. The Act further outlines the ESIA process to be followed in Malawi; and requires compliance with the process. Non-compliance with the ESIA requirements is an offence and attracts penalties.

The Act also recognises that improper waste disposal can impact various environmental and social resources and therefore regulates the management, transportation, treatment and recycling; as well as safe disposal of waste. The project, therefore, has to be implemented in an environmentally responsible manner to ensure protection of the environment and sustainable utilization of natural resources.

2.2.2. Public Health Act 1966

The Public Health Act 1966 seeks to preserve public health through the following provisions relevant to the project:

- Parts III, IV, V, VI and VII discuss infectious and epidemic diseases and how to handle them. The Act dictates notifying the Ministry of Health, when diseases such as T.B., Cholera and Measles are identified. A full list of notifiable diseases is presented in Part III. Medical personnel, project managers and family members have to follow the provisions given in the Act, which among others include isolating the patients and allowing medical personnel to attend to the patients.
- Part IX of the Act relates to sanitation and prohibited nuisances. Contractors have to ensure that there are sanitary structures; vehicles and that any other materials used are not in a state that can cause accidents; machine smoke cannot cause injuries to health; and that all material defined as nuisance are not in the work place.
- Part X has provisions for conservancy; sewerage and drainage; and encourages new buildings to have sewage systems, either private or public (connecting to the local authority sewerage). The Act also guides the protection of sewerage systems by preventing the throwing or emptying of waste that may injure the sewer, affect free flow of contents or affect treatment of sewage.

The provisions of the Public Health Act are to be followed and any deviation from the Act is punishable by fines and imprisonment. The Act gives the local authorities the right to inspect any premises for compliance with the Act.

2.2.3. The Water Resources Act (2013)

The Water Resources Act of 2013 supersedes the 1969 Water Resources Act and aims at improving on already existing water resources management efforts in the country. The Act is administered by the Water Resources Authority under the Ministry of Agriculture, Irrigation and Water Development. The Act requires any developer discharging wastewater
(effluent) into surface water ecosystems to have an “Effluent Discharge” permit. One of the conditions in the permit is the need to comply with discharge quality limits for effluent, in accordance with applicable Malawi Standards or any relevant international standards.

2.2.4. Occupational Safety, Health and Welfare Act, 1997

The Occupational Safety, Health and Welfare Act has provisions for the registration of a workplace and the regulation of the conditions of employment in workplaces; with regard to the safety, health and wellbeing of employees. The Act provides for inspection of plant and machinery, for the prevention of accidents in the workplaces, including government establishments and operations, as well as building and civil engineering construction works (Section 5). It requires that employees are provided with appropriate protective clothing and equipment to prevent accident and injury.

The project will comply with the Occupational Safety, Health and Welfare Act. Workers will have to be provided with appropriate protective clothing to prevent accidents related to the construction and operation functions; and breathing masks, ear muffs and goggles where they will be exposed to potential risks and offensive substances; as required by Sections 58, 59, 60.

2.2.5. National Construction Industry Act, 1996

The Act provides for the establishment of the National Construction Industry Council of Malawi (NCIC), for the promotion and development of the construction industry, registration of persons engaged in the construction industry in Malawi, co-ordination of training of persons engaged in the construction industry and general matters incidental thereto. The NCIC is responsible for regulating the construction industry in Malawi through among others: registering consultants and construction firms, standardising quality control, codes of practice, procurement process; and legal contractual procedures in liaison with other organisation. In accordance with the Act, the NCIC must be involved in identifying the contractors, ensuring that a quality contract is in place, resolving conflicts between contractor and client and ensuring that quality structures are developed.

2.2.6. The Local Government Act (1998)

The Local Government Act was enacted to further democratic principles, accountability, transparency and participation of the Malawian people in the decision making and development process. According to the Act, District Councils have the mandate to: promote infrastructure and economic development (Section 6 (c)); establish, maintain and manage services for the collection, removal and disposal of solid and liquid waste (second schedule 2(a). The construction and operation of the EVD Quarantine Centre will generate both solid and liquid waste; hence there is need for the developer and contactors to work with the relevant district councils in waste management and disposal in the project areas, in line with the provisions of the Act. During the operation phase medical and domestic wastes will be
generated. It will be important to involve the respective district councils in the managing of these wastes.

The Local Government Act also provides for local governance structures through which this Environmental and Social Management Plan must be implemented. These include:

- The District Executive Committee (DEC), which is responsible for implementation of all aspects of the District Development Planning System (DDPS).
- The District Environment Sub-Committee (DESC), which is the focal point on issues of the environment. It acts as a multi-disciplinary forum for environmental management and comprises environmental and natural resources management sector district officers. Some of the functions of the DESC include appraising micro-projects and facilitating their development; conducting awareness campaigns on environmental and natural resources management; and developing capacity on sustainable environmental management at community level so that issues of environment are integrated into decision-making process and planning systems.

2.3 ADMINISTRATIVE FRAMEWORK

The mission of the Ministry of Health (MoH) is to raise the level of health of all Malawians by reducing incidences of illness and death of the population. To achieve this, the major objective of MoH is to deliver health services and disseminate health information to the general public. The MoH has the directorates of Administration, Finance, Technical Support Services, Planning and Policy Development, Clinical Services, Nursing Services, Reproductive Health, Physical Assets Management, Pharmaceutical Services and Preventive Health Services (PHS); and a number health institutions throughout Malawi.

The health institutions are categorised into referral (major) hospitals, district hospitals, health centres and clinics. MoH is headed by the Minister of Health who handles policy issues, while operational issues are handled by the Principal Secretary. At district level, there is the District Health Officer (DHO) who is responsible for effective and efficient delivery of quality health services in the district and the District Medical Officer (DMO) in charge of medical services.

Construction activities for the Mwanza EVD quarantine centre are being implemented by the Department of Planning and Policy Development (DPPD) in the MoH, working hand in hand with the Ebola Coordination Unit under the directorate of Preventive Health. Management of the EVD quarantine centre during the operation phase will be done by the District Health Office, together with the Local Council and with assistance from the Ebola Coordination Unit.

2.4 THE WORLD BANK SAFEGUARD POLICIES

The World Bank has keen interest in protection of the environment, for investment projects they support, in line with its ten environmental safeguards policies. These policies provide guidelines, aimed at preventing and mitigating undue harm to people and the environment, when implementing development projects.
The environmental safeguard policies, which provide a platform for the participation of stakeholders in project design and implementation, are:

a) Environmental Assessment (OP/BP 4.01)
b) Forests (OP/BP 4.36)
c) Involuntary Resettlement (OP/BP 4.12)
d) Indigenous Peoples (OP/BP 4.10)
e) Safety of Dams (OP/BP 4.37)
f) Pest Management (OP 4.09)
g) Physical Cultural Resources (OP/BP 4.11)
h) Natural Habitats (OP/BP 4.04)
i) Projects in Disputed Areas (OP/BP 7.60)
j) Projects on International Waterways (OP 7.50)

This project triggers OP 4.01 on Environmental Assessment. This is because moderate environmental and social impacts are anticipated, since the construction works and waste management activities will be primarily confined to within the existing hospital premises.

2.4.1. Environmental Assessment (OP/BP 4.01)

The objective of Environmental Assessment is to ensure that project activities are environmentally sound and sustainable and that decision-making is improved through appropriate analysis of actions; and mitigation of their likely environmental impacts. This policy is triggered if a project is likely to have potential adverse environmental risks and impacts in its area of influence. Construction of the EVD Treatment Centre may have negative environmental impacts, which require mitigation. Hence this ESMP has been prepared.
CHAPTER 3 DESCRIPTION OF THE PROJECT AND COMPONENTS

3.1 THE EVD QUARANTINE CENTRE FOR MWANZA

The Ebola Virus Disease preparedness activities in Malawi include the development of Ebola Virus Disease quarantine centre, dedicated septic tank and high temperature incinerator, ash pit and security fence at Mwanza District Hospital. The centre will be used to screen and isolate suspected EVD cases. When the suspected cases are confirmed, they will be transferred to the referral centre which will be constructed in Blantyre for treatment.

The EVD quarantine centre has been designed by the Ministry of Health (MoH) by adapting World Health Organisation specifications for Ebola Quarantine/Treatment Centres. The main consideration in the design is infection prevention and control. Hence careful attention has been paid to isolation (case – case, patient-health care worker, case – visitor), ventilation of the facility, hand hygiene, safe water supply, sanitation and waste management. This is supported by fund allocations under Component 1 of this project for infectious disease management training and surveillance programs targeting district health officials, frontline staff and community.

The treatment centre will have a floor area of 20.565 by 13.260 meters and the main rooms in the facility are as provided in table 3.1.

Table 0.1: Main rooms in the Mwanza EVD Quarantine Centre

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Nurses Station</td>
</tr>
<tr>
<td>2.</td>
<td>Change room</td>
</tr>
<tr>
<td>3.</td>
<td>Decontamination Room</td>
</tr>
<tr>
<td>4.</td>
<td>Isolation Ward</td>
</tr>
<tr>
<td>5.</td>
<td>Drug store</td>
</tr>
<tr>
<td>6.</td>
<td>Sluice Rooms</td>
</tr>
<tr>
<td>7.</td>
<td>Toilets</td>
</tr>
<tr>
<td>8.</td>
<td>Stores</td>
</tr>
</tbody>
</table>

The centre will not have laboratories. Hence specimen will be transported to the referral centres. The floor plan for the EVD Quarantine Centre is given in figure 3.1.
Figure 0.1: Ebola shelter in border district
3.2 WASTE DISPOSAL SYSTEMS

3.2.1. Liquid Waste Disposal

According to the WHO guidelines, all liquid waste from an EVD Quarantine/Treatment Centre is not supposed to be discharged into the public sewage system. Therefore a septic tank will be constructed for the EVD quarantine centre at Mwanza District Hospital.

The septic tank is the typical two chamber septic tank and a soak-pit. The design provides for specifications which are to be strictly adhered to during construction. Among others, these specifications include the size of the tank, cement mix ratios, walls thickness, materials to be used and the suitability of different types of soils for effluent disposal. Coarse sand or gravel with no clay silt is specified for disposal of effluent from the soak-pit. The specifications in general, aim at ensuring that there are no pollution effects. The design of the septic tank is provided in figure 3.2.
Figure 0.2: Designs of Septic Tanks
### 3.2.2. Solid Waste Disposal

All solid waste from the EVD Quarantine Centre is considered infectious. Hence, all the solid wastes will be treated in an incinerator and the ash will be disposed in a well-covered ash pit to be constructed near the incinerator. The architectural design for the ash pit is provided in Annex 6.

It is recommended that international industry best practices related to hazardous waste incineration are followed in accordance with the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines for health care facilities as well as the general EHS guidelines. Considering the infectious nature of the wastes, expected volume and the air pollution impacts of incineration, the following specifications (table 3.2) have been proposed for the incinerator.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description/ Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational temperature of 950 - 1320°C</td>
<td>To be able to fully incinerate highly infectious wastes</td>
</tr>
<tr>
<td>Two chambers</td>
<td>The second chamber to be equipped with an afterburner to allow for re-burn of harmful emissions</td>
</tr>
<tr>
<td>High chimney (stack height to be designed according to Good International Industry Practice – see General EHS Guideline Annex 1.1.3)</td>
<td>To ensure that smoke does not impact on the surrounding people and environment.</td>
</tr>
<tr>
<td>Top loading for waste</td>
<td>For easy loading and effective spreading of waste</td>
</tr>
<tr>
<td>Mechanical and air controlled operation</td>
<td>To ensure optimal combustion</td>
</tr>
<tr>
<td>150 – 200 kg batch size</td>
<td>To be able to take in a large volume of waste that would be expected during an outbreak.</td>
</tr>
<tr>
<td>100kg per hour burning rate</td>
<td>In the event that there is a lot of waste, a quick burning rate will ensure that the waste storage time is minimised.</td>
</tr>
<tr>
<td>Efficient average fuel consumption</td>
<td>To ensure operational costs are minimised</td>
</tr>
<tr>
<td>Average emissions according to European Union standards as provided in table 3.3</td>
<td>To reduce air pollution</td>
</tr>
</tbody>
</table>

---

2 The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. When a member of the World Bank Group is involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. The World Bank Group’s EHS Guidelines for Health Care Facilities can be found at: http://www.ifc.org/wps/wcm/connect/bc554d80488658b66b6e666a6515bb18/Final%2BHealth%2BCare%2BFacilities.pdf?MOD=AJPERES&id=1323161961169 and the General Environmental Health and Safety Guideline can be found at http://www.ifc.org/wps/wcm/connect/532ff48048863ab4d6b6e515bb18/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES
The European Union (EU) has average emission guidelines for basic incinerators and these are presented in table 3.2

Table 0.3: Average emissions/EU standards on basic incinerators (with secondary chamber)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limits (1/2 hr. avg.)</th>
<th>Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dust</td>
<td>30 mg/m³</td>
<td>12 mg/m³</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>200 mg/m³</td>
<td>2,4 mg/m³</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>400 mg/m³</td>
<td>60 mg/m³</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>100 mg/m³</td>
<td>78,3 mg/m³</td>
</tr>
</tbody>
</table>

3.3 CONSTRUCTION MATERIALS

Construction Materials for the EVD Quarantine Centre as specified by the Architect includes the following:

Table 0.4: Construction Materials for the EVD Quarantine Centre

<table>
<thead>
<tr>
<th>Structure</th>
<th>Characteristic feature</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor</td>
<td>Concrete slab with cement finish</td>
<td>cement, sand, concrete, wire mesh, damp proof membrane</td>
</tr>
<tr>
<td>Wall</td>
<td>Windows and wall</td>
<td>Prefabricated panels, steel windows, and Insulators</td>
</tr>
<tr>
<td>Roof</td>
<td>Roof sheets and trusses</td>
<td>Corrugated iron sheets, Steel trusses</td>
</tr>
</tbody>
</table>

The prefabricated materials including windows and still framework have been imported from South Africa; whereas sand, paints, cement, concrete, wire mesh and damp proof will be sourced locally.

3.4 CONSTRUCTION WORKS

At Mwanza District Hospital, construction of the EVD quarantine centre has not started, pending the re-routing of an 11 Kilovolt electricity overhead line and preparation and approval of the Environmental Management Plans. Once the construction works start, they are expected to take 4 months.

3.5 LABOUR FOR CONSTRUCTION

One international contractor has been engaged by the Ministry of Health to construct the EVD treatment/quarantine centres in all the sites except at Kamuzu Central Hospital in Lilongwe District. The contractor has subcontracted a local construction company to construct the concrete slabs.
Considering the small size of the EVD quarantine centre and that prefabricated materials are being used, a small team is engaged for the construction activities. About 10 local people will be employed as labourers for the Mwanza District Hospital EVD centre project.
CHAPTER 4  ENVIRONMENTAL AND SOCIAL SETTING

4.1  BIO-PHYSICAL CHARACTERISTICS

4.1.1. Location of the project

Mwanza District is located in the Southern Region of Malawi about 104 Kilometres from Blantyre District, the Commercial City of Malawi, and is about 320 kilometres South of Lilongwe, the Capital City. It is bordered by Neno to the North and East, Chikwawa to the South and the People’s Republic of Mozambique to the West (See fig. 1.1 on page 3).

The proposed site for the EVD Quarantine Centre is at Mwanza District Hospital which is at the boma. The proposed site where the Ebola Quarantine Centre will be located is currently a bare lawn in front of the hospital buildings and no one was using the land. Figure 4.1 shows the map of Mwanza and the location of the district Hospital.
Figure 0.1: Map of Mwanza District and the location of the district Hospital
The site is at approximately the following coordinates: 36L 661915 m E and 36L 8275680 m S. Above the site is an 11 Kilovolt electricity power line which is set to be re-positioned to outside the hospital fence during the planning phase. Figure 4.2 is the Satellite image of Mwanza District Hospital and the proposed site.

![Figure 0.2: Satellite image of Mwanza District Hospital and the proposed site](image)

### 4.1.2. Accessibility

The hospital is accessed through the S135 road which branches to the right from the M6 road. The M6 Road starts from the M1 at Zalewa (Mwanza Turnoff) and ends at Mwanza Border post. The hospital is on the opposite side of Mwanza Hospital Market, on the right hand side of the S135. The site was selected because of the following reasons:

i. It is where there is the cholera shelter. Hence, it is already a site for infectious diseases and an isolation area; and

ii. It is near the second entrance which goes to the mortuary and is less frequently used.

### 4.1.3. Topography

Mwanza district is characterised by mountains and hills with several areas of slopes of more than 12 degrees and no large areas of flat land (see figure 4.3). There are 3 major agro-ecological zones:

i. The Mwanza area with moderate altitude (600 - 1000m) but the terrain is dissected and steep, although Mwanza Valley is a flat alluvial plain.
ii. The Mkulumadzi Valley comprised of a fragmented and highly dissected escarpment.

iii. The Kirk-range to the west, which is an area of relatively high attitude, exceeding 1,200m above sea level. The terrain is dissected with slopes between 12 to 25 degrees.

![Figure 0.3: Topography of Mwanza District](image)

Mwanza District Hospital is at the Boma, at an altitude of about 700 metres. The project site is relatively flat. However the waste disposal area at the back of the hospital slopes down into Mkhwibvi stream shown in figure 4.4.
4.1.4. Water Resources

The catchment area for major rivers in the district e.g. Mwanza and Mkulumadzi Rivers includes the hills in the west and the Kirk range. These rivers drain into the Shire River on the east of the district. There is a small stream called Mkhwibvi at approximately 300 metres from the waste disposal site for the hospital (see figure 4.4). The stream supports agricultural activities through irrigation water and fertile soils during dry season.

The water table is naturally high near the river and low at the hospital. Hence the borehole for the district hospital is also near Mkhwibvi River. The borehole is about 35 metres deep and the water is pumped using a solar pump to a tank at the hospital. The water is used without chlorination, for all applications at the hospital, as it was tested to be safe.

4.1.5. Soil

The soils in Mwanza Valley, the area of the project, are generally sandy clay, loam to clay, of good depth, permeable and well drained though gravel in some parts. Given the permeability and the high quality of the soil, there must be careful management of wastewater other waste (e.g. cement dust) to avoid ground water pollution.

4.1.6. Biodiversity

Mwanza District is characterised by two types of vegetation: ‘Miombo woodlands’ in the west and a mixed low altitude savannah woodland vegetation in the areas close to the Shire River. Around the project area there are the Miombo trees (*Brachystegia boekmii*) (see figure 4.5) and Gmelina trees (*Gmelina arborea*).
Brachystegia boekmii are indigenous trees, which take a period of over 20 years to reach maturity and they must be protected. On the other hand Gmelina arborea are exotic trees and they grow vigorously. The Gmelina arborea add to the scenic beauty of the site, as they align on both sides of the road to the mortuary and the waste disposal area, as can be seen in figure 4.6. If it is determined that trees have to be cut down as a result of activities related to the EVD treatment centre construction however, then replacement trees must be planted on a two for one basis.

4.1.7. Air Quality

The draft Mwanza District’s Socio-economic profile (2013 – 2018) has identified air pollution as a one of the critical issue in environmental management in the district. The major source of air pollution includes vehicle exhaust, charcoal and firewood; and bush fires. Incineration and burning of wastes at Mwanza district hospital is also a source of air pollution.

4.1.8. Climate

Mwanza climate is tropical and falls into wet and dry seasons. The wet season starts in November and ends in March, while the dry season occurs from April to October. However it is common for some parts of the district to receive rains in the month of April. The annual rainfall for Mwanza ranges from about 800mm in the Mkulumadzi Valley, to over 1,200mm on the heights of the Kirk Range, Northwest of the district. January and February are the wettest months while September is the driest as can be seen in figure 4.7 below.

Mean annual temperature varies widely from 15°C in the Kirk Range, to over 30°C in the Mkulumadzi Valley. The hottest months are from September to April, with temperatures ranging from 23°C to 35°C. May to August are the coldest months where temperatures of 8°C to 15°C are registered.
Figure 0.7: Temperature and rainfall for Mwanza District

The Climate for Mwanza District is changing, following the global trends in climate change. This has resulted in variability in temperature and rainfall; and extreme environmental hazards (e.g. droughts and floods). Since climate change is mainly influenced by air pollution (carbon emissions), all emissions from the project must be managed carefully.

4.2 SOCIO-ECONOMIC CHARACTERISTICS

4.2.1. Population

As at the 2008 census, Mwanza District has a total population of 92,947 people with an intercensal annual growth rate of 4.1. Like most of the districts in Malawi, Mwanza has more female population, representing 52% of the total population. The population is distributed between the two T/As, one STA and Boma as given in Table 4.1.

Table 0.1: Population distribution in Mwanza District

<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>Population 18+</th>
<th>Growth rate</th>
<th>Household size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>T/A Kanduku</td>
<td>35,971</td>
<td>17,006</td>
<td>18,965</td>
<td>16,567</td>
</tr>
<tr>
<td>T/A Nthache</td>
<td>29,068</td>
<td>13,966</td>
<td>12,102</td>
<td>20,038</td>
</tr>
<tr>
<td>STA Govati</td>
<td>13,682</td>
<td>6,458</td>
<td>7,224</td>
<td>20,038</td>
</tr>
</tbody>
</table>


Mwanza Boma has a low population but has the highest growth rate.

4.2.2. Migration Pattern

Mwanza, being a border district, experiences emigration of some people who usually go to Mozambique for piece work in the farms and also to work in the mines. Intermarriage has also contributed migration into Mozambique and vice versa.
Mwanza District, especially Mwanza Boma and adjacent areas also experienced a population influx due to the Moaritize - Nacala Railway Construction project in 2012 – 2015. A number of people with different nationalities like Mozambicans, South Africans and others came into the district and some of them settled there. Some people from other districts in Malawi also came to Mwanza to explore business opportunities. Other than immigrants in the district, the border generally experiences a large number of inflow and outflow of people.

4.2.3. Economy

Mwanza District economy is supported by agriculture, mainly the growing of Maize for food. Other crops grown for food and/or sale include peas, beans, groundnuts, cassava, sweet potato, sorghum, millet, cotton, tobacco, bananas, mangoes, tangerines, oranges, lemons, chillies, and vegetables. Production of Tangerines is of particular importance as a source of income to over 2,000 farm families who have close to a million fruit trees.

The economy is also supported by forestry, through forestry products such as timber, fuel wood, fruits; and non-forestry products such as bee keeping and guinea fowl rearing. A large number of the population is also engaged in businesses while others are employed.

Mwanza Hospital Market, opposite Mwanza District Hospital, is a place of business activity including the selling of agriculture crops. A large number of people visit the market such that in an outbreak, an unknown EVD case would easily get into contact with a lot of people. Hence the people at the market must receive training and sensitization in EVD infection prevention and control.

4.2.4. Electricity, Water Supply and Telephone Services

Electricity to the Boma is supplied by the Electricity Supply Corporation of Malawi (ESCOM) and according to the Mwanza District Socio-economic Profile, the rural population uses paraffin, solar battery lamps, and candles for lighting. In the areas where electricity is supplied, there is however the problem of intermittent supply of electricity and this is also a national problem. The hospital has solar photovoltaic systems for selected departments and a heavy duty diesel generator which is used when there is no power from the grid.

Boreholes, shallow wells and piped water supply are sources of drinking water in the district. At the Boma the water is supplied by Southern Region Water Board. The Water Board however has a challenge of high demand against a small water supply scheme. The hospital has a borehole which is used when there is no water from the Board. The borehole uses a solar water pump donated by Telekom Network Malawi (TNM).

Telecommunications services are supplied by the Malawi Telecommunication Limited (MTL) and mobile phone networks (AIRTEL, TNM and ACCESS). Telecommunication services are reliable and other areas are able to get telephone signals from Mozambique.

4.2.5. Waste Management and Sanitation

At household level waste management is by way of rubbish pits and burning. Mwanza District Council does not have a proper system of waste collection and disposal. The District
Council is however, responsible for sweeping the roads, markets and public places. During the consultations it was established that the District Council does not adequately manage wastes at the market, especially outside on the side of the road where there is the hospital. For human wastes there are pit latrines and flash toilets in the district and at the hospital. A number of NGOs including UNICEF have been working on ending open defecation which contributes to Cholera outbreaks in the area.

4.2.6. Health Services

Like in other districts, the health-care system in Mwanza District, is delivered at the three levels of: district hospital, health centre/dispensary and community levels. Of great importance in these levels of health-care service delivery are the referral and communication systems. There are also ambulances which take referral cases from health centres to the district hospital and from the district hospital to the Queen Elizabeth Central Hospital.

The communities in Chikwawa (Gaga, Chithumba and Chang’ambika Health Centres), which are separated by Mwanza River from their (Chikwawa) District Hospital are referred to Mwanza District Hospital. Patients from Mozambique, especially from Zobue and Mkondezi Health Centres, are also referred to Mwanza District Hospital. Mozambique and Mwanza have a good working relationship such that, for example, learning visits are carried out on either side. In Ebola Preparedness Activities, the DHO is also in touch with their counterparts in Mozambique.

Health facilities are owned by the government and the private sector. There are no Christian Health Association of Malawi hospitals in Mwanza District. Table 4.2 provides the health facilities and their distances to the referral hospital in Mwanza District.

Table 0.2: The health facilities in Mwanza.

<table>
<thead>
<tr>
<th>Health Facility</th>
<th>Type</th>
<th>Ownership</th>
<th>Distance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kunenekude</td>
<td>Health Centre</td>
<td>Government</td>
<td>18Km</td>
<td>T/A Kanduku</td>
</tr>
<tr>
<td>Thambani</td>
<td>Health Centre</td>
<td>Government</td>
<td>26Km</td>
<td>T/A Nthache</td>
</tr>
<tr>
<td>Tulonkhondo</td>
<td>Health Centre</td>
<td>Government</td>
<td>17Km</td>
<td>T/A Kanduku</td>
</tr>
<tr>
<td>Banja la Mtsogolo</td>
<td>Clinic</td>
<td>Private</td>
<td>4km</td>
<td>T/A Kanduku</td>
</tr>
<tr>
<td>Wellness Centre</td>
<td>Clinic</td>
<td>Private</td>
<td>8km</td>
<td>T/A Kanduku</td>
</tr>
<tr>
<td>Tiyendebwino clinic</td>
<td>Clinic</td>
<td>Private</td>
<td>3km</td>
<td>T/A Kanduku</td>
</tr>
</tbody>
</table>

4.3 MWANZA DISTRICT HOSPITAL CHARACTERISTICS

4.3.1 Existing Infrastructure and Services

Mwanza District Hospital is a standard district hospital comprising of an administration block, an out patients department (OPD) and registration, drug store, a laboratory, theatres, paediatric wards, gynaecology/antenatal maternity ward, male and female medical/surgical
wards, male and female TB isolation wards, kitchen, laundry, mortuary and mourners shed. The hospital infrastructure is well maintained and clean.

The hospital provides care and treatment for all cases. Referral cases are sent to Queen Elizabeth Central Hospital in Blantyre. The mission of the hospital is to improve health status of all surrounding community through the provision of high quality preventive curative, promotional and rehabilitative health care services (see figure 4.8).

![Mission Statement of Mwanza District Hospital](image)

Figure 0.8: The Mission Statement of Mwanza District Hospital

However the hospital has following challenges to fulfilling its mission:

i. **Food shortage:** To address this, problem the hospital is planning to open a farm, with support from the District Agriculture Office, for provision of land and subsidized farm inputs; and the prison service for provision of farming labour.

ii. **Shortage of Ambulances:** The District Hospital has received an ambulance for Ebola activities but would like another ambulance for Thambani Health Centre.

iii. **Lack of funding for development projects:** The hospital has been receiving help from well-wishers and donors including TNM and the Malawi Science for Health (MSH).

### 4.3.2 Waste Management Services

#### 4.3.3.1. Liquid Waste

The liquid waste management system has 7 septic tanks which receive sewage from all the buildings at the hospital. However for the past 5 years, the tanks have not been emptied and they are now full. The hospital also has pit latrines.

#### 4.3.3.2. Solid Waste Collection

Solid waste is segregated into sharps, burnt waste, and food waste at the point of generation and is placed in appropriate receptacles. The receptacles are appropriately colour coded and labelled. When full, the receptacles are emptied in colour coded wheelie bins (see figure 4.9) which are then carted to the waste disposal area by hospital staff twice in a day.
4.3.3.3. Solid Waste Disposal

Facilities at the waste disposal area include an incinerator for sharps, an incinerator for infectious wastes, an ash pit and a placenta pit; all in a secure fence (figure 4.10). These are new, constructed with assistance from the Malawi Science for Health (MSH). The incinerators are made of bricks, have one chamber and do not have any mechanical controls.

Figure 0.9: Colour coded and labelled wheelie bins at Mwanza District Hospital

An Incinerator for Sharps  General Medical Waste Incinerator

An Ash pit  A Placenta Pit
Outside the incinerators fence, there is a general waste disposal pit which is currently full, not covered and not secured from dogs and scavengers (figure 4.11). There is also an old incinerator (figure 4.12) which is still in use and an old placenta pit that has been closed.

Challenges:

During the consultations, the following were established as challenges faced in the management of solid wastes:

1. Segregation of wastes is not 100%; for example sometimes food waste is mixed with medical wastes. This reduces the efficiency of the incinerator; hence more fuel is used;
2. The waste bags which are used are too big to fit into the opening of the incinerators. As a result the incinerator operator picks out the wastes using inappropriately gloved hands which is a health and safety risk;

3. The incinerator operator is provided surgical gloves instead of heavy duty gloves. Generally there is inadequate supply of PPE (e.g. gloves, masks, apron and boots). This is attributed to lack of funding;

4. The hospital is still using the old and broken incinerator, which produces uncontrolled smoke as it does not have a chimney (figure 4.12) and is inefficient.

5. Shortage of fuel for the incinerator due to inadequate funding;

6. The non-infectious waste disposal pit is on a ground that slopes into a maize garden and into Nkhwibvi River. The pit itself is not covered and is presently full (figure 4.10). Hence, the pit degrades the land and is a potential source of water pollution for the river;

7. The pit for non-infectious wastes is also used for disposal and burning infectious wastes;

8. The incinerator operator has not been adequately trained; and

9. The new incinerator is currently not being fully used, pending the donor to train the operators.

Generally the new disposal area is kept clean and the door to the incinerator is always locked to keep out dogs and scavengers. It is advised that the hospital work with the MOH to source the correct sized bags that will fit within the new incinerators which are not being used.

It is also recommended that the hospital work towards properly decommission the current kitchen waste disposal pit and open a new waste one that is covered and well protected from flooding, dogs and scavengers.
CHAPTER 5 IMPACTS OF THE PROJECT AND SIGNIFICANCE RATING

Construction and operation of the Ebola Virus Disease quarantine centre at Mwanza District Hospital will have both positive and negative impacts on the bio-physical and social-economic environment

5.1 IDENTIFICATION OF THE POTENTIAL IMPACTS

5.1.1. Literature review

The consultant reviewed a number of documents including the Mwanza District Socio-economic profile and the World Health Organisation (WHO) manual for the care and management of patients in Ebola Care Units. The list of documents reviewed is indicated in the references. The documents were reviewed for a description of the environment in which the project will be implemented and the activities during the operational phase. WHO has also included guidelines for environmental management and infection control in Ebola Units and these have also been considered in the mitigation measures for the project impacts.

5.1.2. Site Investigations

Site investigations were carried out to complement the literature review. The consultant specifically carried assessments at the hospital, visited the project site and access areas, the waste disposal area, the nearby river and the water supply system. The investigations focussed on identification of critical environmental and socio-economic elements likely to be affected during construction and operation of the project.

5.1.3. Stakeholder Consultations

Stakeholder consultations were conducted with key hospital staff including the District Health Officer, District Medical Officer, Environmental Health Officer and support staff. The list of people consulted is provided in annex 2; while the issues raised are presented in annex 3. A community consultation meeting was also held on 9th February 2016 and minutes of the consultation are provided in annex 4.

5.1.4. Study of satellite images

Satellite images were produced for assessment of fine details of the site. This was important as project’s area of influence is too small to be fully presented on conventional maps.

5.2 DESCRIPTION OF POSITIVE IMPACTS

5.2.1. Positive impacts during planning phase

The main activities during this phase include:
i. Training and sensitizations;
ii. Designing of the EVD quarantine centre;
iii. Assessment of existing infrastructure;
iv. Identification of contractor;
v. Identification of the project site; and
vi. Re-routing of the power lines that pass over the proposed site.

Most of the activities have already started and the following were identified as positive environmental and social impacts:

5.2.1.1. Increased knowledge and skills in infection control and prevention

The hospital staff that attended the training and sensitization in Ebola Virus Disease case management, Infection Control and Waste Management acquired knowledge and skills which can also be applied to the management of other infectious diseases. These efforts will be further supported under the infectious disease management training and surveillance programs targeting district health officials, frontline staff and community members that are a part of this Ebola response project.

The following measures can help enhance the impact:
   i. Ensure that the trainings are continuous and that many more people are trained and sensitised;
   ii. Trained people must be encouraged and motivated to be available during an outbreak;
   iii. Ensure that the Health Care Waste Management Plan completed for the Nutrition and HIV/AIDS Project is implemented and followed to address potential environmental and health impacts due to operational activities;
   iv. Conduct simulation exercise to firm up EVD response in case there is an outbreak.

5.2.2. Positive impacts during construction phase

Main activities during the construction phase include:

   i. Site clearing and excavation for the foundations;
   ii. Construction of a concrete slab;
   iii. Installation of prefabricated walls;
   iv. Roofing of the building;
   v. Excavation for the septic tank; and
   vi. Construction of the septic tank as well as installation of incinerators.

The following are the anticipated positive impacts:

5.2.2.1. Employment opportunities

The construction works will provide employment opportunities for the local people, although this will be short term and very few locals will be employed (about 10 people). During operation, the facility may also require skilled personnel (e.g. nurses and laboratory assistants); and unskilled workforce (e.g. guards and cleaners).
Enhancement Measures

i. The international contractor must observe local labour laws; and
ii. Workers must be paid fairly for the services rendered.

5.2.2.2. Acquisition of skills in construction of prefabricated buildings

The main contractor is from South Africa, but local labourers will be engaged. The local labourers are expected to acquire new skills from their counterparts through observation and on the job training. To enhance the impacts, the contractor must be encouraged to provide on job training to the labourers.

5.2.2.3. Income to material/ equipment suppliers

Construction of the treatment centre will require cement, sand and concrete. This will provide business opportunities for local materials suppliers; hence increased income opportunities. The impact can be enhanced by paying suppliers within the agreed times.

5.2.3. Positive Impacts during the Operation and Maintenance Phase

5.2.3.1. Increased rooms for medical services

The EVD Quarantine centre will be an additional infrastructure to the hospital and hence increase in the space for medical services. Since currently there is no EVD outbreak in Malawi, the EVD Centre structure can be used for other epidemics, thereby supplementing the use of tents for outbreaks and diseases including cholera. The new structure will also improve the appearance of the hospital.

Enhancement Measure

The impact can be enhanced through:

i. Taking proper care of the EVD Quarantine Centre; and
ii. Ensuring the Centre is not misused and is readily available when needed for EVD.

5.2.3.2. Improved medical services

It is anticipated that there will be improved medical services due to the following:

i. Training and sensitization in infectious diseases management;
ii. Medical supplies and equipment that will be made available in readiness of EVD;
iii. An ambulance and utility vehicle that may be provided to the hospital for EVD. In the event that there is no Ebola Virus Disease, the ambulance and utility vehicle can be used for other infectious diseases.

The impact can be enhanced by:

i. Periodic evaluation of the training and subsequent review of curricula;
ii. Ensuring that EVD preparedness equipment is used properly (i.e. staff and equipment for an EVD outbreak should be readily available when needed).
5.3 DESCRIPTION OF NEGATIVE IMPACTS

5.3.1. Impacts during the planning and design

Significant environmental and social impacts during planning and design stage are expected to emanate mainly from the relocation of the electricity line as follows:

5.3.1.1. Temporary loss of power to some parts of the town

The EVD quarantine site is near a section of the power line which must be re-routed during the planning phase. In order to connect power to the newly constructed poles, the ESCOM will have to temporarily switch off power supply to some parts of the town. The impact will be moderate and short term (about 5 hours). During the re-routing of the line, accidents may occur (e.g. falling from poles, electric shock to employees or community and poles falling on people or objects during rifting).

To mitigate the impact:

- The Electricity Supply Corporation of Malawi (ESCOM) must issue notices to the people to be affected about the temporary loss of power during commissioning of the new transmission line, at least one week in advance;
- ESCOM must ensure that they have all the required materials before starting the work to ensure there are short or no interruptions;
- All activities that do not require switching off power supply must be done well in advance before switching off;
- Danger warning signs must be placed around the work area to alert people of potential accidents;
- Safety measures, including use of PPE (e.g. wearing of helmets and safety harnesses) must be observed.

5.3.2. Impacts during construction

5.3.2.1. Accidents to workers, staff and the public on the construction site

Accidents to staff, patients and the general public on the construction site may occur during construction. Sources of accidents may include electric shocks during welding, objects falling on people, workers falling from heights, nailing or hammering oneself and injuries from lifting and carrying building materials. The general public and animals may also be exposed to risks of falling into open trenches, especially outside the contractor’s working hours. Mitigation measures include to:

- Train workers on prevention and managing incidences;
- Restrict hospital staff and the public from going to the construction site during and outside working hours by placing posters, reflecting tapes and erecting barriers;
- Labourers must wear protective gear; and
- Provide first aid kit.
5.3.2.2. Utilizing unlicensed quarry sites

Construction of the treatment centre will require cement, sand and concrete. Indiscriminate mining activities can take place in sensitive areas and create depressions that often block surface drainage system and create pools of stagnant water. Such pools of stagnant water are breeding grounds for mosquitoes.

Mitigation measures include:
- Identify licensed quarries with the suitable materials for construction.
- Procure construction material only from permitted sites and licensed / authorized quarries.

5.3.2.3. Use of lead-based paint products

Lead is commonly absorbed into the body by inhalation from use of and/or scrapping of lead-based products like paint. When workers breathe in lead as a dust, fume, or mist, their lungs and upper respiratory tract absorb it into the body. They can also absorb lead through the digestive system if it enters the mouth and is ingested.

Mitigation measures include:
- Ensuring that no paint containing lead or lead products are used.
- Provide facemasks to workers when a surface with lead paint is rubbed and scraped for removal.

5.3.2.4. Noise disturbances

Noise disturbances may result from metal fabrication activities and from other machinery. The noise will be a source of discomfort to the construction team and the users of the pharmacy, the cholera shelter and the nearby ward. The construction team may also make significant noise (through loud chatting) which can be a disturbance to others.

Mitigation measures include:
- The Hospital Administrator must sensitize the contractor to minimise noise;
- The contractor must use efficient machines that do not make loud noise;
- The contractor must provide appropriate PPE (e.g. ear muffs) to workers;
- The contractor must also ensure that noisy activities, which cannot be avoided, are limited to normal working hours.

5.3.2.5. Increased costs for electricity

An increase in the cost of electricity may occur due to the use of electricity from the hospital supply lines by the contractor. This can be a source of conflicts, considering that the hospital is underfunded and therefore is likely to have problems to pay additional utility charges. The hospital has a diesel generator for use when there is no electricity. However diesel is far more expensive than power from ESCOM.

To avoid or mitigate the impact:
• A proper arrangement for apportioning the costs must be agreed upon between the contractor and the hospital administration.
• The contractor should provide a separate electricity generator to be used during construction and operation of the EVD Centre.

5.3.2.6. Dust nuisance

Construction of the concrete slab will require digging the foundation, cement and concrete mixing. These activities will likely lead to generation of dust, which can reach the nearby hospital wards, depending on the wind direction.

To avoid or mitigate the impact:

• The construction team must wear dust masks during site clearing and levelling;
• The contractor must erect a barrier around the work sites to break or reduce wind and dust movement to the nearby hospital ward and departments; and
• The contractor must spray water on the activity area to suppress dust.

5.3.2.7. Waste generation

Solid waste will be generated at the site during construction. The waste may consist of metal cuttings, excavated materials during digging of foundation, paper/cement bags, empty paint and solvent containers and broken glass among others. Some of the wastes may be hazardous to the environment e.g. paints and cement while others like plastic are not biodegradable. The excavated soils on the other hand can be carried away by rain water and increase sedimentation and siltation in the nearby Nkhwibvi River.

To avoid or mitigate the impact:

• Properly segregate and separate wastes to encourage reuse of some of the wastes e.g. cartons and paint containers;
• Use some of the excavated materials for rehabilitation of the waste disposal area or for covering waste in the disposal pits.
• Designate appropriate disposal sites in the contract and cost unit disposal rates accordingly.

5.3.2.8. Water pollution

Water pollution is likely to result from cement, paints, lubricants and fuels where these fall or spill onto the ground.

The impact can be mitigated by:

• Lining surfaces where cement, paints and oils will be stored to catch any spillage;
• Lining or covering the floor during painting and use of lubricants;
- Sensitizing the workers to appropriately manage construction materials and wastes; and
- Close supervision of the workforce.
- Ensuring that no lead paints are used which may cause health and safety risks as well as environmental risks.

5.3.2.9. Risk of Spread of STIs and HIV/AIDS

Enhanced social interaction with the construction employees, most of whom are likely to come from other parts of the country, with the residents (considering the influence of money) is a potential avenue for transmission of HIV/AIDS and other social infections.

Mitigation measures include to:
- Awareness meetings shall be conducted as a part of all construction employee orientation programs; and
- Employees shall be provided with condoms for protection from STIs.

5.3.2.10. Removal of trees

There are *Brachystegia boekmii* and *Gmelina arborea* near the project site. Two *Gmelina arborea* trees which are on the area proposed for the access road will be removed. The trees (marked with red crosses) are shown in figure 4.12.

![Figure 0.1: Gmelina arborea trees that will be marked x cut at Mwanza District Hospital](image)

The impact is significant as the trees add to the scenic beauty of the area, provide shade from the sun, absorb carbon from the air and release oxygen into the ecosystem.

To mitigate the impact:
- Where possible, transplant trees and vegetation to nearby areas; and
- The cut down trees must be used for productive uses e.g. as firewood and timber;
Replace felled trees on a two for one basis (two replacement trees for each removed) and ensure that indigenous trees are selected.

5.3.3. Impacts during Operation and Maintenance

Activities during operation and maintenance phase include:

i. Receiving and isolation of suspected EVD cases and provision of health-care to EVD suspected or confirmed cases or to persons infected by other infectious diseases

ii. Specimen handling (collection and transportation) for the referral centre in Lilongwe; and

iii. Waste management (collection, transportation, treatment and disposal).

Significant negative impacts anticipated during this phase include:

5.3.3.1. Fear of being infected

EVD is a highly infectious disease that causes fear of being infected among the workers and the general public. When suspected or confirmed cases are reported, there is likely to be anxiety and fear among the hospital staff, patients and the community. During the community consultations it was also established that some locals may be afraid to come to the hospital for fear of Ebola. The market place nearby is also likely going to be affected as some may shun the place for fear of infection.

To avoid or mitigate the impact the following measures must be taken:

- Conduct adequate sensitization and awareness meetings with staff and the surrounding community including the people at the market on how the EVD may be contracted and transmitted; and on infection control and health-care practices for patients;
- Train staff on Occupational Safety and Health and Infection Control; and
- Frequently update the public on the activities in the EVD Quarantine Centre.

5.3.3.2. Air pollution and operational risk from incineration of wastes

Air pollution from incineration of wastes is expected to increase in the operational phase.

During the operation phase, there will be additional wastes at Mwanza District Hospital as a result of activities in the EVD quarantine centre. EVD centres generally produce 2 – 20kg/person/day of wastes. The wastes will be incinerated in the proposed high temperature, two chamber incinerator with low emissions; to be installed by the project. Large amounts of emissions, if allowed to accumulate in the air may contribute to climate change effects. In addition, the current solid waste management practices at the hospital may result in smoke and emissions and these could also contribute to cumulative impacts of climate change.

Proposed mitigation measures for the impact are as follows:
• Construct a new covered pit for non-infectious waste;
• Train and sensitize staff to adequately sort wastes from the point of generation to ensure that only combustible waste goes into incinerators;
• Provide small biohazard bags (bin liners) which can easily pass through the door of the incinerator;
• Install a high temperature, two chamber incinerator as specified;
• Ensure that international industry best practices related to hazardous waste incineration are followed in accordance with the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines for waste management facilities.³
• Train staff (especially the incinerator operator) on appropriate use of the incinerator;
• Provide adequate budget for incinerator fuel and ensure the fuel is properly used;
• Regularly maintain the incinerators;
• Orient staff to infection control and waste management practices; and
• Plant trees to compensate for emissions.

5.3.3.3. Water pollution

Spillages of wastewater and chemicals from the EVD quarantine centre may occur, resulting pollution of Mkhwibvi stream.

The EVD quarantine centre will use a septic tank and a soak-pit, which can also be a source of water pollution. Overflows and/or outflows from either manholes or broken pipes may also result in water pollution.

To mitigate the impact:

• Ensure wastewater does not spill onto the ground surface;
• Ensure that wastewater disposal is adequately budgeted to ensure regular cleaning of the septic tank;
• Only licensed waste collectors shall be employed for this disposal;
• Construct the septic tank according to the design specifications;
• Ensure that the wastewater system is properly used to avoid blockages;
• The hospital must decommission the old waste disposal pit; and
• Construct a new waste disposal pit with a cover and protect it from surface drainage.

5.3.3.4. Occupation safety and health risks

The main health and safety issues which are anticipated will relate to the following:

i) Working in a confined spaces and exposure to highly infectious disease;

³ The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. When a member of the World Bank Group is involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. The International Finance Corporation’s EHS Guidelines for Waste Management Facilities can be found at: http://www.ifc.org/wps/wcm/connect/1d72a0046857cfd14f6a6515bb1a/Final+-+Waste+Management+Facilities.pdf?MOD=AJPERES
ii) Improper use of personal protective equipment e.g. the Ebola suit;
iii) Shortage of medical supplies and equipment;
iv) Exposure to highly infectious waste, especially by the waste handlers; and
v) Intermittent supply of electricity and water.

The impact can be avoided or mitigated through the following:

- Mwanza District Hospital shall be responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;
- The MoH and Mwanza District Hospital must continue to train and sensitize its staff in infection control and best practices for managing infectious wastes in accordance with the World Health Organization’s Safe Management of Wastes from Health-care Activities\(^4\) handbook and its Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings\(^5\). Other relevant infection prevention and control guidelines provided by WHO should further inform operational procedures;
- Regularly training staff in Ebola Virus Disease case management, infection control and waste management;
- Regularly monitoring performance of equipment and carrying out maintenance;
- Ensuring that there is enough supply of medicines and PPEs;
- Regularly training staff on how to use PPE; and
- Installing a separate water reservoir and electricity generator for the EVD facility.
- Ensure that a fence around the EVD treatment centre is constructed according to WHO guidelines to keep visitors at distance but allowing them to see through;
- Ensure that the Project’s Health Care Waste Management Plan and the infectious disease management training and surveillance programs targeting district health officials, frontline staff and community members under Component 1 are implemented.

5.3.4. Impacts during Decommissioning

Decommissioning entails closure of the facilities and services. Consideration of impacts of decommissioning is important so that on closure of these facilities, due consideration is given to mitigate impacts from abandoned structures and equipment. Consideration should also be given to staff that may be made redundant.

5.3.4.1. Air, land and water contamination

Air, land and water contamination from waste would result from cleaning of premises and equipment and from transportation and disposal of wastes. The impact can be mitigated through the following measures:

\(^4\) http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1
\(^5\) http://apps.who.int/iris/bitstream/10665/130596/1/WHO_HIS_SDS_2014.4_eng.pdf?ua=1&ua=1&ua=1
• Disposing wastewater in appropriate and approved drainage systems; and
• Incinerating contaminated solid waste and disposing ash in ash pits.

5.3.4.2. Risk of infection from contaminated equipment

The decontamination team and other people are likely to be at risk of infection of handling equipment that has not been fully decontaminated. Mitigation measures would include to:

• Provide appropriate PPE for staff for destroying equipment used in the centre; and
• Destroy all equipment used in the EVD Quarantine Centres.

5.4. SIGNIFICANCE RATING OF NEGATIVE IMPACTS

The significance of the identified potential negative environmental and social impacts has been determined by assessing and rating the impacts as (-1), (-2) or (-3), using the available information, professional judgement and experience from similar development projects. The ratings are based on:

a) Likelihood of occurrence (L) – a measure of the likelihood of the impact to occur;

b) Spatial Distribution (SD) - size of the area to be impacted; and

c) Time (duration) of impact Distribution (TD) - the period of time over which the impact may occur.

The significance of the impact has been determined as the multiplication of L by SD and TD. Table 5.1 provides the significance rating of the impacts of the construction and operation of the EVD Quarantine Centre at Mwanza District Hospital before mitigation. After implementation of the mitigation measures, the impacts are assessed as low to nil.
### Table 0.1: Significance rating for negative impacts

<table>
<thead>
<tr>
<th>SN</th>
<th>Impact</th>
<th>Likelihood of occurrence (L)</th>
<th>Spatial Distribution (SD)</th>
<th>Time (duration) of impact Distribution (TD)</th>
<th>Severity of Impact (LxSDxTD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Very likely to occur = -3</td>
<td>Regional = -3</td>
<td>Long term = -3</td>
<td>High: -8 to -27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May occur = -2</td>
<td>National = -2</td>
<td>Medium term = -2</td>
<td>Moderate: -4 to -7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unlikely to occur = -1</td>
<td>Local = -1</td>
<td>Short term = -1</td>
<td>Low: -1 to -3</td>
</tr>
<tr>
<td>1.</td>
<td>Planning and Design phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Temporary loss of power to power to some parts of the town</td>
<td>-3</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>2.</td>
<td>Construction Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Accidents to workers, staff and public on construction sites</td>
<td>-2</td>
<td>-1</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>2.2</td>
<td>Utilizing unlicensed quarry sites</td>
<td>-2</td>
<td>-2</td>
<td>-1</td>
<td>-4</td>
</tr>
<tr>
<td>2.3</td>
<td>Use of lead-based paint products</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>2.4</td>
<td>Noise disturbances</td>
<td>-3</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>2.5</td>
<td>Increased costs for electricity</td>
<td>-3</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>2.6</td>
<td>Dust nuisance</td>
<td>-2</td>
<td>-1</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>2.7</td>
<td>Waste generation</td>
<td>-3</td>
<td>-1</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>2.8</td>
<td>Water pollution</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>2.9</td>
<td>Risk of Spread of STIs and HIV/AIDS</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>2.10</td>
<td>Removal of trees</td>
<td>-3</td>
<td>-1</td>
<td>-3</td>
<td>-9</td>
</tr>
<tr>
<td>3.</td>
<td>Operational and Maintenance phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Fear of being infected</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>3.2</td>
<td>Increased air pollution from incineration of wastes</td>
<td>-3</td>
<td>-1</td>
<td>-3</td>
<td>-9</td>
</tr>
<tr>
<td>3.3</td>
<td>Water pollution</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>3.4</td>
<td>Occupation safety and health risks</td>
<td>-3</td>
<td>-1</td>
<td>-3</td>
<td>-9</td>
</tr>
<tr>
<td>4.</td>
<td>Decommissioning Phases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Air, land and water contamination</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>4.2</td>
<td>Risk of infection from contaminated equipment</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
</tbody>
</table>
CHAPTER 6  ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

6.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental and Social Management Plan (ESMP) has been proposed to facilitate the integration of environmental and social management measures in the construction and operation of the EVD quarantine centre. The ESMP contains:

- Anticipated negative impacts of the proposed project and mitigation measures identified in Chapter 5 of this report;
- Responsible institutions to implement the mitigation measures; and
- Time frame for implementation of the mitigation measures.

Implementation of the ESMP will be done by the Contractor. Hence, the contractor has to include the cost for the impact mitigation measures in the project bid price.

The aim of the ESMP is to ensure that the Ministry of Health will prevent, reduce, mitigate and/or compensate affected persons for the proposed project’s impacts on the biophysical and social economic environment. The ESMP is presented in a tabular format in table 6.1. As part of the environmental management, the Department of Planning and Policy Development (DPPD) in the MoH must ensure that the ESMP is included as part of the contractor’s contract documents. The MoH and Mwanza District Hospital must also ensure that funds are available for implementation of the ESMP.

Several issues with the existing infrastructure and operational sustainability at the hospital have been identified through the development of this ESMP, including general waste management and difficulty procuring correct sized trash bags. While these are not directly linked to this project, it is recommended that Mwanza District Hospital take a phased approach to correct systemic challenges affecting human health, the natural environment and the general level of hospital performance. Other systemic issues, like those associated with inadequate water and electrical supplies, need to be mitigated as they can directly result in potentially serious environmental health issues during operation of the EVD treatment centres.
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or Social Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Planning and design Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|     | 1.1. Temporary loss of power to some parts of the town | • ESCOM must issue notices to the people to be affected about the temporary loss of power at least a week in advance;  
• ESCOM must ensure they have all the required materials before starting the work to ensure there are no interruptions;  
• All activities that do not require switching off the power supply must be done well in advance before switching off;  
• Danger signs must be placed around the work area to avoid accidents;  
• Safety measures must be observed including use of PPE e.g. wearing of helmets and safety harnesses | ESCOM | Once during the planning phase | To be included in the hospital’s development budget |
| 2.  | Construction Phase                     |                              |                             |                        |                |
|     | 2.1. Accidents to workers, staff and the public on the construction sites | • Train workers on prevention and managing incidences;  
• Restrict hospital staff and the public from going to the construction site by putting posters and erecting barriers;  
• Labourers must wear protective gear;  
• Provide first aid kit. | Contractor | Throughout the construction phase | Included in the project bid for the Contractor |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or social Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of funds</th>
</tr>
</thead>
</table>
| 2.2 | Utilizing unlicensed quarry sites       | • The Contractor will identify materials from existing licensed quarries with the suitable materials for construction.  
• Procurement of construction material only from permitted sites and licensed / authorized quarries. | Contractor | Throughout the construction phase | Include in the project bid for the Contractor |
| 2.3 | Use of lead-based paint products.       | • The Contractor shall ensure that no paint containing lead or lead products is used. | Contractor | Throughout the construction phase | Include in the project bid for the Contractor |
| 2.4 | Noise disturbances                       | • The hospital administrator must sensitize the contractor to minimise loud chatting;  
• The contractor must use efficient machines that do not make a lot of noise;  
• The contractor must provide appropriate PPE (e.g. ear muffs) to workers; and  
• The contractor must ensure that noisy activities which cannot be avoided are limited to normal working hours. | Contractor | Throughout the construction phase | Included in the project bid for the Contractor |
| 2.5 | Increased costs for electricity          | • A proper arrangement for apportioning the costs must be agreed upon between the contractor and the hospital administration.  
• The contractor should provide a separate electricity generator to be used during construction and operation of the EVD Centre. | Mwanza District Hospital, Contractor | Once before construction starts | Included in the project bid for the Contractor |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or social Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of funds</th>
</tr>
</thead>
</table>
| 2.6 | Dust nuisance                          | • The construction team must wear dust masks during site clearing and levelling;  
     |                                        | • The contractor must erect a barrier around the work sites to break or reduce wind and dust movement to the nearby hospital ward and departments; and  
     |                                        | • Spray water on the activity area to supress dust. | Contractor | Throughout the construction phase | Included in the project bid for the Contractor |
| 2.7 | Waste generation                       | • Properly segregate and separate wastes to encourage reuse of some of the wastes e.g. cartons and paint containers;  
     |                                        | • Use some of the excavated materials for rehabilitation of the waste disposal area and for covering waste in the pits.  
     |                                        | • Designate disposal sites in the contract and cost unit disposal rates accordingly; and  
     |                                        | • All wastes must be taken to the approved disposal area. | Contractor | Throughout the construction phase | Included in the project bid for the Contractor |
| 2.8 | Water pollution                        | • Lining surfaces where cement, paints and oils will be stored to catch any spillage;  
     |                                        | • Lining or covering the floor during painting and use of lubricants;  
     |                                        | • Sensitizing the workers to appropriately manage construction materials and wastes; and  
<pre><code> |                                        | • Close supervision of the workforce. | Contractor | Throughout the construction phase | Included in the project bid for the Contractor |
</code></pre>
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or social Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.9</td>
<td>Spread of HIV AIDS</td>
<td>• Awareness meetings shall be conducted as a part of all construction employee orientation programs; and • Employees shall be provided with condoms for protection from STIs.</td>
<td>Contractor</td>
<td>Throughout the construction Phase</td>
<td>Include in the project bid for the Contractor</td>
</tr>
<tr>
<td>2.10</td>
<td>Removal of trees</td>
<td>• The cut down trees must be used for beneficial uses such as for firewood and timber; and • Transplant trees and ornamental shrubs in the same or other nearby areas wherever possible; • Replace felled trees on a two for one basis (two replacement trees for each removed) and ensure that indigenous trees are selected; and • Ensure landscaping design considers where hospital expansion activities are likely to occur in the near future.</td>
<td>Mwanza District Hospital</td>
<td>Once during construction</td>
<td>Included in the project budget</td>
</tr>
<tr>
<td>3.</td>
<td>Operation and Maintenance phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Fear of being infected</td>
<td>• Conduct adequate sensitization and awareness meetings with staff and the surrounding community, including the people at the market, on how the EVD may be contracted and transmitted; and on infection control and health-care practices for patients; • Train staff on Occupational Safety and Health and Infection Control; and • Frequently update the public on the activities in the EVD Quarantine Centre</td>
<td>Mwanza District Hospital</td>
<td>Once every month</td>
<td>To be included in the hospital’s recurrent budget</td>
</tr>
<tr>
<td>No.</td>
<td>Potential Environmental or social Impact</td>
<td>Proposed Mitigation Measure</td>
<td>Institutional Responsibility</td>
<td>Time for Implementation</td>
<td>Source of funds</td>
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</tr>
</tbody>
</table>
| 3.2. | Air pollution and operational risks from incineration of wastes | • Install a high temperature mechanical incinerator as specified for the EVD centre and in accordance with the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines for health care facilities;  
• Ensure that international industry best practices related to hazardous waste incineration are followed in accordance with the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines.  
• Sensitize and train staff to adequately segregate the waste from the point of generation, to ensure only combustible waste goes into incinerators;  
• Adequately budget for fuel for the incinerators;  
• Provide appropriate breathing masks to incinerator operators and other staff that work near the incinerator;  
• Regularly maintain the incinerators to ensure they are working properly. | Contractor, Mwanza District Hospital and Contractor | Once during installation of the incinerator | Included in the project budget |
| 3.3. | Water pollution | • Construct the septic tank according to the design specifications. | Contractor | Once during the construction of the septic tanks | Included in the project budget |

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The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. When a member of the World Bank Group is involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. The World Bank Group’s EHS Guidelines for Health Care Facilities can be found at: [http://www.ifc.org/wps/wcm/connect/bc554d80498658b6b6b66a6515bb1?MOD=AJPERES&id=1323161961169](http://www.ifc.org/wps/wcm/connect/bc554d80498658b6b6b66a6515bb1?MOD=AJPERES&id=1323161961169) and the General Environmental Health and Safety Guideline can be found at [http://www.ifc.org/wps/wcm/connect/532ff480486583ab4d6f66a6515bb18/T-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES](http://www.ifc.org/wps/wcm/connect/532ff480486583ab4d6f66a6515bb18/T-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES)
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or social Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Ensuring that the wastewater system is properly used to avoid blockages; and&lt;br&gt;• Ensure wastewater does not spill onto the ground surface by regular preventive maintenance.&lt;br&gt;• Ensure that wastewater disposal is adequately budgeted to ensure regular cleaning of the septic tank;&lt;br&gt;• Only licensed waste collectors shall be employed for this disposal;</td>
<td>Mwanza District Hospital,</td>
<td>Once every month</td>
<td>To be included in the hospital’s recurrent budget</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Potential Environmental or Social Impact</td>
<td>Proposed Mitigation Measure</td>
<td>Institutional Responsibility</td>
<td>Time for Implementation</td>
<td>Source of funds</td>
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</tr>
</tbody>
</table>
| 3.4 | Occupation safety and health risks      | - Mwanza District Hospital shall be responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;  
- The MoH and Mwanza District Hospital must continue to train and sensitize its staff in infection control and best practices for managing infectious wastes in accordance with the World Health Organization’s *Safe Management of Wastes from Health-care Activities*’ handbook and its *Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings*. Other relevant infection prevention and control guidelines provided by WHO should further inform operational procedures;  
- Regularly monitor performance of equipment and carry out maintenance;  
- Ensure there is enough supply of medical supplies including PPEs;  
- Regularly train staff on how to use PPE;  
- Ensure that a fence around the EVD treatment centre is constructed according to WHO guidelines to keep visitors at distance but allowing them to see through;  
- Ensure that the Project’s Health Care Waste Management Plan and infectious disease management training and surveillance programs targeting district health officials, frontline staff and community members are implemented; | Mwanza District Hospital | Once every month | Include in the hospital’s recurrent budget |

7 [http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1)  
8 [http://apps.who.int/iris/bitstream/10665/130596/1/WHO_HIS_HSD_2014.4_eng.pdf?ua=1&ua=1&ua=1](http://apps.who.int/iris/bitstream/10665/130596/1/WHO_HIS_HSD_2014.4_eng.pdf?ua=1&ua=1&ua=1)
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or social Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Decommissioning Phases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.1. Air, land and water contamination</td>
<td>• Dispose wastewater in appropriate and approved drainage systems; and • Incinerate contaminated solid waste and dispose ash in approved landfill sites</td>
<td>Mwanza District Hospital</td>
<td>Throughout the decommissioning phase</td>
<td>To be included in the hospital’s recurrent budget</td>
</tr>
<tr>
<td></td>
<td>4.2. Risk of infection from contaminated equipment</td>
<td>• Provide appropriate PPE for staff for destroying equipment used in the centre; and • Destroy all equipment used in the EVD Quarantine Centre.</td>
<td>Mwanza District Hospital</td>
<td>Throughout the decommissioning phase</td>
<td>To be included in the hospital’s recurrent budget</td>
</tr>
</tbody>
</table>
6.2 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Environmental and social monitoring has to be carried out during construction, operation and maintenance and decommissioning of the Ebola Virus Disease Quarantine Centre. Table 6.2 provides the proposed monitoring institutions, monitoring indicators, monitoring frequency and the estimated costs for monitoring the ESMP implementation. The contractor (Project Engineer) will also perform monitoring activities as stipulated in the contract.
## Table 0.2: Environmental and Social Monitoring Plan

<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 1.  | Planning and Design | 1.1. Temporary loss of power to a large section of the district | • ESCOM must issue notice letters to communicate to the affected people about the impending loss of power at least a week in advance;  
• ESCOM must ensure they have all the required materials before starting the work to ensure there are no interruptions;  
• All activities that do not require switching off the power supply must be done well in advance before switching off;  
• Danger signs must be placed around the work area to avoid accidents;  
• Safety measures must be observed including use of PPE e.g. wearing of helmets and safety harnesses | • Reports of notice for loss of electricity  
• Availability of all materials for re-routing of the power line  
• Prior works carried out before relocation of the power line  
• Use of danger signs  
• Use of PPE | ESCOM, Mwanza District Hospital | During the whole process of relocation of the line | N/A |
<p>| 2.  | Construction Phase | | | | | |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 2.1. | Accidents to workers, staff and public on construction sites | • Train workers on prevention and managing incidences;  
• Restrict hospital staff and the public from going to the construction site by putting posters and erecting barriers;  
• Labourers must wear protective gear;  
• Provide first aid kit. | • Number of workers trained  
• Number of posters and barriers erected  
• Number of workers wearing protective gear  
• Types and number of supplies in the first aid kit | Contractor, District Health Office, Local Assembly MoH (Planning Department) | Once every month | 2000 USD (for transport and allowances for officials from the planning Department) |
| 2.2. | Utilizing unlicensed quarry sites | • The Contractor will identify materials from existing licensed quarries with the suitable materials for construction.  
• Procurement of construction material only from permitted sites and licensed / authorized quarries. | • Evidence provided upon request demonstrating source of construction materials | Contractor, DHO, DPPD | As appropriate during the construction phase | Included in 2.1 |
<p>| 2.3. | Use of lead-based paint products. | • The Contractor shall ensure that no paint containing lead or lead products is used. | • Evidence of using non lead-based paint. | Contractor, DHO, DPPD | As appropriate during the construction phase | Included in 2.1 |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 2.4 | Noise disturbances | • The hospital administrator must sensitize the contractor to minimise loud chatting;  
• The contractor must use efficient machines that do not make a lot of noise;  
• The contractor must provide appropriate PPE (e.g. ear muffs) to workers; and  
• The contractor must also ensure that noisy activities which cannot be avoided are limited to normal working hours. | • Complaints/reports on loud chatting  
• Efficiency of machines  
• Time of the day when noise making activities are carried | Contractor, District Health Office, Local Assembly, MoH (Planning Department) | Once every month | Included in 2.1 |
| 2.5 | Increased demand for electricity | • A proper arrangement for apportioning the costs must be agreed upon between the contractor and the hospital administration.  
• The contractor should provide electricity generator to be used during construction and operation of the EVD Centre. | • Use of a separate generator  
• A signed agreement on payment of utility bills | Contractor, District Health Office, MoH (Planning Department) | Once every month during the construction phase | Included in 2.1 |
| 2.6 | Dust nuisance | • The construction team must wear dust masks during site clearing and levelling;  
• The contractor must erect a barrier around the work sites to break or reduce wind and dust movement to the nearby ward and departments; and  
• Spray water on the activity area to suppress dust. | • Use of mouth and nose masks  
• Presence of a barrier during dust making activities  
• Area sprayed with water | Contractor, District Health Office, Local Assembly, MoH (Planning Department) | Once every month during the construction phase | Included in 2.1 |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 2.7 | Waste generation | • Properly segregate wastes to encourage reuse of some of the wastes e.g. cartons and paint containers;  
• Incinerate segregated wastes e.g. used gloves;  
• Use some of the excavated materials for rehabilitation of the waste disposal area.  
• Designate disposal sites in the contract and cost unit disposal rates accordingly; and  
• All wastes must be taken to the approved disposal area. | • Volume of waste segregated and reused  
• Use of approved waste disposal area  
• Area rehabilitated | Contractor, District Health Office, Local Assembly, MoH (Planning Department) | Once every month during the construction phase                                           | Included in 2.1                                                                 |
| 2.8 | Water pollution   | • Lining surfaces where cement, paints and oils will be stored to catch spillage;  
• Lining or covering the floor during painting and use of lubricants;  
• Sensitizing the workers to appropriately manage construction materials and wastes; and  
• Proper supervision of the workforce. | • Area lined during application of cement and paints  
• Area lined for storage of paints etc.  
• Records of sensitizations  
• Number of hours the supervisor is available on site | Contractor, District Health Office, District Council, DPPD | Monthly                                                                                 | Included in 2.1                                                                 |
| 2.9 | Spread of HIV/AIDS | • Awareness meetings shall be conducted as a part of all construction employee orientation programs.  
• Employees shall be provided with condoms for protection from STIs" | • Number of meetings conducted  
• Number of condoms distributed | Contractor, District Health Office, Local Assembly, MoH (DPPD) | Once every month during the construction phase                                           | Included in 2.1                                                                 |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 2.10. | Removal of trees | • Transplant trees and ornamental shrubs in the same or other nearby areas wherever possible;  
• Replace felled trees on a two for one basis (two replacement trees for each removed) and ensure that indigenous trees are selected; and  
• Ensure landscaping design considers where hospital expansion activities are likely to occur in the near future.  
• The cut trees must be used for productive uses e.g. as firewood and timber; and | • Number of trees removed  
• Number of trees planted at another place | District Health Office, MoH (Planning Department) | Once every month during the construction phase | Included in 2.1 |

3. **Operational and Maintenance phase**
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 3.1 | Fear of being infected | • Conduct adequate sensitization and awareness meetings with staff and the surrounding community including the people at the market on how the EVD may be contracted and transmitted; and on infection control and health-care practices for patients;  
• Train staff on Occupational Safety and Health and Infection Control; and  
• Frequently update the public on the activities in the EVD Quarantine Centre | • Number of times sensitization meetings are conducted  
• Number of staff and community members people sensitized  
• Consent for conducting burial at nearby community graveyard  
• Number of staff trained in occupation safety and health and infection control  
• Number of reports on activities at the EVD Quarantine Centre | District Health Office, Local Assembly, Local NGO’s, MoH (Ebola Coordination Unit) | Once every month | 3,000 USD (for transport and allowances for officials from the Ebola Coordination Unit) and 20,000 USD for infectious disease management training and surveillance programs under Component 1. |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
|     | Air pollution and operational risk from incineration of wastes | • Install a high temperature, mechanical incinerator as specified for the EVD Centre and in accordance with the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines for health care facilities;  
  • Train staff (especially the incinerator operator) on appropriate use of the incinerator;  
  • Plant trees to compensate for emissions; | • Specifications of the installed incinerator  
  • Records of training on how to operate the incinerator  
  • Number of staff oriented in infection control and waste management  
  • Number of trees are planted | Contractor, District Health Office, Local Assembly, MoH (Ebola Coordination Unit) | Twice during the construction phase and operation phase | Included in 3.1 |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Train and sensitise staff to adequately sort wastes from the point of generation to ensure that only combustible waste goes into incinerators;</td>
<td>• Number of staff trained in waste segregation</td>
<td>District Health Office, Local Assembly, MoH (Ebola Coordination Unit)</td>
<td>Once every month</td>
<td>Included in 3.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide small biohazard bags (bin liners) which can easily pass through the door of the incinerator;</td>
<td>• Number and size of bin liners provided;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensure that good international industry practices related to hazardous waste incineration are followed in accordance with the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines for health care facilities.</td>
<td>• Litres of fuel available every month</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide adequate fuel for incinerator and ensure the fuel is properly used; and</td>
<td>• Records of maintenance of incinerators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Regularly maintain the incinerators; and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Orient staff to infection control and waste management practices;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9 The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. When a member of the World Bank Group is involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. The World Bank Group’s EHS Guidelines for Health Care Facilities can be found at: [http://www.ifc.org/wps/wcm/connect/bc554d8048865b6b6b666a6515bb18/Final%2B-%2BHealth%2BCare%2BFacilities.pdf?MOD=AJPERES&d=1323161961168] and the General Environmental Health and Safety Guideline can be found at [http://www.ifc.org/wps/wcm/connect/532ff48048865b6b6b666a6515bb18/T-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES]
<table>
<thead>
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<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 3.3 | Water pollution  | • Construct the septic tank according to the design specifications;  
• Ensure wastewater does not spill onto the ground surface by regular preventive maintenance; and  
• Ensuring that the wastewater system is properly used to avoid blockages  
• Ensure that wastewater disposal is adequately budgeted to ensure regular cleaning of the septic tank;  
• Only licensed waste collectors shall be employed for this disposal; and | • Properties of the septic tank  
• Reports of spillages  
• Records of monitoring and maintenance of the septic tank. | District Health Office, Local Assembly,  
District Health Office, MoH (Ebola Coordination Unit) | Once every month | Included in 3.1 |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 3.4 | Occupation safety and health risks | • Mwanza District Hospital shall be responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;  
• The MoH and Mwanza District Hospital must continue to train and sensitize its staff in infection control and best practices for managing infectious wastes in accordance with the World Health Organization’s Safe Management of Wastes from Health-care Activities\(^{10}\) handbook and its Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings\(^{11}\);  
• Regularly monitor performance of equipment and carry out maintenance;  
• Ensure there is enough supply of medical supplies including PPEs;  
• Ensure that the Project’s Health Care Waste Management Plan and infectious disease management training and surveillance programs targeting district health officials, frontline staff and community members under Component 1 is implemented;                                                                                     | • Number of times health workers are screened  
• Number of staff trained in occupational safety, infection control and waste management  
• Number of times equipment is maintained  
• Number of PPE in stock  
• Availability of separate water reservoir and electricity generator | District Health Office, MoH (Ebola Coordination Unit) | Once every month | Included in 3.1 |

\(^{10}\) [http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1)  
\(^{11}\) [http://apps.who.int/iris/bitstream/10665/130596/1/WHO_HIS_SDS_2014.4_eng.pdf?ua=1&ua=1&ua=1](http://apps.who.int/iris/bitstream/10665/130596/1/WHO_HIS_SDS_2014.4_eng.pdf?ua=1&ua=1&ua=1)
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<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Decommissioning Phases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Air, land and water contamination</td>
<td>• Dispose wastewater in appropriate and approved drainage systems; and • Incinerate contaminated solid waste and dispose ash in approved landfill sites</td>
<td>• Area for disposal of wastewater • Volume of solid waste incinerated</td>
<td>District Health Office, MoH (Ebola Coordination Unit and DPPD)</td>
<td>Twice during decommissioning phase</td>
<td>600 USD for transport and allowances for officials from the DPPD and Ebola Coordination Unit; no costs applicable for the officers at the district level</td>
</tr>
<tr>
<td>3.2</td>
<td>Risk of infection from contaminated equipment</td>
<td>• Provide appropriate PPE for staff for destroying equipment used in the centre; and • Destroy all equipment used in the EVD Quarantine/Treatment Centres.</td>
<td>• Reports of use of PPE during cleaning • Number of equipment destroyed</td>
<td>District Health Office, MoH (Ebola Coordination Unit, DPPD)</td>
<td>Twice during decommissioning phase</td>
<td></td>
</tr>
</tbody>
</table>
6.3 INSTITUTIONAL RESPONSIBILITY FOR IMPLEMENTATION OF THE ESMP

For effective implementation of the Environmental Management and Monitoring Plan, there is need for clear roles, responsibility and reporting procedures:

The Ministry of Health, through the Department of Planning and Policy Development (DPPD) and the Ebola Coordination Unit, will have the overall responsibility to ensure that the ESMP and the monitoring plan is implemented. They must ensure that all stakeholders are familiar with the contents of the ESMP and their roles; resources are available and key staff for implementing the activities are adequately trained. As part of the environmental management, the DPPD must also ensure that ESMP is included as part of the contract documents. Guidelines which the contractor must observe to minimise or mitigate impacts on the biophysical and social economic environment are provided in annex 5.

Since the impacts are mainly localised and moderate, the day to day responsibility for monitoring implementation of the project and the ESMP rests with the stakeholders at district level as follows:

1. **Mwanza District Health Office**, is responsible for delivering health services including environmental health in the area. The Environmental Health Officer (EHO) will lead in the implementation of the ESMP. He will familiarise himself with the contents of the ESMP, mobilise resources and stakeholders; and ensure that the mitigation measures are implemented. The EHO will however need training in management of wastes from an Ebola Treatment Centre. He will be reporting to the District Environmental Health Officer (DEHO) and the Hospital Administrator.

   The District Health Office has the **Maintenance Supervisor** will be responsible for daily supervision of the contractor for implementation of the ESMP during construction, ensuring that the contractor is adhering to the contract agreement with respect to the ESMP recommendations. He will be reporting to the Hospital Administrator and the Projects Engineer from the Department of Planning and Policy Development.

2. **The Contractor** will be responsible for ensuring construction activities are carried out sustainably through compliance to the contract and the ESMP. The contractor will also adhere to the regulations and environmental standards for Malawi.

3. The hospital’s Healthcare Advisory Committee (HAC) will work with the District Hospital in the implementation and monitoring of the ESMP.

4. **The District Council** has a District Environmental Sub-Committee (DESC) which has the responsibility for appraising projects, environmental management plans and monitoring. Therefore all reports from the DEHO, Contractor and HAC will be reviewed by the DESC. The District Council’s Environmental District Officer (EDO) and Engineer must also work with Mwanza District Health Office in implementing the ESMP and monitoring the project activities.
5. The DESC reports to the **District Executive Committee (DEC)**. Where the ESMP is found to be inadequate or there is non-compliance to the ESMP, the DESC will recommend the revision of the ESMP or discontinuing of the project.

6. The **Environmental Affairs Department (EAD)** in the Ministry of Natural Resources, Energy and Mining will provide an advisory role to the District Council. The EAD has environmental inspectors who may inspect the project for compliance to Environmental Standards in accordance with the Environmental Management Act (1996).

### 6.4 COSTS FOR ENVIRONMENTAL MANAGEMENT

Costs for managing the impacts on the biophysical and socio-economic environment are, in general, included in the project budget. Costs for monitoring the ESMP have also been estimated in dollars at the exchange rate of 1 USD = MK 700.00 and they are as in Table 6.3.

Table 0.3: Summary of the costs for monitoring the ESMP

<table>
<thead>
<tr>
<th>Item/Activity</th>
<th>During construction phase</th>
<th>During operation phase (5 Years)</th>
<th>During decommissioning phase</th>
<th>Total Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport and allowance for monitoring staff from the Ebola Coordination Unit and Planning Department of Ministry of Health</td>
<td>2,000</td>
<td>15,000</td>
<td>600</td>
<td>17,600</td>
</tr>
<tr>
<td>Infectious disease management training and surveillance programs targeting district health officials, frontline staff and community members</td>
<td>20,000</td>
<td></td>
<td></td>
<td>20,000</td>
</tr>
<tr>
<td>Total</td>
<td>2,000</td>
<td>35,000</td>
<td>600</td>
<td>37,600</td>
</tr>
</tbody>
</table>
CHAPTER 7 CONCLUSION AND REQUIREMENTS

7.1 CONCLUSIONS

The construction activities and operation of the Ebola Virus Diseases Quarantine Centre at Mwanza District Hospital will have both positive and negative impacts. The negative impacts, on overall, are assessed as moderately severe and can be mitigated to low. Hence, this Environmental and Social Management Plan (ESMP) has been prepared. Integration of environmental considerations presented in the ESMP will improve the sustainability and the performance of the EVD Quarantine Centre. The study has also proposed a Monitoring Plan to ensure effective implementation of the ESMP.

7.2 REQUIREMENTS

The following overall summary of requirements are applicable to the project: :

- Mwanza District Hospital is responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;
- The MoH and Mwanza District Hospital will continue to train and enforce infection control practices for managing wastes in accordance with standards set by the World Health Organization, including those outlined in the Safe Management of Wastes from Health-care Activities handbook in addition to the Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings.
- During construction, operation and maintenance phases, the MoH and the Mwanza District Hospital will implement good international industry practices provided in the World Bank Group’s environmental, health, and safety technical (EHS) guidelines for health care facilities.
- This ESMP is adopted and effectively applied;
- Provide appropriate corrective actions for issues arising from monitoring of the ESMP;
- The District Health Office, the District Council and the other responsible institutions will ensure that technical expertise and financial resources are available for mitigating and enhancement of the impacts;
- The MoH and the DHO will adequately train staff for implementing the ESMP;
- The contractor and monitoring authorities will comply with all relevant legal provisions outlined in this report;
- The District Health Office and the District Council will provide regular updates to the communities, on the EVD preparedness activities; and
- Provide adequate sensitization to the communities about Ebola Virus Disease, Infection Control, Health-care and Waste Management.
REFERENCES

ANNEXES

ANNEX 1: TERMS OF REFERENCE

Environmental and Social Management Plans for 6 Ebola Sites

Introduction:
Any civil works/constructions being funded under World Bank projects require an Environmental and social due diligence to be undertaken during project conceptualization/preparation and prior to start of works. Such due diligence requires actions to be taken, and the process is documented, consulted and disclosed before project implementation starts. This step was missed out when the AF phase was approved; however, this is a requirement which the Bank has mandated which cannot be bypassed. Recognizing that the project is in active implementation, the Bank would help in any way possible to ensure requirements are adhered to and compliance is met, while also not significantly delaying project implementation. Therefore as a start, site-specific Environmental and Social management plans (ESMPs) must be prepared.

Scope of the ESMP:
1. Include a description of the geographical locale of each site and its environs and the associated social aspects during construction and operation of the Ebola Virus Diseases Quarantine/Treatment Centres;
2. Where the EVD Quarantine/Treatment is being constructed at a hospital include a detailed description of the existing waste management systems including incinerators and conditions of sewage systems;
3. Provide the mode of treatment of infectious waste water, a description what is to be undertaken in the event that a connection has been made to the municipal sewer lines. Likewise the system to be put in place for infectious sharps and waste;
4. Assess impacts of installation of incinerators, wastewater discharges and solid waste management will not have any negative impacts
5. Define any measures required to prevent any longer-term impacts on the environment and the neighbouring community and could also build in such enhancements into the design/infrastructural plan of the units.
6. Propose an EMP in tabular form by which all of the mitigation measures prescribed will be carried out. An environmental monitoring plan should also be prepared.
7. The ESMPs will need to be consulted with the local community and disclosed prior to continuation of works.

Report format:
Considering the project has been stopped prepare a summarised report of 6 – 10 pages.

Assignment Duration: 13 days

---

12 ToRs based on communications with World Bank and meetings between NAC and the Consultant. No official ToRs were provided
# ANNEX 2: LIST OF PEOPLE CONSULTED

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation -</th>
<th>Institution</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Raphael Piringu</td>
<td>District Health Officer</td>
<td>Mwanza District Hospital</td>
<td>0881222330</td>
</tr>
<tr>
<td>Dr. Kapachika</td>
<td>District Medical Officer</td>
<td>Mwanza District Hospital</td>
<td></td>
</tr>
<tr>
<td>Blessings Chitsime</td>
<td>District Environmental Health Officer</td>
<td>Mwanza District Hospital</td>
<td>0884523032</td>
</tr>
<tr>
<td>Mr. Chavinda</td>
<td>Maintenance Manager</td>
<td>Mwanza District Hospital</td>
<td></td>
</tr>
<tr>
<td>Mr Bote</td>
<td>Engineer</td>
<td>Mwanza District Hospital</td>
<td></td>
</tr>
<tr>
<td>Z. Manyeta</td>
<td>Driver/Community Member</td>
<td>Mwanza District Hospital</td>
<td>0888527490</td>
</tr>
<tr>
<td>C. Kulinji</td>
<td>Driver/Community Member</td>
<td>Mwanza District Hospital</td>
<td>0881043497</td>
</tr>
<tr>
<td>C. Menyere</td>
<td>Driver/Community Member</td>
<td>Mwanza District Hospital</td>
<td></td>
</tr>
<tr>
<td>R. Rhoza</td>
<td>Driver/Community Member</td>
<td>Mwanza District Hospital</td>
<td>0884918866</td>
</tr>
<tr>
<td>C. Mkwaera</td>
<td>Driver/Community Member</td>
<td>Mwanza District Hospital</td>
<td>0999309180</td>
</tr>
<tr>
<td>McDonald Simbani</td>
<td>Community Member</td>
<td>Mwanza Boma</td>
<td>0996055842</td>
</tr>
<tr>
<td>Dorothy Willie</td>
<td>Community Member (Market Chairman)</td>
<td>Mwanza Boma</td>
<td>0881882253</td>
</tr>
<tr>
<td>Golden Josaya</td>
<td>Community Member</td>
<td>Mwanza Boma</td>
<td>0884218255</td>
</tr>
<tr>
<td>Joyce Nanyaka</td>
<td>Community Member</td>
<td>Mwanza Boma</td>
<td>0881855766</td>
</tr>
<tr>
<td>Evanisiyo Dzukani</td>
<td>Community Member</td>
<td>Mwanza Boma</td>
<td>0881322697</td>
</tr>
</tbody>
</table>
### ANNEX 3: MAIN ISSUES RAISED BY STAKEHOLDERS

#### Issues raised during consultations with hospital administrators

1. The hospital has a good incinerator worth 25 million Kwacha (about 35,000 USD at the current rate of 1 USD = MK700) which was donated by Malawi Science for Health (MSH). The only problem is that they don’t know how to operate it.
2. Colour coded bins are used even outside the wards. The community has also been sensitized.
3. The hospital got the knowledge on waste management and colour coding from Malawi University of Science and Technology (MUST).
4. The market is a problem to waste management – they do not clean the area adjacent to the hospital where the market has extended to. As a solution the hospital is proposing collecting market fees on the hospital’s land to finance cleaning activities.
5. A borehole, with a 10,000 litre capacity tank is available. The borehole pump is powered by solar. However there is need for an extra tank, as the tank supplied by the borehole is also used to store water from the Water Board. The water from the borehole is not chlorinated.
6. An electric generator is also available.
7. The hospital has an Ebola Team which has been carrying out sensitizations in the community. Sensitizations have mainly used Churches.
8. More training is required on Ebola Virus Disease Infection Control and Waste Management.
9. The hospital has benefited from EVD preparedness activities through receipt of the following: Training, Twin Cab Car, 30 Ebola Suits, and 2 screening gadgets. However the screening gadget requires change of batteries after few days and it is a drain on hospital funds.
10. To effectively sensitise the communities, an audio visual van may be required. The National Aids Commission has the van and it can be loaned to the hospital on request.
11. There has been theft of drugs before. The hospital is now working with the community and the police. The police and the community have helped to catch drug thieves and the Ministry of Health is handling the cases as they were hospital staff.
12. The district has the lowest population yet it has a highest OPD use.
13. There is a health and environment committee which assists in environmental management.
14. The Administrators use incentives such as parties, awards, employee of the year etc. to encourage staff to work hard.
15. The hospital has good relationship with Mozambique such that learning visits are conducted.

#### Waste Management

16. The waste feed opening of the incinerator is small for large waste bags which come to the disposal area. The operator uses hands to pick waste from the bags to feed the incinerator.
17. No appropriate PPE is provided. The operator asks for surgical gloves from the wards.
18. There is no proper solid waste disposal pit.
19. The sewage system uses septic tanks – there are about 7 septic tanks and most of them are full. Emptying them is a problem as the District Council neither an appropriate vehicle nor place to dispose the sewage waste.
ANNEX 3: MINUTES FOR THE MEETING WITH COMMUNITY MEMBERS HELD ON 9TH FEBRUARY AT MWANZA DISTRICT HOSPITAL

A. AGENDA
1. Establish the knowledge which the community has on Ebola Virus Disease and the construction of the EVD quarantine centre at Mwanza District Hospital; and
2. Establish issues that relate to the community and need to be included in the ESMP for effective construction and operation of the EVD quarantine centre.

B. MEMBERS PRESENT

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kent Kafatia</td>
<td>Lead Consultant</td>
<td>0999831595</td>
</tr>
<tr>
<td>Precious Chaponda</td>
<td>Junior Consultant</td>
<td>0999619354</td>
</tr>
<tr>
<td>Z. Manyeta</td>
<td>Community Member</td>
<td>0888527490</td>
</tr>
<tr>
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<tr>
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<td>Community Member</td>
<td>0881322697</td>
</tr>
</tbody>
</table>

C. OPENING REMARKS

The meeting was called to order by Mr. Chaponda. He thanked the members for coming to the meeting even though it was at short notice. He welcomed everyone and asked for introductions starting with the lead consultant (Mr. Kafatia.) He gave a brief background of Ebola Virus Disease and what the Government of Malawi is doing to prepare for the disease including the construction of the EVD quarantine centre at Mwanza District Hospital. He then introduced the agenda for the meeting and asked if there were any objections to proceed with the meeting. A no objection vote was given hence the meeting proceeded. Discussions used questions and answers and they were led by Mr. Kafatia.

D. AGENDA ITEMS
1. Knowledge on EVD and the construction of the EVD Quarantine Centre
   - The community reported that they had held about Ebola Virus Disease from church meetings. The hospital staffs including the District Health Officer were going in churches to make announcements about the disease, care for patients and how to prevent infection.
   - The community members however expressed ignorance about the planned construction of the EVD Centre and any other associated activities. Hence Mr Kafatia
explained about the construction project activities including the site for the EVD Centre. He also proceeded to ask if the project was welcome and if they can help with some of the activities during the construction, for example fetching sand as volunteers. The community responded that the EVD quarantine centre was welcome but they cannot volunteer at the hospital – any work will attract payment.

– When asked on whether the site for the EVD Centre was right for the project, the members present had no objection saying that it was hospital land and they can do anything with it.

2. **Issues that relate to the community and need to be included in the ESMP for the construction and operation of the EVD quarantine centre**

   – Mr Chaponda explained to the community that the consultant will ask a number of questions to which the answers will inform the preparation of the ESMP. The community members were also allowed to ask questions. The following key things were gathered from the community members:
     i. Some of the community members in Mwanza are afraid of Ebola.
     ii. Smoke from incinerators does not affect the communities.
     iii. The community would provide a burial place for Ebola remains.
     iv. The guardian shelter does not have a toilet. Hence guardians tend to use the market toilet which creates congestion.
     v. Cleaning at the hospital is done by the District Council.
     vi. The hospital is usually clean – cleaning is done at least 3 times a day.

E. **AOB**

   – In the any other business section the community members complained of slow services at the hospital; the Out Patient Department opens late around 9 AM and the pharmacy even much late, around 10 AM. To answer Mr. Kafatia said that he will present this to the hospital administration; however the community should not expect the same kind of delays at the EVD Centre as EVD is fatal and highly infectious. Moreover the EVD Centre will have dedicated staff with special training.

F. **CLOSING REMARKS**

   – In his closing remarks Mr. Chaponda thanked everyone for their attendance and contributions. He then asked everyone to attend meetings on Ebola Virus Disease, Treatment and Infection Control which may be taking place in the District.

Precious Chaponda
(Secretary for the meeting - 0999619354)
ANNEX 5: ENVIRONMENTAL GUIDELINES FOR CONTRACTORS

1. General Provisions and Precautions
The contractor shall take all necessary measure and precautions to ensure that all the works and associated operations on or off the work sites are carried out in accordance with statutory and regulatory environmental and social requirements of the Malawi. The contractor shall take all measures necessary to implement the requirements of the ESMP and protection measures relevant to the works.

The contractor shall avoid and prevent any nuisance or disturbance associated with execution of work under this project. In the event of any soil, debris or silt from the work sites being deposited on any adjacent land, the contractor shall immediately remove all such spoil debris or silt and restore the affected area to its original state, to the satisfaction of the responsible authorities. Any temporarily acquired land for construction purposes should be restored to its prior condition, to the satisfaction of the client or client’s representative.

The contractor shall include environmental management costs in the bid and shall commit to implementing the environmental management activities as agreed in the contract conditions. The contractor shall be liable to a fine as determined by the Environmental Affairs Department (or Minister of Natural Resources, Energy and Mining) in accordance with the EMA 1996, where his actions contravene environmental compliance.

2. Protection of Water and other Public Services
The Contractor shall ensure that no public services are disrupted as a result of execution of the construction works. In particular, the Contractor shall:

- Not interfere with supply or abstraction of water for public or private use; and shall not pollute any water resources (including groundwater);
- Not disrupt power supply or telephone connections or any other public or private services including footpaths and walkways;
- Not discharge or deposit any waste or any material into any waters or any grounds except with the permission of the appropriate regulatory authorities.
- At all times ensure that all streams, drains and trenches within and adjacent to the work sites are kept safe and free from any debris and any material arising from the works;
- Protect all water courses (including ditches, canals, drains and lakes) from pollution, siltation, flooding or erosion as a result of the execution of the works.
- Assume all responsibility to locate or to confirm the details and location of all utility services on or in the vicinity of the site.
- Assume responsibility for any damage and/or interference caused by him or his agents, directly or indirectly, arising from actions taken or a failure to take action to protect public or private utilities.
- Be responsible for full restoration of any damage caused and for restoration of services. Restoration shall be to the satisfaction of the client/client’s representative. The client/ client’s representative will ensure that any affected...
third party is content before confirming they are content with the restoration enacted by the contractor.

- Ensure that water and waste products shall be collected, removed and disposed of at a site approved by the District Council in a manner that will not cause pollution or nuisance.
- Not dispose of any surplus material on private land unless authorized in writing by the owner(s), authenticated before a notary public, and with previous authorization of the District/City Council.

3. **Control of Air Pollution**
   - Open fires and burning of construction waste shall not be permitted;
   - Dust-generating operations shall not be permitted to affect any residential areas, pedestrians or any public or private property. Where dust generation is inevitable, appropriate measures such as use of water sprays and fencing shields or appropriate covering material shall be employed. All workers shall be protected from dust emissions by providing them with appropriate protective wear.
   - All construction machinery, plant and equipment including all vehicles shall be regularly maintained to ensure that no smoke or obnoxious gas is discharged to pollute the air and affect the public or property.

4. **Acquisition of Construction Material**
   - Only licensed quarrying, sand mining and brick-making operations and sites shall be used as sources of construction materials.

5. **Prevention of Soil Erosion.**
   - The Contractor shall fence off construction sites, provide appropriate drainage and ram or compact soils where necessary to stabilize the soils and reduce erosion.
   - All construction sites shall be backfilled, levelled and re-planted with trees, vegetation and grass to restore them to the original state and to prevent soil erosion to the satisfaction of the client or client’s representative
   - As far as possible the contractor shall avoid or reduce construction activities and mining of construction material during the peak of rainy seasons.

6. **Control of Social Impacts**
   - The Contractor shall coordinate with all the neighbouring land users and respect their rights to a clean and safe environment. Written agreements with local landowners for temporary use of their sites or property shall be made and sites must be restored to original condition or conditions acceptable to the owner within an agreed time. Camp sites shall be maintained and cleaned up at all times and on completion of the works.
   - Health and safety of workers shall be protected by providing basic emergency health and first aid facilities and awareness meetings aimed at the prevention of sexually transmitted diseases. Awareness meetings shall be conducted as a part
of all construction employee orientation programs. Employees shall be provided with condoms for protection from STIs.

- The Contractor shall obtain all necessary written traffic control permissions including for use of flagmen, traffic cones or other devices such as barricades and/or lights which he must use to control traffic for safety of pedestrians, cyclists and all road users, particularly school children.
- The Contractor shall neither stockpile nor store any construction materials; nor park construction plant or vehicles in walk ways, pedestrian routes or driveways. Stockpiles of material shall be covered with tarpaulins or sprayed with water where these materials pose risks of dust to the public or people’s property.

7. **Noise Control and Regulation**

- The Contractor shall take all necessary measures to ensure that the operation of all mechanical equipment and construction processes on and off the site shall not cause any unnecessary or excessive noise to the public. In addition, the Contractor shall operate noisy equipment within government working times unless with prior arrangement and permission from the employer.
- Vehicle, plant and equipment exhaust systems shall be maintained in good working order, as recommended by the manufacturers, to ensure that no noise is unnecessarily generated to inconvenience the public.
- Construction works and operations shall be scheduled to coincide with periods when people would least be affected by noise, having due regard for avoiding any noise disturbances to local residents, hospitals, schools or any other public and private places in the work site neighbourhood.
- The contractor shall notify public (likely to be affected by the works) of impending construction operations and specify methods to receive and handle all public complaints.

8. **Environmental Monitoring**

- The Contractor shall be responsible for monitoring all his activities and ensuring that all environmental requirements and the above conditions are met at all times.
- Contractor shall also facilitate regular environmental, social and health; and safety monitoring by the Client, the Client’s representative or an independent monitor appointed by the Client, or any other national agency with a remit to inspect and monitor construction, environmental, social and health and safety performance.
- The contractor will immediately agree and implement a rectification plan to bring the contractor back into compliance where inspections, audits and monitoring identify issues that are not in compliance with the ESMP as included in the contract.
ANNEX 6: ARCHITECTURAL DESIGN OF ASH PIT FOR THE EVD CENTRES

NOTES

1. DO NOT SCALE OFF DRAWING. ALL MEASUREMENTS MUST BE ACCURATE. ANY INACCURACIES MUST BE REPORTED TO THE PROJECT ARCHITECT.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURAL STABILITY AND EFFICIENT PERFORMANCE OF THE WORK.

PLACENTA PIT, LAYOUT PLAN
scale 1:50

PLACENTA PIT, FLOOR PLAN
scale 1:50