Government of the Republic of Malawi

Ministry of Health

EBOLA PREPAREDNESS PLAN

Draft Environmental and Social Management Plan for the proposed Construction of the Ebola Virus Diseases Treatment Centre at Kameza in Blantyre

11 May 2016
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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPPD</td>
<td>Department of Policy and Planning Development</td>
</tr>
<tr>
<td>DEHO</td>
<td>District Environmental Health Officer</td>
</tr>
<tr>
<td>EHO</td>
<td>Environmental Health Officer</td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
</tr>
<tr>
<td>EVD</td>
<td>Ebola Virus Disease</td>
</tr>
<tr>
<td>GoM</td>
<td>Government of Malawi</td>
</tr>
<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>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
</tr>
<tr>
<td>NEAP</td>
<td>National Environmental Action Plan</td>
</tr>
<tr>
<td>NCE</td>
<td>National Council for the Environment</td>
</tr>
<tr>
<td>NEP</td>
<td>National Environmental Policy</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>TCE</td>
<td>Technical Committee on the Environment</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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</table>
ACKNOWLEDGEMENTS

The Consultant, Kent Kafatia, is indebted to the National AIDS Commission (NAC), the Ebola Coordination Unit, and the Department of Planning and Policy Development of the Ministry of Health for the support that was provided during the preparation of this Environmental and Social Management Plan (ESMP). This ESMP is a result of information and knowledge gathered during stakeholder consultations, community consultations and site investigations. Therefore the consultant wishes to express deep gratitude to all the people that were met with and participated in the consultations in Blantyre.
EXECUTIVE 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/treatment centres. The project is being implemented in selected border district and referral hospitals. In Blantyre the proposed EVD centre will be at a site for the proposed Blantyre District Hospital and Cancer Centre at Kameza.

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 EVD treatment centre at Kameza in Blantyre is likely to result in moderate environmental and social impacts, hence this ESMP. This 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 treatment centre in Blantyre.

Methodology for the study

In order to predict the impacts of construction of the EVD treatment centre at Blantyre, 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. 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 will be generated from the project activities during construction, operation and maintenance and decommissioning phases of the project. The following were identified as significant 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 for material/equipment suppliers  
v. Additional health services infrastructure  
vi. Improved/changed scenery

On the other hand, significant potential negative impacts that are likely to be generated include:

i. Noise disturbances  
ii. Waste generation and increased land degradation  
iii. Water pollution  
iv. Accidents  
v. Risk of infections due to inadequate sanitation  
vi. Risk of spreading of STIs and HIV/AIDS  
vii. Fear of being infected with the EVD  
viii. Loss of access to agricultural land  
ix. Air pollution from incineration of wastes  
x. Land degradation and soil contamination  
xi. Groundwater pollution  
xii. Increased runoff  
xiii. Occupation safety and health risks  
xiv. Increased workload/pressure on health worker  
xv. Attraction of thieves  
xvi. Distress due to inadequate facilities  
xvii. Trespassing at the EVD treatment centre by local communities  
xviii. Risk of infection from contaminated equipment

**Impacts Management**

In view of the negative impacts outlined above, this document has presented an the 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 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.

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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/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 and 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/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/treatment centre and the activities in the operational and maintenance phases will have moderate Environmental and Social Impacts. The 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 sites. The screening and
the preparation of the ESMP 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 and treatment centre. 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 treatment centre; as well as key stakeholder consultations and community consultations.

1.4. SCOPE OF THE ESMP STUDY
This ESMP is specifically for the identification of impacts related to construction and operation activities at the EVD treatment centre at Kameza; 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 anticipated positive and negative impacts of the proposed project activities on the biophysical and socio-economic environment, and provides mitigation measures for the negative impacts; and
- recommendations for future environmental protection during operation and maintenance of the EVD quarantine/treatment.

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, 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 (sewage ponds, incinerators, placenta 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 the District Health Officer, District Environmental Health Officer, officers from the local council, and the TA of the area;
e) interviews with key informants from the surrounding communities; affected directly or indirectly by the project; and
f) assessment of socio-economic and the health-care systems in the hospitals for implementations, related data against 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 Kameza in Blantyre 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-requrement of an ESIA. The EVD quarantine/treatment centres are being constructed in areas with existing developments and approved ESIA reports, hence an ESIA is not required. However considering the existing ESIA did not include the EVD Centres, it is necessary to notify the Environmental Affairs Department of the new developments and prepare ESMPs. An ESIA is not necessary in the case of this subproject.

2.1.7 National Construction Industry Policy, 2015

Construction of EVD quarantine/treatment centres 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/treatment facilities. 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 Mzuzu City Council. 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 treatment 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/treatment centres 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. It has the directorate 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.

The construction activities for the EVD treatment centre at Kameza 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. Managing of the EVD treatment centre during the operation phase will be done by Mchinji District Hospital, 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)
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 building 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 TREATMENT CENTRE FOR BLANTYRE

The Ebola Virus Disease (EVD) preparedness activities in Malawi include the development of Ebola Virus Disease treatment centre, dedicated septic tank, high temperature incinerator, ash pit, security fence and backup water reservoir tank and generator in Blantyre. The centre will be used as a referral centre for EVD suspected and confirmed cases in the Southern Region. It shall also act as an information sharing centre hence the designs have included a conference centre.

The EVD treatment centre has been designed by the Ministry of Health (MoH) by adapting World Health Organisation specifications for Ebola quarantine/treatment centres. The proposed EVD treatment centre will have two separate wards – the isolation ward for suspected cases and a ward for confirmed cases. The main considerations in the design are infection prevention and control. Hence careful attention has been paid to isolation (case – case, patient-health care worker, case – visitor isolation), 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 centre will have a floor area of 42.140 X 15.921 metres. The main rooms in the facility are as provided in table 3.1:

Table 0.1: Main rooms in the EVD Treatment Centres in the Referral Hospitals

<table>
<thead>
<tr>
<th>1.</th>
<th>Isolation Ward – to be used by suspected cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Ambulance Area</td>
</tr>
<tr>
<td>1.2</td>
<td>Bed space</td>
</tr>
<tr>
<td>1.3</td>
<td>Toilets</td>
</tr>
<tr>
<td>1.4</td>
<td>Linen store</td>
</tr>
<tr>
<td>1.5</td>
<td>Sluice room</td>
</tr>
<tr>
<td>2.</td>
<td>Confirmed Cases Ward – to be used by confirmed cases</td>
</tr>
<tr>
<td>2.1</td>
<td>Bed Space</td>
</tr>
<tr>
<td>2.2</td>
<td>Wash rooms</td>
</tr>
<tr>
<td>2.3</td>
<td>Conference room</td>
</tr>
<tr>
<td>2.4</td>
<td>Laboratory</td>
</tr>
<tr>
<td>2.5</td>
<td>Steam steriliser</td>
</tr>
<tr>
<td>2.6</td>
<td>Dirty Linen Dispatch areas</td>
</tr>
<tr>
<td>2.7</td>
<td>Visitors Lounge</td>
</tr>
</tbody>
</table>
Figure G: The Floor Plan for the Ebola Treatment Centre in Blantyre
3.2 WASTE DISPOSAL SYSTEMS

3.2.1. Liquid Waste Disposal

According to WHO guidelines, all liquid waste from an EVD quarantine/treatment centre is not supposed to go into the public sewage system. Therefore a septic tank will be constructed for the EVD treatment centre at Kameza in Blantyre.

The septic tank is a 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 treatment 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 of the ash pit is provided in Annex 7.

It is recommended that international industry best practices related to hazardous waste incineration are followed in accordance with the World Bank Group environmental, health, and safety technical (EHS) guidelines for Health Care facilities and the General Environmental Health and Safety Guideline. Considering the infectious nature of the waste, expected volume and the air pollution impacts of incineration, the following specifications have been proposed for the incinerator:

Table 0.2: Specifications of the incinerator for the EVD Treatment Centre

<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 designed in accordance with Good International Practice (see WBG 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/bc554d80488658b6b6e6f66a6515bb18/HealthCare%2BFacilities.pdf and the General Environmental Health and Safety Guideline can be found at http://www.ifc.org/wps/wcm/connect/532f4804886583ab4d6f66a6515bb18/1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES
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 treatment centre as specified by the Architect are provided in Table 3.4:

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 materials and steel windows</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steel, Paint</td>
</tr>
<tr>
<td>Roof</td>
<td>Roof sheets and trusses</td>
<td>Corrugated iron sheets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steel trusses</td>
</tr>
</tbody>
</table>

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

3.4 CONSTRUCTION WORKS

At the Blantyre EVD centre site construction activities started in December, 2015 but have since been stopped (see figure 3.4) to ensure compliance to environmental due diligence, in accordance with the World Bank Operational Policies. The construction period was 4 Months but another 4 months have been added.
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 locals will be employed as labourers for the EVD treatment centre project at Kameza.
CHAPTER 4 ENVIRONMENTAL AND SOCIAL SETTING FOR BLANTYRE EVD TREATMENT CENTRE

4.1 PROJECT LOCATION

4.1.1. Location and Accessibility

Blantyre District is located in the Southern region of Malawi. It is bordered by Mwanza District in the North, Zomba in the North East, Chiradzulu in the South East, Thyolo in the South and Chikwawa in the West (Refer to figure 1.1 on page 2 for the bordering districts). It is located in the Shire Highlands and is the geographical centre of the Southern Region of the Country. It has the largest commercial city (Blantyre City) which is the industrial capital of Malawi.

The proposed site for construction of the Blantyre EVD treatment centre is along the M1 road, about 1 km from the Kameza Roundabout. Figure 4.1 shows the map of Blantyre and the location of the proposed Blantyre EVD treatment centre.

Figure 0.1: Map of Blantyre and the location of Blantyre EVD treatment centre

From the Kameza Round About, on the M1 road, one passes the Kamuzu College of Nursing Blantyre Campus and then the abandoned Gadhafi Hospital Project. The slab for the EVD treatment centre has been constructed at the following coordinates: 36L 716779 m E and 36L 8261794 m S.
4.1.2. Site Selection

The Ministry of Health initially opted to develop the EVD treatment centre at the Queens Central Hospital (QEC H). The site was preferred because:

- Staff to work in the facility would be readily available – the hospital already has highly trained doctors and nurses that would requiring little orientation in handling Ebola Cases;
- It is near the Medical College of the University of Malawi, which is also a research centre and can help during an Ebola outbreak;
- Doctors would be travelling a short distance to the treatment centre as the Queens Central Hospital is in the Centre of the City;
- Security would be readily available. The presence of other structures and people would reduce chances of burglary and theft.

These reasons were generally logistical and not necessarily environmental nor social considerations. However plans for locating the EVD treatment centre at QECH were abandoned due to inadequate space.

The site at Kameza is not located within a Hospital fence or near any hospital. It was however selected because of the following:

- It is isolated – there are no human settlements nearby (on this side of the M1 road) which is ideal for an isolation facility;
- It is near the Chileka International Airport (CIA), Mwanza Border and Mwanza District Hospital where EVD screening is being conducted. Hence it would be easy to transfer suspected/confirmed cases to the referral centre. Moreover the EVD cases would not pass through Blantyre City where there is a large population;
- The site is already a public and District Health Office land;
- The site is adjacent to the planned Blantyre District Hospital and the Blantyre Cancer Centre. There is also Kamuzu College of nursing about 500 metres away. These institutions will help with the activities at the EVD Centre by way of personnel, equipment or space for other activities.
Figure 0.2: Satellite image of the proposed Ebola Virus treatment centre
4.2 BIO-PHYSICAL CHARACTERISTICS OF THE PROJECT AREA

4.2.1. Topography and Drainage

Blantyre District is located on the eastern edge of the Great Rift Valley. Hence it has varied topography. Highest elevations range from 1200 to 1612 metres above sea level in the eastern part. This area is characterised by hills and ranges. In the western and northern parts, elevations are as low as 400m below the sea level, along the Shire River. The project site is at an elevation of about 861 metres which is within the 800 – 1200 metres range. Figure 4.3 is the topographical map of for the proposed area.

The most conspicuous and dominant physical feature of the district is the numerous hills, which are found in all parts of the district. The main hills are the headwaters of several rivers and streams, which form a natural drainage system; with nine district catchment areas of Likhubula, Lunzu, Mombzei, Khombwe, Mudi, Chisombezi, Limbe, Luchenza and Mwamphanzi. The project site also slopes to Mtabi stream in the eastern side.

4.2.2. Air Quality

Blantyre District does not have a comprehensive air quality database. However, according to the Socio-economic Profile for the District, major sources of air pollution include fumes from
factories and engines; and from CFC fridges and freezers. Particulate matters from vehicle exhausts are also a source of air pollution. However the factories are in the Makata industrial area and far away from the project’s area of influence; and the vehicle exhausts are insignificant. Hence there is good air quality at the site.

4.2.3. Noise

The major sources of noise in Blantyre Urban include human and transportation activities. The site is about 100 metres from the M1 road and hence the major source of noise is motor vehicles, mainly large trucks. The noise levels are however tolerable, as the large trucks do not frequently pass by. However in future, due to increased economic activity, the noise levels may increase.

4.2.4. Soil and Vegetation

Blantyre is characterised by Lithosols in the northern part and ferruginous soils in the south. Lithosols are shallow and stony and not good for farming; whereas ferruginous soils are red, with a sandy clay loam top soil and are good for farming. At the project site, there are the ferruginous soils and hence crops grow well. The main vegetation observed at the site during the field investigations was maize.

4.2.5. Climate

Blantyre experiences the Tropical Continental climate, with two distinct seasons in the year. The rainy season is from November to April, with a continuation in form of light cold showers locally known as “Chiperoni” from end May to July. The dry season is from May to October. The mean annual rainfall is 1,122 mm; of which 80% falls within 3½ months between November and March. The district is generally cool, with mean annual temperatures ranging from 13 degrees Celsius during the cold season, to 21 degrees Celsius during the hot season. There are particularly two spells of uncomfortable weather; the hottest season associated with high humidity soon before the onset of the first rains (end October to November) and the frost along rivers, mist and chilly showers and winds characteristic of cold season in June and July. Figure 4.4 shows the temperatures and average rainfall for Blantyre.
4.3 SOCIO-ECONOMIC ASPECTS

4.3.1 Population

According to National Statistical Office (NSO) projections, the total population for Blantyre District is currently 1,328,245; of which 663,838 are male and 664,407 are females. The population is divided into rural and urban as shown in Table 4.1.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blantyre Rural</td>
<td>199,189</td>
<td>208,830</td>
<td>408,019</td>
</tr>
<tr>
<td>Blantyre City</td>
<td>464,649</td>
<td>455,577</td>
<td>920,226</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>663,838</td>
<td>664,407</td>
<td>1,328,245</td>
</tr>
</tbody>
</table>

Based on the 2008 Population and Housing Census in 2008, the population of Blantyre District (city and rural combined) was 1,001,984. Out of this population, 661,256 lived in the city; while 340,728 lived in the rural areas. Hence, there has been a 35% increase, which is significant. According to the NSO, the projections indicate that the population will continue to increase. The question posed by NSO is whether or not the urban infrastructure will be able to support such rapid population increase in a sustainable manner and whether or not the urban economy will be able to absorb the respective increase in the supply of labour. This is something that has to be considered in the implementation of the project and the other projects to come to the site. The M1 may need to be extended in future and more traffic using the nearby M1 road will be anticipated. Land use patterns may also change.

4.3.2 Land Use and Settlements

The project site and neighbouring area are on public land. The land at the site is owned by the Ministry of Health (Blantyre District Health Office); while some of the adjacent land is owned by the Malawi Housing Cooperation (MHC). The land has not been developed and there are no settlements. Settlements are on the opposite side of the M1 road.

The land is currently being used by people from various parts of Blantyre for agriculture, mainly growing of maize. Community members also use footpaths across the land to reach places as far as Machinjiri. The people using the land are aware of the project and the proposed future developments on the site. In accordance with the land laws for Malawi, they are expected to voluntarily stop using it for the developments at the site. Where construction has to be done on cultivated land, appropriate compensation for the crops must be paid.

During the planning phase of the project, the land users were told by the Traditional Authority (TA) and the chiefs about the construction of the EVD treatment centre. They were advised to leave land earmarked for the EVD treatment centre untouched and they acted as advised. Hence, there are no issues of compensation at the site at Kameza. This was confirmed during the consultation, which was facilitated by the National AIDS Commission on 5 May 2015. Notes from the consultations are attached in Annex 5 and
Annex 6 has a letter from the TA, indicating that the normal procedure was followed to stop people from using the land.

### 4.3.3 Economy

Blantyre has several industries and companies as well as small and medium businesses. Hence, it is the largest commercial city of Malawi. There are small shops and a market at Kameza Roundabout and these will benefit from the project and the associated development activities. Food supplies and construction materials such as cement, iron sheets and brick force wire can be bought from the market and from these shops.

### 4.3.4 Water, Electricity and Telephone Services

Public utilities available in the area include electricity supplied by the Electricity Supply Commission of Malawi (ESCOM), piped water supplied by Blantyre Water Board; telecommunications supplied by the Malawi Telecommunications Limited (MTL) and mobile telephone networks (AIRTEL, TELKOM and ACCESS). Connection points for water and electricity are about 100 metres away, inside the fence of the abandoned Gadhafi Hospital project. However Blantyre experience intermittent water and electricity supply. Unlike the other hospitals where EVD treatment centres are being located, this site will not be able to rely on already established electrical, water and telecommunication systems. Therefore, in order to ensure the EVD treatment centre will be able to resist systemic shocks, additional investment will be made by the World Bank for a water reservoir tank and backup generator.

### 4.3.5 Health Services

The health care system in the district offers preventive, curative and rehabilitative health services. The Government of Malawi is the major health services provider, based on the available health facilities, as it can be seen in table 4.2.

<table>
<thead>
<tr>
<th>Type</th>
<th>MOH</th>
<th>CHAM</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central hospital</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hospital</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Health centres</td>
<td>20</td>
<td>3</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Dispensary</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Maternity Unit</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Clinics</td>
<td>0</td>
<td>0</td>
<td>&gt;100</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Health Posts</td>
<td>26</td>
<td>0</td>
<td>0</td>
<td>26</td>
</tr>
</tbody>
</table>

*Source: Blantyre district Socio-economic Profile (2000 – 2015)*

As presented in the table, the District Health Office does not have a District Hospital. Queen Elizabeth Central Hospital (QECH) and Mlambe Hospital cover this gap. However, the limitation to Mlambe Hospital are the moderately high user fees since it is a Christian Health
Association of Malawi (CHAM) hospital; while the limitation with QECH is that it is not supposed to provide primary health care to the immediate catchment. There is a private hospital, called Mtengoumodzi, near Kameza Roundabout, along the road to Chileka International Airport. This hospital can be used to treat injuries or diseases among construction workers, during the construction phase.

As part of the Ebola Virus Disease Preparedness Activities, the District Health Office has a health post at Chileka International Airport where people arriving on international flights are screened.

The head of all the health services in the district is the District Health Officer (DHO) who is assisted by the District Medical Officer (DMO) and the rest of District Health Management Team (DHMT) comprising of the District Nursing Officer as Head of the Nursing Section, the District Environmental Health Officer (DEHO) as Head of Environmental Health Section, the Principal Health Services Administrator (PHSA) as Head of Administration Section and the Accountant. With decentralization, the District Commissioner also takes part in the activities of the DHMT and in the running of the Health Services in the district. The DHMT will have to work together in the implementation of Ebola Virus Disease Preparation activities.
CHAPTER 5 IMPACTS OF THE PROJECT

Construction and operation of the Ebola Virus Disease treatment centre at Kameza in Blantyre 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 Blantyre District Socio-economic Profile, Blantyre District Development Plans and the World Health Organisation (WHO) manual for the care and management of patients in Ebola Care Units. The documents were reviewed to obtain a clear description of the environment in which the project will be implemented, the activities during operation and the anticipated impacts. WHO has also prepared guidelines for environmental management and infection control in Ebola Units and these have been included in the mitigation measures of some of the anticipated impacts. A list of documents reviewed is indicated in the references.

5.1.2. Site Investigations

Site investigations were carried out, focusing on the identification of critical environmental and socio-economic elements likely to be affected during implementation and operation of the project. The consultant visited the site where a concrete slab for the Ebola Virus Disease treatment centre has been constructed and assessed the project’s area of influence.

5.1.3. Stakeholder Consultations

Stakeholder consultations were conducted with officers from the District Health Office including the DHO and the DEHO and members from the City Council. The community was also consulted through a meeting with the TA and the chiefs around the area and interviews with members which have been using the area for agriculture and traders on the nearby road. These consultations were held on 8th February, 2015 on 14th April, 2015 and 5th May, 2015 and the list of people consulted is provided in annex 2, while issues raised are in annex 5.

5.1.4. Study of satellite images

Satellite images were produced for the site for assessment of fine details of the site. This was important as the site is small and cannot be fully presented by 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 treatment centre;
iii. Assessment of existing infrastructure;
iv. Identification of contractor; and
v. Identification of the project site.
Anticipated significant impacts from the above activities will be as follows:

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 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. MoH must use set communication channel and procedures when selecting people to participate in trainings;
   ii. Trained people must be encouraged and motivated to be available during an outbreak;
   iii. Ensure that the trainings are continuous and that many more people are trained and sensitised;
   iv. 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; and
   v. 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 excavations of foundation trenches;
   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.

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 local labourers will acquire skills in construction of prefabricated buildings.

The main contractor is from South Africa, but he has engaged local labourers. The local labourers are expected to acquire new skills from their counterparts through observation and 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. The impact can be enhanced by fairly paying suppliers within the agreed times. Local suppliers must also be encouraged to supply quality products.

5.2.3. Positive Impacts during the Operation and Maintenance Phase

5.2.3.1. Increased health services infrastructure

The District Health Office does not have enough infrastructure including a District Hospital. Hence, the EVD treatment centre will be a welcome additional infrastructure. The proposed EVD treatment centre will have a conference hall, a laboratory and other rooms which can be used for other activities including staff training during times of no Ebola outbreak.

The impact can be enhanced by:
- Taking proper care of the EVD treatment centre; and
- Ensuring the Centre is not misused.

5.2.3.2. Improved scenery

Development of the treatment centre will improve the appearance of the area.

Other than an abandoned Gadhafi Hospital, and the Kamuzu College of Nursing which are at a distance, the project area, which is on the eastern side of the M1 road is not developed. To enhance the impact, the developer should carefully landscape and decorate the area around the project. MoH must also ensure that the future projects in the area are well planned and carefully designed.

5.3 DESCRIPTION OF NEGATIVE IMPACTS

5.3.1. Impacts during the planning and design
There will be no significant impacts on the biophysical and socio-economic environment in this phase as the activities are limited to predominantly desk work.

5.3.2. Impacts during construction

5.3.2.1. Noise and vibrations disturbances

Noise and vibrations disturbances are expected from metal fabrication activities and other machinery. The noise will be a source of discomfort to the construction team.

For mitigation measures the contractor must:

- Use efficient machines that do not make a lot of noise; and
- Provide appropriate PPE (e.g. ear muffs) to workers.

5.3.2.2. Waste generation and land degradation

Solid waste will be generated at the site during construction. The waste may consist metal cuttings, excavated materials during levelling and landscaping, paper/cement bags, empty paint and solvent containers, 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 washed away by rain water and increase sedimentation in the nearby stream.

To avoid or mitigate the impact:

- Segregate the waste (e.g. cartons and paint containers) to encourage reuse;
- Minimise excavations during landscaping and levelling through carefully designed landscape;
- Use some of the excavated materials e.g. stones for backfilling and rehabilitating eroded areas; and
- Dig a waste disposal pit for the wastes, and rehabilitate the site after construction.

5.3.2.3. 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

5.3.2.4. 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 if a surface with lead paint is rubbed and scraped for removal.

5.3.2.5. 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 people on walking along the M1 road of those doing agriculture work in fields adjacent to the worksite.

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 road; and
- The contractor must spray water on the activity area to suppress dust.

5.3.2.6. Loss of access to agricultural land

The land for the project is currently used for agriculture by people from various places in Blantyre. Therefore there will be loss of access to agricultural land by those that are cultivating it. The impact is expected to be minor since the EVD centre will be constructed on a very small piece of land. The impact may be more severe if the construction works are done at a time when there are crops on the land.

The developer should mitigate the impact by:
- Engaging the community leaders and the City Council to adequately sensitise the farmers to voluntarily stop cultivating on the land;
- Carrying out the construction works after the farmers have harvested their crops, if construction has to be done when there are crops on the land;
- Compensating for loss of crops if construction has to be done when crops are on the field.

5.3.2.7. Water pollution

Surface water pollution may result from cement, paints, lubricants and fuels for generators where they spill onto the ground and are washed away to the nearby surface water body. Ground water pollution may occur where the wastes seep into the ground.
Mitigate the impact by:

- Lining surfaces where cement, paints and oils will be stored;
- Sensitising the workers to appropriately manage construction materials and wastes; and
- Closely supervise the workforce to avoid or limit waste generation.

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

Accidents to construction workers may occur during construction. Sources of accidents may include electricity 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. There is also the potential that accidents might occur during transportation of construction materials on the M1 road.

Mitigation measures include to:

- Sensitise workers on prevention and managing incidences;
- Provide protective gear to workers and ensure that they wear them;
- Provide first aid kit;
- Place danger warning signs on vehicles carrying abnormal loads;
- Use drivers with defensive driving skills and safety training; and
- Place appropriate warning signs on a number of points along the M1 road from a distance of 500 metres before the project site.

5.3.2.9. Risk to infections due to inadequate sanitation

The project area has no sanitation facilities. Considering that construction works were planned to take only 4 months, using a small workforce, the contractor may not want to construct temporary sanitation facilities such as toilets and domestic waste pits. This can lead to improper disposal of human and domestic waste, which can be a source of diseases and infection. Human and domestic waste may also pollute water resources, if they are carelessly disposed of on open surfaces and are carried away by run-off.

To mitigate the impact, the developer must:

- Construct sanitation facilities (e.g. pit latrines) for workers, which can also be used during operation;
- Construct waste disposal pits which must be closed and rehabilitated after the construction phase;
- Provide adequate safe water for domestic use and sanitation at the construction site and workers camp; and
- Sensitize workers on the importance of good sanitation practices.

5.3.2.1. Risk of spread STIs and HIV/AIDS

There are some of the busy night clubs at Kameza in Blantyre, where there is also sex trade occurring at night. It is therefore expected that prostitutes and construction workers
infected with STI or HIV/AIDS could interact. Once engaged in the trade, there is a risk of spreading the diseases either to the worker or to the prostitute. To mitigate the impact the developer and the contractor must sensitizing the workers to avoid casual sex or use condoms.

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.

5.3.3. Impacts during Operation and Maintenance

Activities during operation and maintenance include:

i. Isolation and of suspected EVD cases;
ii. Provision of health-care and treatment to confirmed cases;
iii. Laboratory testing – the designs have included a laboratory for some tests;
iv. Specimen handling (collection and transportation) to South Africa for tests;
v. Waste management (collection, transportation, treatment and disposal); and
vi. Trainings and conferences.

Significant negative impacts anticipated during this phase include:

5.3.3.1. Fear of being infected with EVD

EVD is a highly infectious disease and causes fear of being infected among health workers and the general public. During the consultations it was established that in the operation phase there is likely to be fear of infection among the hospital staff and the nearby community. Some of the staff may be reluctant to work in the facilities and others may abscond for fear of getting the virus. Likewise some community members may shun using the hospital and may resist burial of dead bodies at their graveyards.

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

- Adequately sensitize staff and the surrounding community on how the EVD may be contracted and transmitted;
- Adequately train staff on EVD case management, Occupational Safety and Health and Infection Control;
- Encourage and inspire staff to participate during an outbreak, using the training and experience acquired;
- Inform and demonstrate to the staff and the community how safe burial practices may be conducted for EVD dead bodies;
- Secure consent to bury EVD corpses, at nearby graveyards, from the chiefs and local leaders;
- Frequently update the public on the activities in the EVD treatment centre
5.3.3.2. Air pollution and operational risk from incineration of wastes

Air pollution is expected from smoke from incinerators to be used for destruction of medical wastes. The impact is anticipated to have cumulative and long term health effects for incinerator operators. Proposed mitigation measures for air pollution impacts are as follows:

- Install a high temperature mechanical and smoke free incinerator;
- 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
- Properly budget for fuel for the incinerators;
- Provide appropriate breathing masks to incinerator operators and other staff that work near the incinerator;
- Sort the waste to ensure only combustible waste goes into incinerators;
- Train staff on how to operate the incinerators;
- Plant trees to help absorb carbon dioxide;
- Regularly maintain the incinerators to ensure they are working properly; and
- Orient laboratory staff to the Infection Control and Waste Management practices.

5.3.3.3. Water pollution

Spillages of wastewater and chemicals from the EVD treatment centre may occur resulting in water pollution.

The EVD treatment 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:

- Construct the septic tank according to the design specifications;
- 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;
- Sensitize staff to avoid spillage of waste water on the ground surface;
- Sensitize staff and users of the EVD centre to appropriately use the waste drainage facilities, to avoid blockages; and

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 World Bank Group’s EHS Guidelines for Health Care Facilities can be found at: http://www.ifc.org/wps/wcm/connect/bc554d80486658b6b6e6f66a6515bb18/Final%2B-%2BHealth%2BCare%2BFacilities.pdf?MOD=AJP%2BERES&id=1323161961169 and the General Environmental Health and Safety Guideline can be found at http://www.ifc.org/wps/wcm/connect/532fc480486583ab4d6f66a6515bb18/1-%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJP%2BERES
• The septic tank and soak pit site should be regularly monitored to ensure early
detection of problems.

5.3.3.4. Increased runoff

The roof of the EVD treatment centre will serve as a water collector, thereby increasing run-off around the centre. The terrain at the project site is slopping towards the stream and an increase in run-off into the stream may occur. The increased run-off may also lead to erosion of the banks of the stream, affect aquatic life and increase sedimentation in the Mtabi stream.

To mitigate or avoid the impact:
• Carefully design the drainage for the EVD treatment centre and site;
• Plant trees and grass along the banks of the stream to slow down water and control erosion

5.3.3.5. Occupation safety and health risks

The main health and safety issues are likely to relate to the following:

i) Exposure to highly infectious waste, especially by the waste handlers the incinerators operators;
ii) Intermittent water and electricity supply contributing to compromised sanitation;
iii) Shortage of medical supplies and equipment;
iv) Inadequate maintenance for laboratory equipment;
v) Inadequate supply of PPE including waste bin liners; and
vi) Failure or neglecting to use PPE.

To mitigate the impact:
• The Blantyre District Health Office shall be responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;
• The MoH and Blantyre District Hospital must continue to regularly 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;
• Install a 10,000 Litre water reservoir and an electricity backup generator;
• Ensure that there is enough supply of medicines, laboratory equipment and PPEs;
• Regularly train staff on how to use the PPE;

\(^4\) [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)
\(^5\) [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)
• 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 is implemented; and
• Regularly monitor performance of equipment and carry out maintenance.

5.3.3.6. Increased work load/ pressure on health worker

The district health office is understaffed and the workload for health workers is high. During operation, the workers will have more work and this will affect their daily activities (e.g. social activities). Moreover the EVD Centre location is far away from the existing health facilities and this may create resentment in relation to daily travelling and cost to the work site.

The impact can be mitigated:
• Recruiting additional staff for the treatment centre; and
• Constructing staff houses near the site.

5.3.3.7. Attraction of thieves and burglars

The EVD treatment centre is being constructed at an isolated site with low security. As such thieves and burglars are likely to be attracted. The thieves may also be a problem to the houses on the other side of the road.

To mitigate the impact:
• Ensure that the centre is being used when there are no EVD cases;
• Engage the services of a security firm to guard the place;
• Installation of security fence;
• Include the police in the sensitization meetings so that they can present on security issues; and
• Report all theft incidences to the police.

5.3.3.8. Distress due to inadequate facilities

The EVD designs have not included facilities such as kitchen, a morgue and guardian shelter. These may have been overlooked, as the project was meant to be implemented at QECH where these services and structures are already available. However the services and structures are necessary as operating the facility without them would result in distress on the guardians as they will have no place to rest. Also providing food to the patients and staff would be difficult due to the lack of a kitchen. This site will also not be able to rely on already established electrical, water and telecommunication systems. Therefore, additional investment will need to be made on a water reservoir tank and backup generator.

To avoid or mitigate the impact:
• 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;
• Identify financing and make plans for developing the area around the EVD treatment centre to include a kitchen, a morgue and guardian shelter as separate buildings.
• Ensure that the water authority provides a safe and dedicated water line for the EVD treatment centre.
• Ensure that the EVD treatment centre receives electricity from the Electricity Supply Corporation of Malawi.
• Install a separate water reservoir and electricity generator for the facility.

5.3.3.9. Trespassing at the EVD treatment centre by local communities

Trespassing may occur during operation and maintenance due to the following:
• The facilities will lead to closure of some footpaths which are useful;
• The facility is near the M1 road and on a very visible site such that people may find it easy to transport very critically ill patients or people involved in accidents;
• People may unknowingly go to the EVD Centre seeking health services; AND
• The place may attract job seekers due the high unemployment levels in Malawi.

The impact must be mitigated through the following measures:
• Constructing a fence around the EVD treatment centre;
• Erecting appropriate signs to prohibiting unauthorised entry into the site; and
• Placing a sign post along the road, with clear information about the treatment centres.

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:
• Disposing wastewater in appropriate and approved drainage systems; and
• Incinerating contaminated solid waste and disposing ash in approved landfill sites.

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 treatment centre.

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.

Significance of the impacts has been determined by finding the product of L, SD and TD. Table 5.1 provides the significance rating of the impacts of the construction and operation of an EVD treatment centre at Kameza in Blantyre before mitigation. After implementation of the impacts 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>
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<tr>
<td></td>
<td></td>
<td>Very likely to occur=-3</td>
<td>Regional =-3</td>
<td>Long term= -3</td>
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<td></td>
<td></td>
<td>May occur= -2</td>
<td>National = -2</td>
<td>Medium term= -2</td>
<td>Moderate: -4 to -7</td>
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<td>Local = -1</td>
<td>Short term= -1</td>
<td>Low: = -1 to -3</td>
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<td>1.</td>
<td>Construction phase</td>
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<td>Noise and vibrations disturbances</td>
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<td>Waste generation and land degradation</td>
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<td>-1</td>
<td>-2</td>
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<td>Loss of access to agricultural land</td>
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<td>Risk of Spread of STIs and HIV/AIDS</td>
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2. Operational and Maintenance phase
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<th>SN</th>
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<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>
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<td>Very likely to occur=-3</td>
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<td>Air pollution and operational risk from incineration of wastes</td>
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<td>Water pollution</td>
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<td>Increased runoff</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>2.5</td>
<td>Occupation safety and health risks</td>
<td>-3</td>
<td>-1</td>
<td>-3</td>
<td>-9</td>
</tr>
<tr>
<td>2.6</td>
<td>Increased work load/ pressure on health worker</td>
<td>-3</td>
<td>-1</td>
<td>-2</td>
<td>-6</td>
</tr>
<tr>
<td>2.7</td>
<td>Attraction of thieves and burglars</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>2.8</td>
<td>Distress due to inadequate facilities</td>
<td>-3</td>
<td>-1</td>
<td>-2</td>
<td>-6</td>
</tr>
<tr>
<td>2.9</td>
<td>Trespassing of local communities on the project site</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>3.1</td>
<td>Decommissioning Phases</td>
<td>Air, land and water contamination</td>
<td>-2</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>3.2</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

This Environmental and Social Management Plan (ESMP) has been prepared to facilitate the integration of environmental and social management measures in the construction and operation of the EVD treatment 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 and Blantyre District Health Office. Hence the contractor has to include the costs for implementing the mitigation measures in the bid.

The aim of the ESMP is to ensure that the Ministry of Health (MoH) will prevent, reduce, mitigate and compensate for the impacts of the proposed project on the biophysical and socio-economic environment. Key elements of the ESMP are summarised 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 Blantyre District Hospital must also ensure that funds are available for implementation of the ESMP.
<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>Construction Phase</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Noise and vibrations disturbances</td>
<td>• Use efficient machines that do not make a lot of noise; and&lt;br&gt;• Provide appropriate PPE (e.g. ear muff) to workers</td>
<td>Contractor</td>
<td>Throughout the construction phase</td>
<td>Include in the project bid for the Contractor</td>
</tr>
<tr>
<td>1.2</td>
<td>Waste generation and land degradation</td>
<td>• Segregate the waste (e.g. cartons and paint containers) to encourage reuse ;&lt;br&gt;• Minimise excavations during landscaping and levelling through carefully designed landscape;&lt;br&gt;• Use some of the excavated materials e.g. stones for backfilling and rehabilitating eroded areas; and&lt;br&gt;• Dig a waste disposal pit for the wastes, and rehabilitate the site after construction.</td>
<td>Contractor</td>
<td>Throughout the construction phase</td>
<td>Include in the project bid for the Contractor</td>
</tr>
<tr>
<td>1.3</td>
<td>Utilizing unlicensed quarry sites</td>
<td>• The Contractor will identify materials from existing licensed quarries with the suitable materials for construction. &lt;br&gt;• Procurement of construction material only from permitted sites and licensed / authorized quarries.</td>
<td>Contractor</td>
<td>Throughout the construction phase</td>
<td>Include in the project bid for the Contractor</td>
</tr>
<tr>
<td>1.4</td>
<td>Use of lead-based paint products.</td>
<td>• The Contractor shall ensure that no paint containing lead or lead products is used.</td>
<td>Contractor</td>
<td>Throughout the construction phase</td>
<td>Include in the project bid for the Contractor</td>
</tr>
<tr>
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<td>Potential Environmental or social Impact</td>
<td>Proposed Mitigation Measure</td>
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<td>Time for Implementation</td>
<td>Source of Funds</td>
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</tr>
</tbody>
</table>
| 1.5 | 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 suppress dust. | Contractor | Throughout the construction phase | Included in the project bid for the Contractor |
| 1.6 | Loss of access to agricultural land    | • Engage the community leaders and city council to adequately sensitise the farmers to voluntarily leave the land;  
     |                                          | • Take away the land after the farmers have harvested their crops;  
     |                                          | • Compensate for any loss of crops; and  
     |                                          | • The city council and local leaders must help the farmers to identify replacement land. | Blantyre District Health Office | Twice during construction phase | Include in the district health office’s recurrent budget |
| 1.7 | Water pollution                         | • Lining surfaces where cement, paints and oils will be stored;  
     |                                          | • Sensitising the workers to appropriately manage construction materials and wastes; and  
<pre><code> |                                          | • Closely supervise the workforce to avoid or limit waste generation. | Contractor | Throughout the construction phase | Include 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>
</table>
| 1.8 | Accidents to workers, staff and public on construction sites | • Sensitise workers on prevention and managing incidences;  
• Provide protective gear to workers and ensure that they wear them;  
• Provide first aid kit;  
• Place danger warning signs on vehicles carrying abnormal loads;  
• Use drivers with defensive driving skills and safety training; and  
• Place appropriate warning signs on a number of points along the M1 road from a distance of 500 metres before the project site. | Contractor | Throughout the construction phase | Include in the project bid for the Contractor |
| 1.9 | Risk to infections due to inadequate sanitation | • Construct sanitation facilities (e.g. pit latrines) for workers, which can also be used during operation phase;  
• Construct waste disposal pits which must be closed and rehabilitated after the construction phase;  
• Provide adequate safe water for domestic use and sanitation at the construction site and workers camp; and  
• Sensitize workers on the importance of good sanitation practices. | Contractor | Throughout the construction phase | Include in the project bid for the Contractor |
| 1.10 | Risk of Spread of STIs and HIV/AIDS | • 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. | Contractor | Throughout the construction phase | Include in the project bid for the Contractor |
<p>| 2   | Operational and Maintenance phase        |                             |                            |                         |                |</p>
<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>
| 2.1 | Fear of being infected                  | • Adequately sensitize staff and the surrounding community on how the EVD may be contracted and transmitted;  
• Adequately train staff on EVD case management, Occupational Safety and Health and Infection Control;  
• Ensure staff signs legal agreements to be available during an outbreak after attending training;  
• Inform and demonstrate to the staff and the community how safe burial practices may be conducted for EVD dead bodies;  
• Secure consent to bury EVD corpses, at nearby graveyards, from the chiefs and local leaders;  
• Frequently update the public on the activities in the EVD treatment centre | Blantyre District Health Office | Once every month | Included in the project budget |
| 2.2 | 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 World Bank Group’s environmental, health, and safety technical (EHS) guidelines for waste management facilities;  
• Train staff on how to operate the incinerators;  
• Plant trees to help absorb carbon dioxide; | Contractor; Blantyre District Health Office. | Once during the installation of the incinerator | Included in the project budget |
<table>
<thead>
<tr>
<th>No.</th>
<th>Potential Environmental or social Impact</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2.3</td>
<td>Water pollution</td>
<td>• Construct the septic tank according to the design specifications;</td>
<td>Contractor</td>
<td>Once during construction of the septic tank</td>
<td>Include in the project bid for the Contractor</td>
</tr>
</tbody>
</table>

- Ensure that international industry best practices related to hazardous waste incineration are followed in accordance with the World Bank Group’s environmental, health, and safety technical (EHS) guidelines for waste management facilities;\(^6\)  
- Orient laboratory staff to the Infection Control and Waste Management practices  
- Properly 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.  
- Train staff on how to operate the incinerators;  

\(^6\) 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/bc554d80488658b6b6e6f6a6515bb18/Final%2B-%2BHealth%2BCare%2BFacilities.pdf?MOD=AJPERES&\&id=1323161961169](http://www.ifc.org/wps/wcm/connect/bc554d80488658b6b6e6f6a6515bb18/Final%2B-%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/532ff4804886583ab4d6f66a6515bb18/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES](http://www.ifc.org/wps/wcm/connect/532ff4804886583ab4d6f66a6515bb18/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES).
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<th>Source of Funds</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Sensitize staff to avoid spillage of waste water on the ground surface;</td>
<td>Blantyre District Health Office</td>
<td>Once every month</td>
<td>Include in the recurrent budget</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensure that wastewater disposal is adequately budgeted to ensure regular cleaning of the septic tank;</td>
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<td></td>
<td></td>
<td>• Only licensed waste collectors shall be employed for this disposal;</td>
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<td></td>
<td></td>
<td>• Sensitize staff and users of the EVD centre to appropriately use the waste drainage facilities, to avoid blockages; and</td>
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<td></td>
<td></td>
<td>• The septic tank and soak pit site should be regularly monitored to ensure early detection of problems.</td>
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<tr>
<td>2.4</td>
<td>Increased runoff</td>
<td>• Carefully design and construct the drainage for the EVD treatment centre and site;</td>
<td>Contractor, Blantyre District Health Office</td>
<td>Once in the construction phase; more trees to be planted in the tree planting season</td>
<td>Included in the project budget</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Plant trees and grass along the banks of the stream to slow down water and control erosion</td>
<td></td>
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<tr>
<td>2.5</td>
<td>Occupation safety and health risks</td>
<td>• Install a 10,000 Litre water reservoir and an electricity backup generator;</td>
<td>Blantyre District Health Office</td>
<td>Once during construction</td>
<td>Included in the project 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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</tbody>
</table>
|     | - The Blantyre District Health Office shall be responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;  
     | - The MoH and Blantyre 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 Healthcare Activities\(^7\) handbook and its Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings\(^8\). Other relevant infection prevention and control guidelines provided by WHO should further inform operational procedures;  
     | - 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 is implemented;  
     | - Ensure that there is enough supply of medicines, laboratory equipment and PPEs;  
     | - Regularly train staff on how to use the PPE; and  
     | - Regularly monitor performance of equipment and carry out maintenance.                                                                 | Blantyre District Health Office | Throughout the operation phase | 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_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)
<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 | Increased work load/ pressure on health worker | • Recruit staff special for the treatment centre; and  
• Construct houses for staff nearby the site. | Blantyre District Health Office | Once in construction phase | Include in the district health office’s recurrent budget |
| 2.7 | Attraction of thieves and burglars | • Ensure that the Centre is being used even when there are no EVD cases;  
• Engage the services of a security firm to guard the place; and  
• Include the police in the sensitization meetings so that they can present on security issues; and  
• Report all theft incidences to the police | Blantyre District Health Office | Throughout the operation phase | Include in the district health office’s recurrent budget |
| 2.8 | Distress due to inadequate facilities | • 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 (1m high, at about 15m from the centre);  
• Install a separate water reservoir and electricity generator for the facility. | Contractor, MoH and Blantyre District Health Office | During the construction phase | Included in the project budget |
<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>
|     | Identify financing and make plans for developing the area around the EVD treatment centre to include a kitchen, a morgue and guardian shelter as separate buildings.  
     | Ensure that the water authority provides a safe and dedicated water line for the EVD treatment centre.  
     | Ensure that the EVD treatment centre receives electricity from the Electricity Supply Corporation of Malawi. | Blantyre District Health Office | Throughout the operation phase | Include in the district health office’s development budget |
| 2.9 | Trespassing at the EVD treatment centre by local | Construct a fence around the EVD treatment centre;  
     | Erect appropriate signs to prohibiting unauthorised entry into the site; and  
     | Place a sign post along the road, with clear information about the treatment centres. | Blantyre District Health Office | Throughout the operation phase | Included in the project budget |
| 3. | Decommissioning Phases | | | | |
| 3.1 | Air, land and water contamination | Dispose wastewater in appropriate and approved drainage systems; and  
<pre><code> | Incinerating contaminated solid waste and disposing ash in approved landfill sites | Blantyre District Health Office | Throughout the decommissioning phase | Include in the district health office’s recurrent budget |
</code></pre>
<table>
<thead>
<tr>
<th>No.</th>
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<th>Institutional Responsibility</th>
<th>Time for Implementation</th>
<th>Source of Funds</th>
</tr>
</thead>
</table>
| 3.2 | Risk of infection from contaminated equipment | • Provide appropriate PPE for staff for destroying equipment used in the centre; and  
• Destroy all equipment used in the EVD treatment centre. | Blantyre District Health Office | Throughout the decommissioning phase | Include in the district health office’s recurrent budget |
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 treatment 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>
<tbody>
<tr>
<td>1</td>
<td>Construction Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Noise disturbances</td>
<td>• Use efficient machines that do not make a lot of noise; and</td>
<td>• Efficiency rating of machines</td>
<td>Infrastructure Manager; DEHO; EDO; MoH – Planning Department</td>
<td>Monthly</td>
<td>$2,000 USD for transport and allowances for officials from the DPPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide appropriate PPE (e.g. ear muffs) to workers</td>
<td>• Types and number of PPEs available</td>
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<tr>
<td>1.2</td>
<td>Waste generation and degradation</td>
<td>• Segregate the waste (e.g. cartons and paint containers) to encourage reuse;</td>
<td>• Volume of waste reused</td>
<td>Contractor, DHO’s Infrastructure Manager; DEHO; Environment District Officer; MoH – Project’s Engineer</td>
<td>Monthly</td>
<td>Included in 1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Minimise excavations during landscaping and levelling through carefully designed landscape;</td>
<td>• Volume of soils excavated</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Use some of the excavated materials e.g. stones for backfilling and rehabilitating eroded areas; and</td>
<td>• Area rehabilitated and backfilled using excavated soils</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>• Dig a waste disposal pit for the wastes, and rehabilitate the site after construction.</td>
<td>• Availability and size of waste disposal pit</td>
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<td></td>
</tr>
<tr>
<td>No</td>
<td>Potential Impact</td>
<td>Proposed Mitigation Measure</td>
<td>Monitoring indicator</td>
<td>Institution/p person to monitor</td>
<td>Monitoring frequency</td>
<td>Implementation cost</td>
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</tbody>
</table>
| 1.3 | 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 1.1     |
| 1.4 | Use of lead-based paint products.                   | • The Contractor shall ensure that no paint containing lead or lead products is used. He shall provide facemasks for use to the workers when paint is applied in the form of spray or a surface having lead paint is rubbed and scraped. | • Evidence of using non lead-based paint.                                            | Contractor, DHO, DPPD    | As appropriate during the construction phase | Included in 1.1     |
| 1.5 | 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. | • Use of mouth and nose masks  
• Presence of a barrier during dust making activities  
• Area regularly sprayed with water | Contractor, District Health Office, Local Assembly, MoH (Planning Department) | Once every month during the construction phase | Included in 1.1     |
<table>
<thead>
<tr>
<th>No</th>
<th>Potential Impact</th>
<th>Proposed Mitigation Measure</th>
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<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 1.6 | Loss of access to agricultural land | • Engage the community leaders and city council to adequately sensitise the farmers to voluntarily leave the land;  
• Take away the land after the farmers have harvested their crops;  
• Compensate for any loss of crops; and  
• The city council and local leaders must help the farmers to identify replacement land. | • Reports of use of community leaders and local authority in land acquisition  
• Time of the year for taking the land  
• Records of compensation  
• Area of land identified for the farmers | DEHO; EDO; MoH (Ebola Coordination Unit) | Twice during the construction phase | Included in 1.1 |
| 1.7 | Water pollution | • Lining surfaces where cement, paints and oils will be stored;  
• Sensitising the workers to appropriately manage construction materials and wastes; and  
• Closely supervising the workforce to avoid or limit waste generation. | • Area lined for storage of construction materials  
• Number of times workers are sensitized  
• Number of hours in a day the supervisor is available | Contractor, DHO’s Infrastructure Manager; DEHO; Local Council’s Environmental District Officer and District Water Development Officer; MoH – Project’s Engineer | Monthly | Included in 1.1 |
<table>
<thead>
<tr>
<th>No</th>
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<th>Institution/ person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 1.8 | Accidents to workers, staff and public on construction sites | • Sensitise workers on prevention and managing incidences;  
• Provide protective gear to workers and ensure that they wear them;  
• Provide first aid kit;  
• Place danger warning signs on vehicles carrying abnormal loads;  
• Use drivers with defensive driving skills and safety training; and  
• Place appropriate warning signs on a number of points along the M1 road from a distance of 500 metres before the project site. | • Number of workers trained  
• Number of workers wearing protective gear  
• Types and number of supplies in the first aid kit  
• Type of driving licence  
• Signs on vehicles and along the road | Contractor, DHO’s Infrastructure Manager; DEHO; Local Council’s Environmental District Officer; MoH – Project’s Engineer; Traffic Officer | Monthly | Included in 1.1 |
| 1.9 | Risk to infections due to inadequate sanitation | • Construct sanitation facilities (e.g. pit latrines) for workers, which can also be used during operation;  
• Construct waste disposal pits which must be closed and rehabilitated after the construction phase;  
• Provide adequate safe water for domestic use and sanitation at the construction site and workers camp; and  
• Sensitize workers on the importance of good sanitation practices. | • Constructed permanent pit latrine and a waste disposal pit  
• Size of water reservoir and volume of water kept  
• Level of hygiene and sanitation  
• Number of times sensitization meetings on sanitation are carried out. | Contractor, DHO’s Infrastructure Manager; DEHO; Environmental District Officer; MoH – Project’s Engineer) | Monthly | Included in 1.1 |
<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>
| 1.10 | Risk of Spread of STIs and HIV/AIDS | • 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. | • Records of sensitization | Contractor; DEHO; Environmental District Officer. | Monthly | Included in 1.1 |

2. **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>
| 2.1 | Fear of being infected | • Adequately sensitize staff and the surrounding community on how the EVD may be contracted and transmitted;  
• Adequately train staff on EVD case management, Occupational Safety and Health and Infection Control;  
• Ensure staff signs legal agreements to be available during an outbreak after attending training;  
• Inform and demonstrate to the staff and the community how safe burial practices may be conducted for EVD dead bodies;  
• Secure consent to bury EVD corpses, at nearby graveyards, from the chiefs and local leaders;  
• Frequently update the public on the activities in the EVD treatment centre | • Number of times sensitizations meetings are conducted  
• Number of staff and community members people sensitized  
• Signed agreement  
• Consent for conducting burial at nearby community graveyard  
• Number of staff trained in occupation safety and health and infection control  
• Records of public notice on activities at the EVD treatment centre | DEHO; EDO; MoH (Ebola Coordination Unit) | Monthly | $3,000 USD for transport and allowances for officials from the Ebola Coordination Unit and $20,000 for infectious disease management training and surveillance programs |
<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>
| 2.2 | Air pollution and operationa l risk from incineratio n of wastes | - Install a high temperature, mechanical incinerator as specified for the EVD Centre;  
- Properly budget for fuel for the incinerators;  
- Provide appropriate breathing masks to incinerator operators and other staff that work near the incinerator;  
- 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;  
- Orient laboratory staff to the Infection Control and Waste Management practices  
- Train staff on how to operate the incinerators;  
- Plant trees to help absorb carbon dioxide;  
- Regularly maintain the incinerators to ensure they are working properly; and  
- Orient laboratory staff to the Infection Control and Waste Management practices | - Type of incinerator installed  
- Litres of fuel used every month  
- PPEs available to incinerator operators  
- Volume of waste sorted appropriately  
- Number of times and staff are trained to operate the incinerator  
- Number of trees planted  
- Records of maintenance of incinerators  
- Number of staff oriented in infection control and waste management | DEHO; EDO; MoH (Ebola Coordination Unit) | Monthly | Included in 2.1 |

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/bc554d80488658b6b6e6f66a6515bb18/Final%2BHealth%2BCare%2BFacilities.pdf?MOD=AJPERES&id=1323161961169](http://www.ifc.org/wps/wcm/connect/bc554d80488658b6b6e6f66a6515bb18/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/532ff48048863ab4d6f66a6515bb18/1-1%2BAir%2BEmissions%2Band%2B Ambient%2BAir%2BQuality.pdf?MOD=AJPERES](http://www.ifc.org/wps/wcm/connect/532ff48048863ab4d6f66a6515bb18/1-1%2BAir%2BEmissions%2Band%2B Ambient%2BAir%2BQuality.pdf?MOD=AJPERES)
<table>
<thead>
<tr>
<th>No</th>
<th>Potential Impact</th>
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<th>Monitoring indicator</th>
<th>Institution/ person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 2.3 | Water pollution | • Construct the septic tank according to the design specifications;  
• 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;  
• Sensitize staff to avoid spillage of waste water on the ground surface;  
• Sensitize staff and users of the EVD centre to appropriately use the waste drainage facilities, to avoid blockages; and  
• The septic tank and soak pit site should be regularly monitored to ensure early detection of problems | • Area where waste water is drained  
• Specifications of the septic tank  
• Records of blockage and other problems with the sewage system | DEHO; EDO; MoH (Ebola Coordination Unit) | Monthly | Included in 2.1 |
| 2.4 | Increased runoff | • Carefully design and construct the drainage for the EVD treatment centre and site; and  
• Plant trees and grass along the banks of the stream to slow down water and control erosion | • Presence of a well designed and constructed drainage system  
• Reports on use of collected rain water  
• Number of trees planted | DEHO; EDO; MoH (Ebola Coordination Unit) | Twice during the construction phase | Included in 2.1 |
<table>
<thead>
<tr>
<th>No</th>
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<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>
| 2.5 | Occupational safety and health risks | - The Blantyre District Health Office shall be responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;  
- The MoH and Blantyre District Hospital must continue to regularly 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*\[11\]. Other relevant infection prevention and control guidelines provided by WHO should further inform operational procedures;  
- Install a 10,000 Litre water reservoir and an electricity backup generator;  
- 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 is implemented;  
- Ensure that there is enough supply of medicines, laboratory equipment and PPEs;  
- Regularly train staff on how to use the PPE; and  
- Regularly monitor performance of equipment and carry out maintenance. | - Number of staff trained in occupational safety, infection control and waste management  
- Number of times equipment is maintained  
- Type and number of PPE in stock  
- Number of times and staff are trained in the use of PPE  
- Size of electricity generator  
- Size of water reservoir and availability of a borehole | DEHO; EDO; MoH (Ebola Coordination Unit) | Monthly | Included in 2.1 |

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\[10\] [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)
<table>
<thead>
<tr>
<th>No</th>
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<th>Monitoring indicator</th>
<th>Institution/person to monitor</th>
<th>Monitoring frequency</th>
<th>Implementation cost</th>
</tr>
</thead>
</table>
| 2.6 | Increased work load/pressure on health worker | • Recruit staff special for the treatment centre; and  
• Construct houses for staff nearby the site. | • Number of workers special for the facility  
• Number of houses for workers | DEHO; EDO; MoH (Ebola Coordination Unit) | Twice | Included in 2.1 |
| 2.7 | Attraction of thieves and burglars | • Ensure that the Centre is being used even when there are no EVD cases;  
• Engage the services of a security firm to guard the place; and  
• Include the police in the sensitization meetings so that they can present on security issues; and  
• Report all theft incidences to the police | • Use of the facility  
• Number of security guards at the site and hours of work  
• Reports of use of police engagement in the sensitizations  
• Police reports on theft incidences | DEHO; EDO; MoH (Ebola Coordination Unit) | Monthly | Included in 2.1 |
| 2.8 | Distress due to inadequate facilities | • 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 (1m high, at about 15m from the centre);  
• Identify financing and make plans for developing the area around the EVD treatment centre to include a kitchen, a morgue and guardian shelter as separate buildings.  
• Ensure that the water authority provides a safe and dedicated water line for the EVD treatment center.  
• Ensure that the EVD treatment centre receives electricity from the Electricity Supply Corporation of Malawi.  
• Install a separate water reservoir and electricity generator for the facility. | • Presence of a fence  
• Availability of kitchen and guardian shelter  
• Availability of safe water  
• Availability of electricity  
• Presence of a separate water reservoir and electricity generator | DEHO; MoH (Ebola Coordination Unit) | Once | 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>
| 2.9 | Trespassing at the EVD treatment centre by local | • Construct a fence around the EVD treatment centre;  
• Erect appropriate signs to prohibiting unauthorised entry into the site; and  
• Place a sign post along the road, with clear information about the treatment centres. | • Area covered with a fence  
• Number of signs prohibiting unauthorised entry  
• Signs and poster along the road about the Centre | DEHO; EDO; MoH (Ebola Coordination Unit) | Monthly | Included in 2.1 |

3. Decommissioning Phases

| 3.1 | Air, land and water contamination | • Dispose wastewater in appropriate and approved drainage systems; and  
• Incinerating contaminated solid waste and disposing ash in approved landfill sites | • Area for disposal of wastewater  
• Volume of solid waste incinerated | DEHO; EDO; MoH (Ebola Coordination Unit, Planning and Policy Department) | Twice during decommissioning phase | 1000 USD for transport and allowances for officials from the planning Department; no costs applicable for the officers at the district level |

| 3.2 | Risk of infection from contaminated equipment | • Provide appropriate PPE for staff for destroying equipment used in the centre; and  
• Destroy all equipment used in the EVD treatment centre. | • Reports of use of PPE during cleaning  
• Number of equipment destroyed | DEHO; EDO; MoH (Ebola Coordination Unit, Planning and Policy Department ) | Twice during decommissioning phase |  |
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 procedure:

The Ministry of Health through the Department of Planning and Policy Development and the Ebola Coordination Unit will have the 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. Specific guidelines which the contractor must observe to minimise or mitigate impacts on the biophysical and social economic environment are provided in annex 8.

Since the impacts are mainly localised and moderate, the actual implementation of the ESMP and monitoring rests with the stakeholders at district level as follows:

1. **Blantyre District Health Office**, is responsible for delivering health services including environmental health in the area. The office has a District Environmental Health Officer (DEHO) who will lead in the implementation of the ESMP. The DEHO will familiarise himself with the contents of the ESMP, mobilise resources and stakeholders and ensure that the mitigation measures are implemented. He/she will be sending reports to MoH and Blantyre City Council. The DEHO will however need training in management of wastes from an Ebola treatment centre.

   The District Health Office also has the **Maintenance Supervisor** who will supervise the contractor in the construction phase, ensuring that the contractor is adhering to the contract agreement, particularly with regard to implementation of the ESMP. The Maintenance Supervisor will be reporting to the DEHO 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. The Contractor will be reporting to the District Health Officer and the Projects Engineer from the Department of Planning and Policy Development.

3. **The City Council** is the local authority for the city. They have a say on site plans, environmental standards and community engagement. The City Council will review monitoring reports from the Hospital administrator and provide recommendations. The City Council’s Environmental Officer and Projects Engineer will also work with Blantyre District Health Office in implementing the ESMP and monitor the project activities. During the land acquisition, the City Council must work with local leaders in engaging the community to voluntarily leave the land affected by the project.

4. **The Environmental Affairs Department (EAD)** in the Ministry of Natural Resources, Energy and Mining in accordance with the EMA, 1996, will review the ESMPs and certify
the project. They also have inspectors who will inspect the project for compliance to Environmental Standards and the Environmental and Social Management Plan.

5. Apart from the mentioned institutions, there is also a need for involvement of NGOs and Community Based Organisations which are active in Blantyre City.

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>1,000</td>
<td>18,000</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>1,000</td>
<td>38,000</td>
</tr>
</tbody>
</table>
CHAPTER 7 CONCLUSION AND REQUIREMENTS

7.1 CONCLUSIONS

The construction activities and operation of the Ebola Virus Diseases treatment centre at Kameza in Blantyre will have both positive and negative impacts. The negative impacts, on overall, are assessed as moderately severe but 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 treatment centre. Among other recommendations, the ESMP has proposed a Monitoring Plan to ensure effective implementation of the impact management measures.

7.2 REQUIREMENTS

Throughout this document the following recommendations are made. These must be effectively implemented to ensure project success and sustainability.

- The ESMP is adopted and effectively applied;
- The Blantyre District Health Office is responsible for ensuring an adequate and sustainable supply of water and electricity to the EVD treatment centre;
- The MoH and Blantyre DHO 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 District Health Office (DHO) will ensure implementation of all the relevant good international industry practices related to hazardous waste incineration provided in the International Finance Corporation’s environmental, health, and safety technical (EHS) guidelines for waste management facilities;
- The Ministry of Health (MoH) and Blantyre DHO will ensure that funds are available for implementation of the ESMP;
- MoH will include the ESMP in the construction activities contract;
- MoH and Blantyre DHO will adequately train staff for implementing the ESMP;
- Ensure adherence to the relevant legal provisions of Malawi and International Standards during the implementation of the project;
- The EVD treatment centre will require additional infrastructure e.g. the mortuary, kitchen, houses and a water supply system – these must be provided before the EVD Centre is operational;
- The recommended avoidance, mitigation and compensation measures for the project impacts are adhered to; and
- The City Assembly, Communities around the project area and all other stakeholders will be involved in all stages of the project and the implementation of the ESMP.
REFERENCES

18. UNDP (2014). Assessing the socio-economic impacts of Ebola Virus Disease in Guinea, Liberia and Sierra Leone - The Road to Recovery
ANNEXES

ANNEX 1: TERMS OF REFERENCE

Environmental and Social Management Plans for 7 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

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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. Matchaya</td>
<td>District Health Officer</td>
<td>Blantyre District Health Office</td>
<td>0888480872</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0999280872</td>
</tr>
<tr>
<td>Chriswell Nkoloma</td>
<td>Environmental Health Officer</td>
<td>Blantyre District Health Office</td>
<td>0999404495</td>
</tr>
<tr>
<td></td>
<td>Integrated disease surveillance and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>response coordinator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absalom Kapanda</td>
<td>Engineer</td>
<td>Blantyre City Assembly</td>
<td>0999121371</td>
</tr>
<tr>
<td>George Gelani</td>
<td>Engineer</td>
<td>Blantyre City Assembly</td>
<td>0888635084</td>
</tr>
<tr>
<td>Set Kanyanda</td>
<td>Epidemiologist</td>
<td>Ebola Coordination Unit</td>
<td>0888356599</td>
</tr>
<tr>
<td>Arthur Chiphiko</td>
<td>Architect</td>
<td>Planning Department - MoH</td>
<td>0991193175</td>
</tr>
</tbody>
</table>

A photo of some of the people that were consulted
| 25 | Costly Chanza | Director of Town Planning & Estates | BT City Council | 0888202336 | cchanza@hotmail.com |
| 26 | Rashid Gaffar | MP | Blantyre Kabula | 0999960211 | rashv@rashmotors.com |
| 27 | Chief Machinjiri | T/A | | 0984030265 | |

0.1. OPENING REMARKS

The Chairperson called the meeting to order and thanked members for coming. An opening prayer was done by Dr. B. Zuze.

0.2. The agenda for the meeting was:
- Confirmation of sites (available land) for both project
- Production of cadastral and topographic surveys for both sites
- Carry out feasibility studies for each project
- Carry out Environmental Impact Assessment (EIA) studies
- Preparation of project briefs in consultation with the users
- Production of architectural designs for each project

0.3. REQUIREMENTS

0.3.1. LAND

It was reported in the meeting that the Ministry of Lands informed that it allocated 50 hectares of land for the construction of a District Hospital. Members agreed to apply for 50,000 more hectares to cater for both projects and also for recreation. It was also reported that a Nursing College of Nursing has occupied part of the 50 hectares already allocated, hence the need for extra land.

**ACTIONS POINT**

- MO to apply for additional 50,000 hectares of land by Monday, 27th November 2015.
- Honourable Gaffar to lobby for the land with Minister or Commissioner for Lands.

0.3.2. TITLE DEED

It was agreed that the Title Deed should be produced once the land has been given.

**ACTIONS POINT**

Regional Surveyor General to produce the Title Deed at no cost if possible.
0.3.3. FEASIBILITY STUDY AND ENVIRONMENTAL IMPACT ASSESSMENT

This was agreed to be done by Ministry of Health in conjunction with people on the ground by 19th December 2015.

0.3.4. DESIGNING

It was agreed that the design will be based on what people will come up with.

0.3.5. SURVEY

The house agreed that Topographic and Cadastre Surveys should be through in three weeks time – but geographical survey should be done by 19th December 2015.

0.4. AREA MAP

The house requested to have a look at the map of the area mainly ESCOM who wanted to be clear on:

- Load requirements
- Encroachment along the road

0.5. HOUSING

It was agreed to invite officials from ESCOM as they are using part of the land in the area for building dwelling houses. There is need to explore and agree on Public Private Partnership (PPP).

ACTION POINT

To invite housing officials in next meeting.

0.6. USERS MEETING - PREPARATION OF PROJECT BRIEFS

Users meeting was agreed to be held on 1st December 2015 at 9:00 am in the DHO’s Conference Room. To be presented to Senior management in January.

Responsible person – DHO.

ACTION POINT

To be ready by Friday 4th December 2015.

SECURITY OF THE SITE ONCE PROJECT STARTS

Police was asked through the station officer for Chileka Mrs. Jacqueline Kunje. She promised to provide the security once contractors are site.
BUILDING NEW CENTRAL HOSPITAL INSTEAD OF DISTRICT HOSPITAL

Members also suggested that it would have been much better if government built this structure as a central hospital then have Queen Elizabeth Central Hospital as the District Hospital. It was responded that it may be too late to start the discussion but authorities can just be made aware of the idea.

0.7. DATE OF NEXT MEETING

The next meeting was agreed to be held on 10th December 2015 at 10:00 am in the DHO’s Conference Room.

0.8. CLOSING REMARKS

The Chairperson thanked members for coming and requested them to visit the site.

Dr. M. Matchaya
DHO - CHAIRPERSON

C. T. Msonthi
AHSA - SECRETARY
### ANNEX 4: MAIN ISSUES RAISED BY KEY STAKEHOLDERS

<table>
<thead>
<tr>
<th>ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General issues in the EVD preparedness activities</strong></td>
</tr>
<tr>
<td>- Areas for preparing for Ebola include: Training, space at the airport, beds, cars and computers. The District Health Office musty be assisted.</td>
</tr>
<tr>
<td>- Trainings in Ebola Case Management have started. However the Ebola Coordination Unit is not involving the DHO in the identification of persons to attend the trainings. This may be a problem e.g. the DHO may fail to organise training for others or select staff to work in the EVD centre during an outbreak. The DHO has also not received training.</td>
</tr>
<tr>
<td>- Access road to the EVD treatment centre will need to be constructed</td>
</tr>
<tr>
<td>- Not much publicity has been done about Ebola.</td>
</tr>
<tr>
<td><strong>Project Design and Implementation</strong></td>
</tr>
<tr>
<td>- The District Health Office was not consulted during the designing of the project - this is a common problem with government projects and the DHO has had to condemn some infrastructure due to inadequacy of the design.</td>
</tr>
<tr>
<td>- The District Health Office’s only contribution has been identification of space. Construction started without notification such that they could not come to properly monitor activities.</td>
</tr>
<tr>
<td>- A mortuary must be included in the designs.</td>
</tr>
<tr>
<td>- Water and electricity is a problem in Blantyre – a generator and borehole must be included as part of the facilities.</td>
</tr>
<tr>
<td><strong>Land Issues</strong></td>
</tr>
<tr>
<td>- There are no any land conflicts – a community meeting was held at the local leader’s place in regards to the use of the land for farming.</td>
</tr>
<tr>
<td>- No compensations will be required.</td>
</tr>
<tr>
<td>- There is no history of floods at the site</td>
</tr>
<tr>
<td>- The soils are good – soils holding the septic tank cannot slide/sink/settle down.</td>
</tr>
<tr>
<td><strong>Environmental Management</strong></td>
</tr>
<tr>
<td>- There is need to plant a tree belt around the river for sustainability of the project.</td>
</tr>
<tr>
<td>- Future developments may include sewage ponds</td>
</tr>
<tr>
<td><strong>Staffing</strong></td>
</tr>
<tr>
<td>- Very few hospital staff have received training in the wearing of the Ebola Suit</td>
</tr>
<tr>
<td>- Hospital staff are afraid of Ebola – some are likely to refuse to work in the EVD treatment centre in the event there is Ebola.</td>
</tr>
<tr>
<td>- Liverpool Welcome is training its staff in Ebola Management - they can help in the project by providing training to hospital staff.</td>
</tr>
<tr>
<td><strong>Expected problems</strong></td>
</tr>
<tr>
<td>- Like in all health institutions funding is a problem.</td>
</tr>
<tr>
<td>- The project is near the road, some people may bring other patients thinking that it is a full hospital.</td>
</tr>
<tr>
<td>- The facility is coming before the main structure. It is therefore expected that there will be few people at the site (mainly security personnel) and the structure may be abandoned in the absence of Ebola outbreak. Hence, theft is expected to be a problem.</td>
</tr>
<tr>
<td>- Shortage of staff may occur in the operational phase.</td>
</tr>
<tr>
<td>- Traffic signs will be required to avoid accidents.</td>
</tr>
</tbody>
</table>
ANNEX 5: NOTES FROM CONSULTATIONS ON THE LAND AT KAMEZA

Date: 5 March 2016

Team Members:

- Mr. Ellious Chasukwa- Acting Head of Policy Support and Development (National AIDS Commission)
- Dr. Mathew Kagoli- Epidemiologist, Deputy Director/Head of Ebola Coordination Unit (Ministry of Health)
- Dr. Francis Adatu- Technical Advisor to Ministry of Health and Ebola preparedness
- Mr. Precious Chaponda – Consultant’s representative.

A. People that were met with

B. Notes:
1. The team, accompanied by Ms. Mercy Daudi the Senior Health Surveillance Assistance (SHSA) officer at North Lunzu Health Centre visited TA Machinjiri to confirm if the land acquisition process for the proposed EVD treatment centre had been done properly and to establish if the land users had been negatively affected by the project.

2. It was established that on 04 May 2016, a day before the team’s arrival, Mr Maulidi, Environmental Health Officer, Ms Daudi and the District Environmental Health Officer for Blantyre had been to the TA the previous day (04 May, 2015), to discuss the same
land issues. At the meeting they agreed that the TA will meet the land-users to establish if they have any issues with regard to being stopped from using the land and document and sign the proceedings (by the TA, Chiefs in the area and the persons that were using the land).

3. The team met with Mr. James Matiti (the person who had been using the land where the slab had been constructed). Mr. Matiti was asked as to whether he had been approached by community leaders to stop using the land before the slab was constructed and if he had any issues on this. Mr. Matiti admitted to have been told in advance and to have also been involved in telling other people to stop using the land, as he is also a chief. Mr. Matiti stated that he had no objection to stopping cultivating on the land and that he did not need to be compensated. He therefore signed the letter which was written by the TA. Chief Magasa also signed the letter and Ms. Daudi signed as a witness.

4. The team searched for other land users but could not find them.

5. To complement the signing of the letter, the consultant conducted investigations and key informant interviews and the following was established:

a. Chief Kameza, Chief Malunga and TA Machinji, had also advised the community not to use the land where the slab has been constructed. However the people continued to use it and when construction of the EVD treatment centre was about to start, the area was freely left to the contractor’s use.

b. Mr. Manuel Gelesom (no phone number, but works at Simama General Dealers – the gate opposite the Gaddafi Hospital area entrance) was the one who had cleared the land at the site for the concrete slab. He confirmed that no-one from the community stopped him or complained about his act. The land was freely surrendered to the project and the people would like to see the project proceed.

c. Mrs Mtekesha cultivates the land outside the hospital area and she is aware of the project. She said that despite the land being beneficial to the community in terms of agriculture, the hospital was much more needed. Hence the project should proceed. The community understands that the land is earmarked for hospital development.

d. A car dealer, food traders and a shoe repairer who conduct their business outside the entrance to the proposed Gaddafi Hospital reported that they are aware of the project and that they have been interviewed about it by several people, including the Malawi Broadcasting Cooperation Television crew. They would like the project to continue as it will also provide employment. As regards to the land, they had never witnessed any disputes. The community knows that the land is for the government and it is earmarked for the hospital development.

ANNEX 6: A LETTER ABOUT THE LAND AT KAMEZA
CHIEF MACHINJIRI
CHILAWENI HEADQUARTERS
P/ BAG 97
BLANTYRE

05/05/2016

THE LAND AT KAMEZA

The land in question which is at Kameza in the city of Blantyre, T/A Machinjiri area, belongs to Ministry of Health. We the villagers were just using the land for cultivating since it was not being used by the owners.

We the chiefs and the villagers who have been using the land are hereby willingly surrendering the land back to the owners to carry out their intended project(s).

Yours faithfully,

T/A Machinjiri
On behalf of all the concerned chiefs

Previous user
ANNEX 7: ARCHITECTURAL DESIGN OF ASH PIT FOR THE EVD CENTRES

NOTES

1. DO NOT SCALE OFF FROM THE DRAWING. ALL DRAWINGS MUST BE CHECKED ON SITE. ALL DRAWINGS AND INFORMATION PROVIDED ASHEMENS FOR DEPRAVATIONS MIGHT BE INCOMPLETE AND SUBJECT TO CHANGE. CONTACT THE DESIGNED OR DREW TO COME ON HAND.

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

REVISIONS

MALAWI GOVERNMENT
BUILDINGS DEPARTMENT
PRIVATE BAG B 389
LILONGWE 3

PROJECT TITLE
CONSTRUCTION OF AN INCINERATOR

CLIENT
SECRETARY FOR HEALTH
P.O. BOX 30377
LILONGWE

DRAWING NAME
ELEVATIONS

ASH PIT, FLOOR PLAN, scale 1:50

ASH PIT, LAYOUT PLAN, scale 1:50
ANNEX 8: 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 contravenes 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.


- 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 walkways, pedestal 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.