THE DIGITAL MALAWI ACCELERATION PROJECT (DMAP)

GRANT NUMBER	**:**	**IDA-E338-MW**
PROJECT NUMBER	**:**	**P505095**

UPDATED ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE CONSTRUCTION AND OPERATION OF A GOVERNMENT DATA CENTRE IN MALAWI AT THE DEPARTMENT OF E-GOVERNMENT IN LILONGWE

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EXECUTIVE SUMMARY

Introduction

The Government of Malawi has received World Bank financing for the implementation of the Digital Malawi Acceleration Project (DMAP). The line ministry for DMAP is the Ministry of Information and Digitization (MoID), but the project will be implemented by the Public Private Partnership Commission (PPPC). The development objective of DMAP is to increase access to and inclusive use of the internet and improve the government's capacity to deliver digitally enabled services. A summary of the project components is described in the Project Information Document (PID), which was disclosed on 10 April 2024 and can be accessed at:
Concept Project Information Document (PID)

The National Data Centre

The Digital Foundation Project, through its component III – Digital Platform and Services – funded the designing, construction, installation and commissioning of a Data Centre at the Department of E-Government premises along Paul Kagame Road in Lilongwe. However, the works at the Data Centre were not completed by the end of the Digital Foundations Project on 31 October 2024, largely due to logistical challenges in shipping imported construction materials and equipment. The remaining works are therefore inherited into the Digital Malawi Acceleration Project in its component 1 - Affordable Broadband and Secure Data Hosting.
The National Data Centre is expected to have 277.2 GHz of processing power, 2.63TB of memory and 107.52 TB of hard disk space. The facility has 13 empty server racks that will be available for co-location.

The National Data Centre in Lilongwe is the primary site, and the Data Centre in Mandala, Blantyre, is the disaster recovery (DR) site. This DR site will have identical server equipment as the primary site to allow seamless data replication that will facilitate data recovery and business continuity in the event of an outage of the primary site.

DMAP would like to utilise a part of the funding to complete the following additional activities at the National Data Centre.

1. Installation of a Redundant Fibre Link Between the Lilongwe and Blantyre National Data Centres and Connectivity Accessories
2. Construction and operation of a service power line
3. Installation of additional server equipment for the National Data Centre
4. Data migration from Ministries, Departments and Agencies to the National Data Centre

Purpose of the Environmental and Social Management Plan

The ESMP for the National Data Centre has been updated to manage the environmental and social risk and impacts that are envisaged during the design, supply, installation and operation of the Data Centre facility under DMAP, a successor project for Digital Malawi Foundations Project (DigMap). The objectives of the ESMP study were to:

- Identify and evaluate potential environmental and social impacts that may arise during the construction, installation of ICT and Non-ICT equipment, construction of powerline and subsequent operation of the Data Centre facility.
- Identify and propose measures for the prevention, reduction or mitigation of the environmental and social impacts identified.
- Suggest best environmental and social management practices for Data Centre operation during and beyond the Digital Malawi project.

Methodology used to prepare the ESMP

The methodology used for preparing and updating this ESMP included a desktop study, a visit to the project sites, and stakeholders' consultations. Several project-related documents and other government environmental and social-related documents, including applicable legal and policy frameworks in Malawi, were reviewed during the desktop study. Furthermore, internal consultations were conducted with e-Government Staff to understand the scope of the additional works that will be carried out under DMAP and identify significant E&S risks.

Summary of potential E&S risks and impacts.

Below is the summary of the potential environmental and social risks and impacts for project activities and their enhancement/mitigation measures:

Positive Socio-Economic Impacts

a) Increased employment opportunities

Enhancement measures

- Prioritise employment of local persons who qualify;
- Treat and paid workers fairly for the services rendered.

b) Opportunity for Skills Transfer

Enhancement measures

- Provide on-the-job training to the employees;
- Labourers who have acquired new skills must be promoted to encourage training;

c) Improved storage, back-up and management of Government information

Enhancement measures

- Maintain equipment timely and regularly to sustain internet reliability and speed;
- Train the operation and maintenance personnel for the continued reliability of the network services.

d) Increased Interconnectivity of digital data sources

Enhancement measures

- Sustain the reliability and affordability of the network;
- Train the operation and maintenance personnel for the continued reliability of the network services.

e) Secured storage of government information

Enhancement measures

- Allocate sufficient bandwidth to support data-intensive activities such as heavy encryptions;
- Connect as many government institutions as possible;
- Train the operation and maintenance personnel for the continued reliability of the data centre services.

f) Easy data monitoring and recovery

Enhancement measures.

- Train the operation and maintenance personnel for continued reliability of the network services.

Negative Environmental and Social Impacts

a) Nuisance from noise, dust and vibrations

Mitigation measures

- Inform neighbouring offices about work start/ stop times and possibility of noise and dust;
- Provide ear muffs to workers, as may be necessary;
- Spray water to dusty areas;

b) Increased generation of solid waste

Mitigation measures

- Store solid waste temporarily on-site in a designated place before off-site transportation and disposal.
- Transport solid waste to designated dump sites approved by Lilongwe City Council.
- Open burning or burial of solid waste shall not be allowed. It is prohibited for the contractor to dispose of any debris or construction materials in an environmentally and culturally sensitive areas, including watercourses, natural habitats and cultural sites.
- Train workers on the correct use of PPE and other protective equipment when handling solid waste.

c) Increased generation of liquid waste

Mitigation measures include:

- Provide hand washing facilities with soap and water or hand sanitiser
- Sensitise workers on good sanitation practices.
- Provide mobile toilets for use by construction workers and ensure safe disposal of waste matter.
- Intensify supervision of the workforce on adhering to sanitation measures

d) Generation of e-waste

Mitigation measures

- Develop a site-specific e-waste management plan outlining waste management procedures to be followed at the site;
- Identify e-waste recycling companies in Malawi who can receive the e-waste from the Data Centre operations;

- Liaise with Lilongwe City Council (LCC) for designated sites for disposal of e-wastes;
- Store the e-wastes in secure and separate waste receptacles until a disposal site is identified;
- E-wastes should be disposed of in designated disposal sites once the councils have identified the sites;
- Quantify the e-wastes that have been generated against those that have been sent to recyclers and those disposed of;
- Contractors are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas.

e) Increased generation of hazardous materials and wastes:

Mitigation measures:

- Develop a site-specific hazardous waste management plan outlining waste management procedure to be followed at the site for all the identified hazardous chemicals used at the site.
- Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer's Occupational health and safety impacts: specifications;
- Dispose hazardous wastes as per the MSDS guidelines and in liaison with the Lilongwe City Council and obtain a hazardous waste handling and storage permit;
- Train workers in hazardous materials and wastes handling procedures;
- Ensure workers wear appropriate PPE when handling hazardous materials and wastes.

f) Increased exposure to occupational health and safety risks (including injuries to the workers due to exposure of electrical risks, accidents from working at height, accidents from use of power equipment, trips and falls and cuts from sharp objects)

Mitigation measures

- Conduct OHS risk assessment
- Train staff to strictly adhere to specific safety standards and code of conduct;

- Specific training, safety measures, personal safety devices and other precautions should be defined in the health and safety plan.
- Install warning and safety signage in all strategic places

g) Risk of introduction and spread of Sexually Transmitted Infections (STIs)

Mitigation Measures

- Prepare and enforce the code of conduct on SEA;
- Provide civic awareness on STIs to workers;
- Provide condoms to workers.

h) Increased instances of sexual exploitation and abuse (SEA):
Mitigation measures:

- Implement the GBV-SEA/SH Action plan prepared as a part of DMAP ESMF
- Develop and implement a workplace code of conduct that addresses SEA, SH, and
- GBV. All contractor workers shall sign the Code of Conduct.
- Sensitize the contractor workers on the grievance redress mechanism (GRM) before the implementation of the project.
- Encourage a survival-centric approach for victims of any form of GBV/SEA/SH incidents.

i) Increased privacy and security concerns

Mitigation measures

- Implement a stringent privacy protection policy and practices to safeguard personal information;
- Provide stringent security measures that will safeguard the public's sensitive information

Implementation Arrangements

The Project Implementation Unit (PIU) for DMAP, Department of e-Government and the selected consulting firms are the key partners that will be responsible for the implementation of additional project activities at the National Data Centre and its DR site. The World Bank, through its country office, will provide financial and technical support.

DMAP PIU and the Department of e-Government are responsible for the overall coordination of the project. They are responsible for coordination with the contractor and relevant planning authorities to ensure the project is executed in line with acceptable best

practices. The PIU will ensure that appropriate instruments to manage environmental and social risks and impacts are in place. It will also be responsible for inspections and monitoring the environmental and social management works required under the project.

The selected consulting firms will be responsible for the civil and installation works. It is within the scope of their responsibilities to ensure that all E&S risks and impacts, as well as the impact management measures outlined in this ESMP, are duly implemented.

Summary of Stakeholder Engagements

To solicit and integrate the views of stakeholders on the proposed project, consultations were held with the PIU staff, representatives from the Department of Buildings, and management and staff from E-Government and NACIT, including NACIT students. Government institutions surrounding the proposed project site, including the Malawi Revenue Authority (MRA), Pharmacy and Medicine Regulatory Authority (PMRA), Department of Irrigation, Department of Government Printing, and Department of Museums, Monuments, and Relics, were consulted. A meeting with the representatives from the Lilongwe City Council was also conducted. The list of people consulted is presented in **Appendix 2.**

Furthermore, consultations on the additional works at the National Data Centre were conducted between PPPC and the Department of e-Government to clarify the scope of the additional works that will be carried out under DMAP and identify significant E&S risks

This aligns with the project's Stakeholder Engagement Plan (SEP) that was prepared for the Project, based on the World Bank's Environmental and Social Standard (ESS) 10 on Stakeholder Engagement. The SEP can be found at https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099051424115527979.

The updated ESMP for the National Data Centre will be disclosed to the public when it is cleared by the World Bank.

Conclusion and recommendations

The proposed design, construction, installation and commissioning of a National Data Centre has both positive and negative impacts on the biophysical and socioeconomic environment. Overall, the negative impacts are reversible when the proposed mitigation measures are diligently implemented.

To ensure that the ESMP achieves its intended objectives, it is recommended that:

1. Funds for the implementation of environmental management and monitoring activities should be provided timely.
2. Appropriate conditions and clauses should be included for the bidders to follow and adhere to the recommendations of this ESMP;
3. An Environmental and Social Safeguards personnel should be among the key personnel for the service providers
4. The service providers must develop site site-specific Contractor Environmental and Social Management Plan (CESMP) to guide the implementation of mitigation measures under their jurisdiction

ABBREVIATIONS AND ACRONYMS

ADMARC	:	AGRICULTURAL DEVELOPMENT AND MARKETING CORPORATION
AGCOM	:	AGRICULTURAL COMMERCIALIZATION
AIDS	:	ACQUIRED IMMUNODEFICIENCY SYNDROME
AST	:	ABOVEGROUND STORAGE TANK
CAE	:	CHILD ABUSE/EXPLOITATION
CAT 6	:	CATEGORY 6 CABLE
CBD	:	CENTRAL BUSINESS DISTRICT
CFCS	:	CHLOROFLUOROCARBONS
COC	:	CODE OF CONDUCT
COSOMA	:	COPYRIGHT SOCIETY OF MALAWI
DCaaS	:	DATA CENTRE AS A SERVICE
DHO	:	DISTRICT HEALTH OFFICER
DMAP	:	DIGITAL MALAWI ACCELERATION PROJECT
DigMAP	:	DIGITAL MALAWI PROJECT
Db	:	DECIBELS
EHS	:	ENVIRONMENTAL HEALTH AND SAFETY
EMA	:	ENVIRONMENTAL MANAGEMENT ACT
EMF	:	ELECTRIC AND MAGNETIC FIELDS
ERS	:	EMERGENCY RESPONSE PLAN
ESMP	:	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
ESCOM	:	ELECTRICITY SUPPLY COMMISSION OF MALAWI
ESF	:	ENVIRONMENTAL AND SOCIAL FRAMEWORK
ESMF	:	ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK
ERP	:	EMERGENCY RESPONSE PLAN
E-WASTE	:	ELECTRONIC WASTE
GBV	:	GENDER BASED VIOLENCE
GLAN	:	GOVERNMENT LOCAL AREA NETWORK
GRC	:	GRIEVANCE REDRESS COMMITTEE
GRM	:	GRIEVANCE REDRESS MECHANISM
GWAN	:	GOVERNMENT WIDE AREA NETWORKS

HFCs	:	HYDROFLUOROCARBONS
HIV	:	HUMAN IMMUNODEFICIENCY VIRUS
HR	:	HUMAN RESOURCE
HS	:	HEALTH AND SAFETY
ICT	:	INFORMATION COMMUNICATION TECHNOLOGY
IEC	:	INFORMATION EDUCATION COMMUNICATION
IFMIS	:	INTEGRATED FINANCIAL MANAGEMENT INFORMATION SYSTEM
LAN	:	LOCAL AREA NETWORKS
LCC	:	LILONGWE CITY COUNCIL
LWB	:	LILONGWE WATER BOARD
MACRA	:	MALAWI COMMUNICATIONS REGULATORY AUTHORITY
MAREN	:	MALAWI RESEARCH AND EDUCATION NETWORK
MEPA	:	MALAWI ENVIRONMENTAL PROTECTION AUTHORITY
MBS	:	MALAWI BUREAU OF STANDARDS
MDAs	:	MINISTRY, DEPARTMENTS AND AGENCIES
MDB	:	MAIN DISTRIBUTION BOARD
MGDS	:	MALAWI DEVELOPMENT GROWTH STRATEGY
MIX	:	MALAWI INTERNET EXCHANGE
MIP	:	MALAWI IMPLEMENTATION PLAN
MRA	:	MALAWI REVENUE AUTHORITY
MOU	:	MEMORANDUM OF UNDERSTANDING
NACIT	:	NATIONAL COLLEGE OF INFORMATION TECHNOLOGY
ODS	:	OZONE DEPLETING SUBSTANCES
OP/BP	:	OPERATING POLICIES/BANK PROCEDURE
PAD	:	PROJECT APPRAISAL DOCUMENT
PCR	:	PHYSICAL CULTURAL RESOURCES
PGRC	:	PROJECT GRIEVANCE REDRESS COMMITTEE
PIU	:	PROJECT IMPLEMENTATION UNIT
PM	:	PARTICULATE MATTER
PMRA	:	PHARMACY AND MEDICINE REGULATORY AUTHORITY
PMT	:	PROJECT MANAGEMENT TEAM
PPE	:	PERSONAL PROTECTIVE EQUIPMENT

PPPC	:	PUBLIC PRIVATE PARTNERSHIP COMMISSION
SEA	:	SEXUAL EXPLOITATION AND ABUSE
SH	:	SEXUAL HARRASSMENT
STI	:	SEXUALLY TRANSMITTED INFECTION
SSBs	:	SOIL STABILISED BLOCKS
UPS	:	UNINTERRUPTIBLE POWER SUPPLY
VAC	:	VIOLENCE AGAINST CHILDREN
WAN	:	WIDE AREA NETWORKS

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1.0 INTRODUCTION

1.1 Background Information about the Digital Acceleration Project

The Government of Malawi has received financing for the implementation of the Digital Malawi Acceleration Project (DMAP). The line ministry for the DMAP is the Ministry of Information and Digitization (MoID), but the project will be implemented by the Public Private Partnership Commission (PPPC). The development objective of DMAP is to increase access to, and inclusive use of, the internet and improve the government's capacity to deliver digitally enabled services.

A summary of the project components is described in the Project Information Document (PID), which was disclosed on 10 April 2024 and can be accessed at: Concept Project Information Document (PID)

1.2. The National Data Centre

The Digital Malawi Program: Digital Foundation Project (also financed by the World Bank), through its **component III – Digital Platform and Services** – funded the designing, construction, installation and commissioning of a Data Centre at the Department of E-Government premises along Paul Kagame Road in Lilongwe. However, the works at the Data Centre were not completed by the end of the Digital Foundations Project on 31 October 2024, largely due to logistical challenges in shipping imported construction materials and equipment.

The remaining works are therefore inherited into the Digital Malawi Acceleration Project in its **component 1 - Affordable Broadband and Secure Data Hosting**.

The National Data Centre is expected to have 277.2 GHz of processing power, 2.63TB of memory and 107.52 TB of hard disk space. The facility has 13 empty server racks that will be available for co-location.

The National Data Centre in Lilongwe is the primary site, and the Data Centre in Mandala, Blantyre is the disaster recovery (DR) site. This DR site will have identical server equipment as the primary site to allow seamless data replication that will facilitate data recovery and business continuity in the event of an outage of the primary site.

1.2.1 Justification for National Data Centre

Currently, Government Ministries, Departments, and Agencies (MDAs) host their IT systems and applications in silos across multiple server rooms nationwide. When the National Data Centre facility becomes operational, it will be used for hosting the majority of critical government systems, applications and data in one modern place that has high availability, a reliable energy source, and secure with reliable connectivity. It is envisioned that the facility will provide shared access to applications and data using a complex network, computing, and storage infrastructure.

1.2.2 Services to be offered

The National Data Centre will adopt an operating model of Data Centre as a Service (DCaaS), and the services that will be offered include:

a) Provision of connectivity to GWAN and a direct link to Malawi Internet Exchange (MIX).
b) Provision of high-performance analytic tools, processes, procedures and robust monitoring tools for all sub-systems.
c) Supporting cloud and automation requirements.
d) Hosting applications used by MDAs.
e) Facilitating MDAs to bring their servers into the Data Centre to take advantage of the available amenities that the National Data Centre will provide.
f) Facilitating MDAs to rent or lease access to the National Data Centre, using the facility's servers, networking, storage and other computing resources.
g) Usage of the National Data Centre as a disaster recovery site for MDAs.

1.2.3 Expected benefits

Some of the expected benefits that the introduction of the National Data Centre will bring include:

a) Increased Productivity

Consolidating Data Centre facilities will offer the ability for MDAs to enhance operations, improve redundancy and flexibility, deliver higher availability and better use of IT assets.

b) Improved Energy Efficiencies

MDAs will realize increased energy efficiencies through hardware refreshes during a consolidation program by right-sizing to more energy-efficient platforms. Transitioning to newer infrastructure typically results in lower power usage and lower electric bills. This is likely to deliver direct savings to the Government of Malawi as a whole, allowing for

reallocation and reinvestment of financial resources.

c) Enhanced Security

Reducing the footprint of Data Centres or computer/server rooms across the MDAs will enable centralization of Data Centre infrastructure, which strengthens security and streamlines management. Reducing the size of the MDAs' critical infrastructure will help reduce the attack landscape and scope of security for the Government of Malawi ICT Infrastructure.

d) Mitigated Risk

Consolidation of computing infrastructure will help reduce risk of system outages by eradicating outdated, end-of-support platforms and mitigating opportunities for system failure. It will also improve disaster recovery enabling MDAs to implement a more robust disaster recovery plan that will also encompass options for replication in the cloud.

e) Cost Reductions

By using a common and shared Data Centre, each of the MDAs that will have their systems hosted in the Data Centre would not need to operate their own server rooms. This would in turn entail a reduction in expenses such as equipment maintenance, staff expenses and utility bills, just to mention a few.

1.3 Purpose of the updated Environmental and Social Management Plan

The ESMP for the National Data Centre has been updated to manage the environmental and social risk and impacts that are envisaged during the design, supply, installation and operation of the Data Centre facility under DMAP, a successor project for Digital Malawi Program Phase 1 – Digital foundations Project. The objectives of the ESMP study were to:

- Identify and evaluate potential environmental and social impacts that may arise during the construction, installation of ICT and Non-ICT equipment, construction of a powerline and subsequent operation of the Data Centre facility.
- Identify and propose measures for the prevention, reduction or mitigation of the environmental and social impacts identified.
- Suggest best environmental and social management practices for Data Centre operation during and beyond the Digital Malawi project.

1.4 Project Location

The National Data Centre is located in Area 4, within the Department of E-Government premises along Paul Kagame Road in Lilongwe. The coordinates of the plot are -13.973928° °

and 33.771330^{o} and the approximate size of the plot is 0.33 Hectares

This area is designated for institutional and commercial land use by Lilongwe City Council. The site is surrounded by government and private institutions, including Government Print, Inq Digital, Agriculture Commercialisation Project office, Poisons and Medicines Regulatory Authority (PMRA), Malawi Revenue Authority, Copyright System of Malawi (COSOMA) House, Department of Irrigation, and Department of Museums and Monuments. Other prominent structures within the vicinity of the project site include AMINA House, Cashbuild building, Chipiku Stores and Area 3 Agriculture Development and Marketing Cooperation (ADMARC).

2.0 DESCRIPTION OF PROJECT ACTIVITIES

2.1 Nature of the Project Activities

The National Data Centre sub-component works were split into two activities; thus, the civil works consist of the construction of a prefabricated double-storey building and the installation of Data Centre-related equipment in the building, including amenities such as the Uninterrupted Power Supply (UPS), Batteries, Gensets, Cooling systems and Fire Detection and Suppression System equipment. The building is designed to suit the amount and types of equipment that are required for a Tier III Data Centre that will be hosted therein. The building was constructed using solid steel frames and cement blocks. A concrete foundation was cast in situ where the prefabricated steel framework was mounted. Other civil works included the construction of a guard room, foundation of the generators, generator canopy, plinths for the transformers, support staff utility building, retaining walls for diesel storage underground tanks, car park, and driveway. Figure 1 shows the completed Data Centre Building.

Figure 1. Data Centre Building

The second activity under the Data Centre sub-component involves the design, supply, installation and commissioning of the Data Centre equipment and related Data Centre amenities.

Under Digmap, 15 servers and 2 network 42U racks were installed in the server room as shown in Figure 2.

Figure 2. Server room installations

Related cable network for the servers were connected and installed under a raised floor. To facilitate the Data Centre connectivity, primary optic fibre cables that were temporarily terminated at the e-Government Building were installed in the building.

In addition to the ICT equipment, Data Centre amenities, including Fire detection and Suppression System, Data Centre Cooling System, and Electrical equipment, were installed in specific rooms in the Data Centre building. Some of the ICT and non-ICT equipment installed at the National Data Centre are provided in Figure 3.

Figure 3. ICT and non-ICT installations at the NDC

The following is the allocation of the Data Centre building to the various Data Centre equipment and amenities.

The ground floor of the Data Centre building has the Server Room, Fire Suppression System Room, Cooling System room, Battery Room and Uninterrupted Power Supply (UPS) Room. This is because the servers and electrical equipment are heavy and their load can be easily be borne by the ground floor. Additionally, the ground floor does not pose significant leakage risks than the first floor whose roof is directly exposed to weather elements during the wet

season. The ground floor has the Staging room, Telcom's room and Store room. A number of Data Centre functional rooms including the Network Operations Centre (NOC) Room, NOC Monitoring room, Public Key Infrastructure (PKI) room, CA room, Accredited CA room, CERT offices, and Test room are located on the **first floor of the building**. This floor also has a Meeting Room, and offices for Data Centre Technical officers. The building has provisions for sanitary as well as dining facilities.

In addition to the building structure and amenities within it, other structures that ensure complete and effective operations of the Data Centre were considered as follows:

1. **Earth Pits**

   The main reason for doing earthing in electrical network is for the safety. When all metallic parts in electrical equipment are grounded, then if the inside the equipment fails, there are no dangerous voltages present in the equipment case. The purposes of earthing are safety for human life / building / equipment, over voltage protection and voltage stabilization. A typical earthing pit is constructed by excavating on earth a pit size of 1.5m x 1.5m by 3.0m and using a 600mm x 600mm x 12mm galvanized or cast-iron plate for more contact with the earth and reducing earth resistance. The pit was filled with a mixture of wood, coal powder, salt and sand.

2. **Outdoor Cooling Units**

   A raised concrete slab was constructed as the base for the placement of the outdoor cooling units. The floor dimensions of the slab was 3m x 2m. The area surrounding the outdoor cooling units will be kept free of any plants or shrubbery that have grown around the outside unit as well as any obstructions to ensure there is proper airflow.

3. **Diesel Generator Sets**

   A raised concrete slab was constructed as the base for the placement of the generators. An enclosure was erected with corrugated iron sheets, steel columns and galvanized steel enclosure to offer protective barriers surrounding the generators. This enclosure will allow for adequate ventilation, cooling, security and easy equipment maintenance. Since the enclosure is facing the outdoors, all electrical connections and cables were appropriately insulated and protected from the weather elements. The floor dimensions of the enclosure is 7.5m x 6m.

4. **Fuel Storage Tank**

   The site has an aboveground storage tank (AST) installed. The purpose of this tank is to maintain the level of fuel in the generators' internal tanks. The tank is located at a minimum

of 2m and a maximum of 20m from the engine, and both the tank and the generators are on the same altitude. The fuel storage tank is accessible by fuel delivery truck. At full load, the proposed 500Kva generator consumes 120litres of diesel per hour. In order to meet the requirement of 72hours non-stop backup power, the generator will require 8,640 litres of diesel and this is the capacity of the fuel storage tank installed. A roof structure was erected to reduce evaporation and condensation effects and to provide shelter from the direct rays of the sun to minimize over-heating. Safety measures are in place some of which include:

- The AST is located on a high, well-drained site, a minimum of 12metres from any buildings, water tributary or combustible materials.
- The storage area shall be free of weeds and other combustible material.
- Open flames and smoking shall not be permitted in the area.
- The AST was installed in an east-west orientation to reduce the amount of solar radiation the tank receives.
- The AST has been marked with the name of the fuel contents and a sign with "FLAMMABLE–KEEP FIRE AND FLAME AWAY." The words are at least six inches in height and in bright red.
- "NO SMOKING" signs should also be conspicuously exhibited from various angles of approach.
- Class B-type fire extinguishers have been mounted in easy-to-access locations.
- The AST is not placed where ignition sources such as welding and cutting torches are likely to be used.
- The AST is placed in a bunded area made of fire and leak-proof material to prevent any spillage to the ground.
- An oil-water interceptor is provided.

5. Power Transformer

A provision of ground space of 3.5metres x 2.7metres was made for the planting of electric poles that will host the transformer. There is a structure-free distance of at least 5 metres away from all sides of the transformer.

2.2 Additional Work under DMAP

Under DMAP, the following activities are planned for implementation at the National Data Centre.

1. **Installation of a Redundant Fibre Link Between the Lilongwe and Blantyre National Data Centres and Connectivity Accessories**

Under DMAP, the Department of e-Government intends to engage a service provider to provide a redundant fibre connection between the two Data Centres under an Indefeasible Right of Use (IRU) arrangement. This activity will involve among other things, the routing of the 24-core fibre cable from the Department of Accountant General server room at the Capital Hill and terminating it at the National Data Centre in Area 4 in Lilongwe, covering approximately 8 km. The service provider is expected to complete the link within fourteen (14) days from the day of signing the contract.

2. **Construction of a service power line**

DMAP has planned to construct a service powerline for the National Data Centre Building in Lilongwe. The service powerline will originate from the Substation at Kamuzu Central Hospital (KCH), belonging to the Electricity Supply Commission of Malawi (ESCOM), to the National Data Centre in Area 4, approximately 1.5 km away. The service power line will be buried underground. The construction of the service powerline will enhance the reliability and resilience of the National Data Centre operations and mitigate risks associated with power disruptions, which will eventually ensure uninterrupted services critical to Data Centre operations. The service powerline will also fulfil a key requirement that qualifies the facility as a Tier 3 Data Centre. A separate ESMP for this activity was prepared and disclosed on the website and can be accessed through: https://documents.worldbank.org/ext/en/home

3. **Installation of additional server equipment for the National Data Centre**

Under DMAP, the Department of e-Government aims to increase the capacity of the National Data Centre to cater the demand of key government institutions for at least the coming 5 years.

Desk research was conducted based on the inventory of systems that are currently running in the various MDAs. The survey revealed that a total of 8,948 CPUs, 41.1 TB RAM and 660.5 TB storage are the additional capacity that would be required for the National Data Centre for the next 5 years.

4. **Data migration from MDAs to the National Data Centre**

Currently, Government Ministries, Departments, and Agencies (MDAs) host their IT systems and applications in silos across multiple server rooms nationwide. Under DMAP, the government intent to migrate the priority systems of individual MDA to the National Data

Centre and also plan for proper data backup and recovery. This transaction aims to transfer applications, systems and data from current storage systems to the National Data Centre infrastructure, ensuring improved data management, backup, security, and accessibility.

2.3 Scope of the National Data Centre Project

The scope of works for the National Data Centre is limited to its location, the structures that house the Data Centre equipment and the interior and exterior Data Centre amenities. The works planned and conducted were as follows:

2.3.1 Planning, Designing and Procurement Phase

The works that were completed under DigMap included:

- Preparing architectural and civil engineering designs and drawings for the National Data Centre facility. This activity was led by the Department of Buildings under the Ministry responsible for Public Works. The designs and drawings were submitted to and approved by the Lilongwe City Council's Town Planning Committee prior to the commencement of the civil works.
- Preparing ESMP. This activity was undertaken by the project's safeguards team. The ESMP was submitted to and approved by the World Bank country office and the Malawi Environment Protection Authority (MEPA) prior to the commencement of the civil works.
- Procuring a contractor - Netcon and J&J Construction joint venture - to construct a two-storey structure and design, supply, install and commission a Data Centre facility.

  Under DMAP, four consulting firms and or contractors shall be procured to (1) install a redundant fibre link between two Data Centres, (2) to construct a service powerline (3) to install additional servers and (4) to undertake data migration from MDAs to the NDC. The bidding documents will include a requirement that the contractor adhere to the E&S risk and impacts management measures included in this ESMP. The contractor will also be required to abide by the project's Labour Management Procedure (LMP) and Stakeholder Engagement Plan (SEP), among other safeguard requirements.

2.3.2 Construction Works

The activities conducted under DigMap included demolition of a small, desolate structure located on the plot and construction of a two-storey structure hosting the Data Centre equipment and its associated amenities.

Other civil works included the supply, delivery and installation of the raised access flooring systems with necessary accessories and thermal insulation. A back-up generator shelter was erected adjacent to the building.

Demolitions: All materials such as iron sheets and window frames arising from the demolition of the obsolete structure on the vacant plot were handed over to E-Government. The demolition work was carefully carried out,causing as little disturbance as possible to surrounding construction and on-going business activities in nearby offices.

Waste management: All wastes generated from the demolition of the obsolete structure were managed according to the waste management hierarchy. The accumulated wastes were stored on-site and disposed of according to the city council waste management procedures through a licensed waste operator.

The wastewater and sewerage wastes were managed through an onsite septic tank. During construction, pit latrine for both Male and Female workers was provided.

Temporary screens: A Temporary screens made of corrugated ironsheets were erected and maintained throughout the progress of the civil works. These screens were taken down upon completing the civil works.

Dust suppression: The contractor frequently sprinkled water across dusty areas, including the access road, as necessary to prevent any nuisance from dust.

2.3.3 Landscaping Works

Preparation: The site was excavated to a minimum depth of 150mm; and large stones, perennial weeds and rubbish were removed to a tip.

Site clearance (provisional): The site was cleared of all rubbish, concrete materials, rubbles stones and any unwanted material in all planting areas. The heaps of excavated solid and rubble were disposed at the Lilongwe City Council designated dumpsite.

Levelling: All soil and clods were broked and raked out to make up fine levels. The sides of excavations was carefully trimmed to make gentle slopes.

Top soil: All unpaved grounds were supplied with fertile top soils, averaging 100 mm deep then level back the soils.

Manure (provisional): Well-decomposed composite manure were supplied, thoroughly mixed and apply to all planting areas including areas for lawn and trees and shrubs.

2.3.4 Electrical Works

Electrical works included the acquisition and installation of the main power supply from the national grid by Electricity Supply Commission of Malawi (ESCOM). The Data Centre was planned to be fed from the national grid through 2 different sources from different substations. One source should be uninterrupted, rarely affected by blackouts and load shedding.

Presently, one source was supplied under DigMap, while the service power line will be constructed under DMAP.

The power supply from the grid was connected to the main distribution board of the Data Centre. Cables for wiring Data Centre equipment and accessories including the UPS and a stand by power generator were supplied and installed. Appropriate earthling of the main supply to the entire installation wasalso be done. All the electrical installation conducting and wiring were done in accordance with specifications and best trade practices.

2.3.5 Data Centre Design, Equipment Supply, Installation, Commissioning and Operation

In according to the design, install and commission of the National Data Centre at the Department of E-Government premises in Lilongwe, the following works are, among others, were expected:

- **Supply and installation of redundant connectivity with sufficient bandwidth.**
  All the MDAs has been connected to the Data Centre through the GWAN as the primary link. The secondary connection will be through the Internet. Through DMAP, the Data Centre will be connected to a disaster recovery site (Blantyre Data Centre) through a dark fibre with a round-trip time of less than 5milliseconds. The redundant fibre link for DR site is present at the Accountant General's server room. This link will be extended to the National Data Centre Building in Area 4 under DMAP.
- **Supply, delivery, installation and commissioning of the Precision Air Conditioning System for cooling.**
  The Data Centre is supported by a variety of cooling units as tabulated below:

Description of Room	Type of Air Conditioner (A/C)	No of Units
Server Room	In-row type pressure A/Cs	7
Telco Room	Split A/Cs	2
Staging Room	Split A/Cs	2
Power Room	Ductable ceiling suspended A/Cs	2
Battery Room	High wall mount A/Cs	2
Offices & Meeting Room	Split / cassette A/Cs	2

Research has shown that over 65% of IT equipment failures are directly attributed to inadequate, poorly maintained or failed air conditioning in the server room. For this reason, the Data Centre has a Cold Aisle Containment System to enclose the aisle delivering a uniform and predictable flow of cold air directly to the facility's IT equipment. Airflow controls are utilized to match the air supply needs of the aisle, eliminating hot spots and ensuring optimal operating efficiency.

- **Supply, installation and commissioning of monitoring systems.**

  An IP Surveillance System has been installed as a tool for monitoring activities within and surrounding the Data Centre building. Infrastructure monitoring systems has been installed in the NOC Room to monitor hardware, software, databases, network, electricals, cooling and security systems. The system uses a combination of IP based indoor dome cameras, IP based indoor PTZ dome cameras and IP based outdoor PTZ dome cameras. A 32 channel Network Video Recorder (NVR) is used for recording all the camera feeds. CAT6A

network cables ise used for connectivity between the cameras and the network switches which carries both power and data.

- **Supply, installation and commissioning of a Firewall and Intrusion Detection system**
  The Data Centre has a Perimeter Level Security comprising next generation firewalls and intrusion prevention system (IPS) to protect traffic coming from outside the Data Centre. It also has an internal security system comprising micro-segmentation with virtual firewalls to protect traffic within the Data Centre. The Data Centre also has a Web Application firewall solution to protect attacks targeted web applications.

- **Supply, installation and commissioning of access control systems.**
  The Data Centre has an access control system comprising a biometric and card reader for entry into the Server Room; a card reader for exit from the Server Room; a card reader with access keypad for entry into the rest of the rooms; and a push button for exit from the rest of the rooms.

- **Supply, installation and commissioning of environmental monitoring systems.**
  The Data Centre has environmental monitoring systems to monitor temperature and humidity in the Server Room, Telco Room, Staging Room, Power Room, Battery Room and NOC Room. There is also a water leakage monitoring system in the Server Room. In addition, there is a rodent monitoring system for the Server Room, Telco Room, Staging Room, Power Room, Battery Room and NOC Room.

- **Supply and installation of redundant power distribution systems for supplying power.**
  The Data Centre is designed to be fed by main power supply from the national grid that come from 2 different sources. These sources are two separate substations. A source from KCH substation that is uninterrupted will be constructed under DMAP. This source is rarely affected by black outs and load shedding.

- **Supply and installation of redundant backup power sources.**
  The Data Centre is supported by 2 diesel generators, and each unit has a capacity of 500kVA. These generators operates in full redundancy and they will be providing 72 hours

backup power to the entire Data Centre. Power distribution system has path redundancy and equipment level redundancy from the 2 generators to the racks in the Data Centre.

- **Supply and installation of redundant UPS Power Supply System.**
  The Data Centre has 2 UPS systems and each unit has a capacity of 150kVA. Each rack in the Data Centre has 2 power sources; one from each of the 2 UPS systems. Each UPS has 20mins battery backup. On failure of utility power, within 1 minute, generator will be powered. During the transition period, UPS system will be backing power load in the Data Centre

- **Supply, installation and commissioning of fire detection and automatic suppression system.**
  The fire detection system is aspirating-based and has multi sensors for heat and smoke with 2 hours battery backup. The fire suppression system is using Novec 1230 fire protection fluid whose benefit is a reduced volume making it easy to store within the server room space. This system has an ozone depletion potential rating of zero and will break down in the atmosphere in only five days thus providing an extremely low global warming potential. For smoke detection, the Data Centre has VESDA (Very Early Smoke Detection Apparatus) aspirating smoke detection solutions with continuous air sampling provide the earliest possible warning of an impending fire hazard.

- **Supply, installation and commissioning of redundant CAT 6 network wiring of the Data Centre.**
  Cat 6 based copper cabling solution has been used within the Data Centre. The same is used for data/voice outlets for worktables, IP Surveillance system and access control systems. OM4 multi-mode optical fibre cabling is used for all the nodes that will require to be transmitting at 10Gbps.

- **Supply, installation and commissioning of hyper-converged infrastructure.**
  The Data Centre utilizes hyper-converged infrastructure that integrate servers, storage systems, networks and virtualization in a single system. This software-centric architecture IT infrastructure virtualizes all of the elements of conventional "hardware-defined" systems

and legacy infrastructure consisting of separate servers, storage networks, and storage arrays.

- **Supply, installation and commissioning of a counterpart server infrastructure with Disaster Recovery** is hosted remotely at a government Data Centre facility in Blantyre to provide data mirroring, disaster recovery and failover capabilities.

Other activities expected include practical acceptance testing- civil works. user training, functional acceptance testing and perform final acceptance test and handover to the Department of E-Government

2.4 Project Inputs

Materials for construction works of the Data Centre building included the steel frame sourced externally, with a few items for the concrete base and exterior Data Centre amenities sourced locally. For the ICT equipment, all were sourced from abroad. Standard safety procedures and appropriate guidelines, including the use of environmentally friendly materials were followed by the contractors when purchasing and handling the required materials. Table 1 shows a summary of the main inputs and outputs of the project activities.

Table 1: Summary of inputs and outputs of the project activities.

Activity	Main Machines	Materials
Land clearing and site preparations; Waste removal	• Bulldozers • Rollers/Compactors • Tippers • Water Bowser	• Water, Timber • Common fill gravel • Top soil • Manure
Construction of Data Centre Building	• Cranes for unloading the Steel frame and placing the elements as per the design.	• Water • Common fill gravel • Cement, • Sand, timber, • Reinforcement bars, • Steel frame, tiles,

Activity	Main Machines	Materials
	• Excavator for foundation work of building • Scrafford for working at height work	• Metal fittings, • Glass fittings
Supply and installation of redundant connectivity with sufficient bandwidth.	• Hand tools such as hoes, pick and shovel for trenching work for laying of fiber cables from service providers.	• Poles and pole dressing materials • Optic fibre • Gravel • cement
Supply, delivery, installation and commissioning of Precision Air Conditioning System for cooling.	• Cranes for unloading the PAC Units. • Fork lilt for placement of PAC units	
Supply, installation and commissioning of monitoring systems.	• Software	
Supply, installation and commissioning of a Firewall and Intrusion Detection system		Firewall equipment & Cyber security equipment
Supply, installation and commissioning of access control systems.		Access control device will be installed
Supply, installation and commissioning of environmental monitoring systems.	• IOT devices and Software	
Supply and installation of redundant power distribution systems for supplying power.	• UPS	

Activity	Main Machines	Materials
Supply and installation of redundant backup power sources.	• Cranes for unloading and placing the DG Sets on the DG Set foundation • Excavator for foundation work of HSD Secondary fuel storage tank • Crane for unloading and placing the HSD Secondary fuel storage tanks.	• Water
Supply and installation of redundant UPS Power Supply System	• Cranes for unloading the UPS Systems. • Fork lilt for placement of the UPS systems	
Supply, installation and commissioning of fire detection and automatic suppression system.		Fire detection & suppression equipment
Supply, installation and commissioning of redundant CAT 6 network wiring of the Data Centre.		CAT 6 cable, PVC trunking
Supply, installation and commissioning of hyper-converged infrastructure.		Racks, Servers and storage devices
Supply, installation and commissioning of a counterpart		Racks, Servers and storage devices

Activity	Main Machines	Materials
server infrastructure with Disaster Recovery hosted remotely		

2.5 Employment Opportunity

The project employed 70 people, including technical, construction and ICT experts; skilled and unskilled labourers, as well as drivers, cleaners, security personnel and site managers. Although the workforce was expected to constitute at least 40 percent women, it was not possible to reach the target due to lack of interest by female workers.

3.0 BIOPHYSICAL CHARACTERISTICS AND SOCIO-ECONOMIC ENVIRONMENT

3.1 Location

Lilongwe is the capital city of Malawi located in the central region of the country. The city is surrounded by a number of districts in the central region. On the west of the city is Mchinji district while on its east the district has made boundaries with Dedza and Salima districts. Dowa and Kasungu districts connects with the district on the northern boundary. The total area of the district is approximately 6,159 square kilometres.

3.2 Biophysical Environment

3.2.1 Topography

The topography of the proposed project area is generally flat terrain with an altitude of 1,050 meters above sea level. The site sits on a sloped ground and is part of the catchment for the Lilongwe River located at approximately 1 km in the south-western edge.

3.2.2 Geology

The most important rock species within the proposed project site are gneiss, pegmatite rocks, granulite and schist which are assigned to what is called 'the Malawi Basement Complex'. Rock formations are masked by a variety of superficial deposits (soil), which in some places are of considerable thickness. In other areas however, especially the eastern side of the city, the hard rock formation is very close to the surface.

3.2.3 Hydrology

The project site is situated within the catchment area of Lilongwe River and its tributary Lingadzi River. Lilongwe River comes from the Dzalanyama Hills and hosts two dams that supply water to Lilongwe City. The Lilongwe Water Board abstracts water from Lilongwe River just downstream of its confluence with Chankhandwe stream as there is no aqueduct to transfer water from the dams. The river enters the City at Chigwirizano/ Likuni and passes through the now all built-up area to the old town. Lingadzi River runs from the north side and merges with the Lilongwe River in Lilongwe City.

3.2.4 Soils

Soils within the proposed site is generally *Lilongwe Catena,* a representative of the ferruginous soil pattern covering the central part (Lilongwe City) of Lilongwe plain. Basically, dark red sandy clay or clay, possessing typical properties of ferruginous soil dominate the district's flat lying plain, commonly known as the *Lilongwe Series*. According to Lilongwe District Socio-economic Profile (2017-2022), *Lilongwe series* has several members that are variable:

- **Kandiani series –** yellowish red profile with a sandy clay sub layer.
- **Mwanjema series –** deep subsoil of dark brown colour.
- **Monde series –** course sandy, ferritic soil, with the lower horizons mottled, and impeded site drainage.
- **Mbabvi series -**black hydromorphic clay, subject to seasonal water logging is dominated by Kandiani series which are sandy clay loam in nature.

3.2.5 Climatic Conditions

Lilongwe features a humid subtropical climate that borders on a subtropical highland climate, with pleasantly warm summers and mild winters. Due to the altitude, temperatures are lower than would be expected for a city located in the tropics. Lilongwe features a short wet season that runs from December to March and a lengthy dry season that covers much of the remainder of the year, particularly June and July which are cooler than the rest of the year. However, the city sees heavy downpours during its rainy season, seeing around 200 millimetres. Figure 3 and Figure 4 shows average minimum and maximum temperature and average rainfall in Lilongwe.

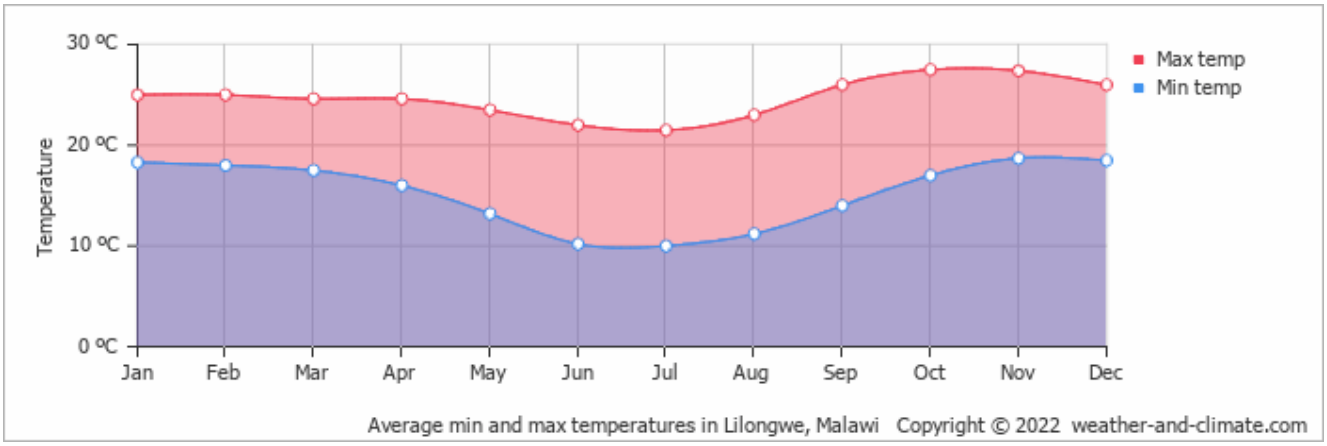


Figure 4. Average minimum and maximum temperature in Lilongwe, Malawi

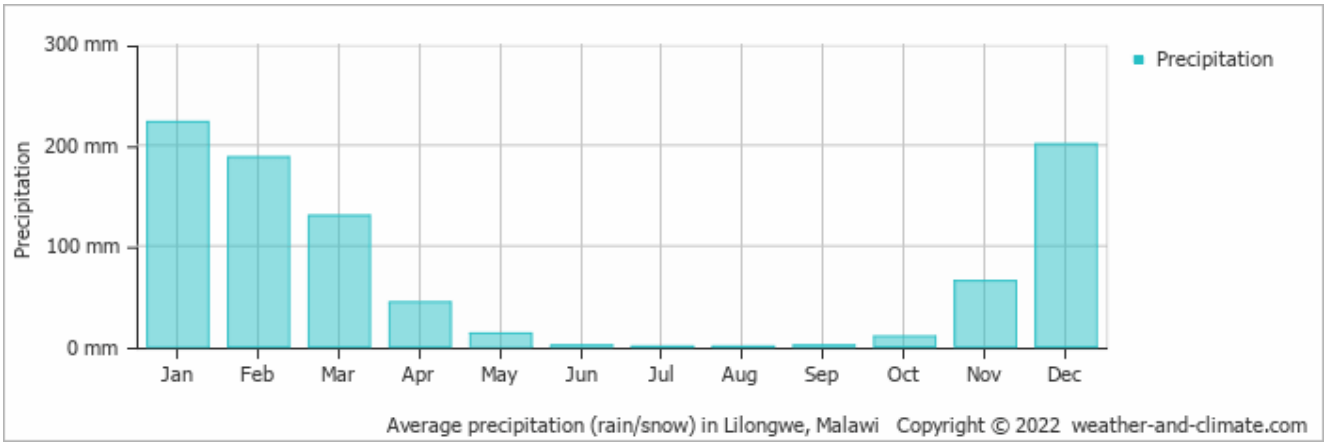


Figure 5. Average monthly precipitation in Lilongwe

3.2.6 Flora

The proposed vacant plot for the Data Centre is a bare ground which was being used for farming. The land has some shrubs and trees with much exposure to the soil. There are 7 exotic trees that are likely to be cut down to create access to the construction site for the Data Centre building. As a mitigation measure, it is expected that ten (10) similar or better species for each tree cut will be replanted by the contractor. These trees will have to be managed for three years by the contractor most especially during the rainy season until the tree can self-sustain for successful growth. Landscaping will be done to provide vegetative cover with grass and trees. Due to the number of trees (70) that are required to be planted an alternate site will have to be identified in liaison with Forestry Department where the trees will be planted and maintained.

3.2.7 Fauna

The sub-project site is not rich in animal biodiversity. The common animals found here include but not limited to birds and lizards.

3.3 Socio-economic Characteristics

3.3.1 Economy

Lilongwe is the Capital City in Malawi. This status attracts several economic activities to itself. Finance, banking, retail trade, construction, transport, public administration, tourism, and manufacturing are the main economic activities in Lilongwe City. The informal sector in Lilongwe City is also vibrant and it largely contributes to its economy. According to the 2018

census, some 75 percent of the labour force in Lilongwe City is employed, of which 27 percent is employed in the informal sector. However, the informal sector lacks adequate regulations and operates with minimal city council support. Inadequate infrastructure such as markets and good roads, inadequate access to credit to expand and improve businesses and inadequate entrepreneurial skills are major obstacles that hamper economic growth in Lilongwe City.

The activities at the proposed project site will attract different levels of employees, some who may be vulnerable to issues of GBV and SEA and SH. Workers such as cleaners or guards at the site may be enticed by contractors to engage in sexual relations hence the ESMP should carry measures for mitigation impacts of GBV and SEA and SH.

3.3.2 Population

According to the 2018 census, the population of Lilongwe City was 989,318 of which 50.2% of the total are female. This represents an intercensal growth rate of 3.8% from the 2008 population, which was 669,021. The population of residents around the project area (Area 6/Area 5) was 1,987 in 2018, but greatly increases during the day due to the commercial nature of the area. (NSO, 2018). About 76% of the city's population lives in unplanned settlements (with poor water and sanitation, electricity, education, health services and road network).

3.3.3 Tribes

Lilongwe city has a population of mixed cultures emanating from different ethnicity backgrounds. According to the 2018 census, 42.28% of the people resident in Lilongwe City were Chewa, which made up the largest ethnic group. The largest ethnic minority in the city are the Ngoni, with 17.1% of the population. Other minor ethnic groups include the Lomwe with 14.5%, Yao with 12.1%, Tumbuka with 6.5%, Mang'anja with 1.9%, Sena, with 1.8% and 3.9% other tribes.

The Data Centre work site will be expected to have a community of different cultures. In some cultures, there are some cultural practices and beliefs that fuel negative social issues such as Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH). It is imperative that sensitizations be conducted with the employees at the site to ensure these practices are not an issue at the site with the coming in of the contractors.

3.3.4 Access to Health Services

Lilongwe City has four major hospitals; Kamuzu Central (area 33), Bwaila/Bottom (area 1), Likuni Mission (area 57), and Daeyang hospital (area 27). There are 33 public and private health centres and clinics run by the government, Lilongwe City Council, the private sector and churches. The main challenges facing the health sector include high cases of malaria, high HIV and AIDS prevalence rates, shortage of equipment and health facilities, shortage of qualified medical staff in the hospitals and clinics, limited capacity and poor sanitation and hygiene (Lilongwe Urban Profile, 2011). Access is also an issue due to the low socio-economic profile of most people within the city meaning they cannot access proper health services from the private hospitals which are deemed better than the public ones. Seventh Day Adventist Hospital, City Centre Clinic and Area 18 Health Centre are the main health service providers close to the project site.

3.3.5 Access to Education

There are two major systems of education in Malawi that are in operation, namely formal and informal systems. Malawi' formal education system comprises 3 levels: Primary Education, Secondary Education and Higher Education. Education services are provided by the government, private and religious schools. Schools within the project catchment area include Mkwichi and Bwaila Secondary School, African Bible College, Malawi College of Health Sciences, Kamuzu University Health Sciences and National College of Information Technology (NACIT). Access to education in Lilongwe City is high; hence levels of education are higher than in rural areas. However, due to urbanization, the city has seen an influx of people with low education.

3.3.6 Water Supply

The water supply is an issue which needs to be dealt with to ensure provision of proper sanitation to the population within the city. Lilongwe Water Board (LWB) needs to augment its water production capacity in the medium to long term to meet the growing water demand. Lilongwe City faces unique water security challenges. Lilongwe River – the only source of water for the city is highly variable and very vulnerable during dry years. The river has been dammed twice to create storage for the dry season (Kamuzu Dam 1 (KD1) and Kamuzu Dam 2 (KD2) constructed in 1966 and 1989 respectively), which are barely able to sustain current demand during the dry season. Although the project activities will be implemented far from the water intake, there is a need to protect the water sources by avoiding and preventing water

pollution to save water treatment costs and biodiversity of Lilongwe River. However, the small-scale nature of the civil works activities is an added advantage in preventing consequential water pollution and siltation impacts. The Data Centre site has potable tap water supplied by Lilongwe Water Board.

3.3.7 Electricity Supply

Electricity Supply Commission of Malawi (ESCOM) supplies electricity in Lilongwe where the project site lies. In recent years, supply of electricity in the project area and Malawi as a whole has been erratic with regular blackouts and load shedding. The project is expected to install a standby power generator to ensure uninterrupted services.

4.0 LEGAL AND OTHER REQUIREMENTS

4.1 Policy Framework Relevant to the Project

The legal and other requirements on the project are provided through the various relevant legislation and policies. This legal framework forms the compliance base for the project. The primary environmental legislation and policy framework forming part of the environmental and social assessments for the project are listed below:

4.1.1 The Malawi 2063 First 10-Year Implementation Plan (MIP-1) (2021-2030)

The Malawi 2063 First 10-Year Implementation Plan (MIP-1) builds on lessons learnt and successes from the Malawi Growth and Development Strategy (MGDS) III which was the last operationalization plan of Vision 2020.The MIP-1(2021-2030) is a decisive and strategic reference document for Malawi to transform into a Middle-Income Economy.

The (MIP-1) 2021-2030 in Chapter 2 (Enabler 6) under ICT Development section emphasises on the need of promoting investment in ICT infrastructure to increase digital access and technological adoption. The National Data Centre aims at creating opportunities to transform public service delivery in Malawi, using digital technologies. Hence, the project is in line with the aspirations of Government of Malawi.

Chapter 2 (Enabler 7) under the Environmental Sustainability section of the (MIP-1)2021-2030 stresses the need to promote Sustainable Development with a clean, secure environment when implementing projects. The focus area highlighted in this section are: Ecosystem Conservation and Environmental Management, Waste Management and Green Economy, Climate Change Management, Environment and Climate Change Financing and Natural Disasters and Climate Adversities Preparedness.

These areas emphasise the need for preparation of this ESMP.

4.1.2 The National Environment Policy (2005)

The National Environmental Policy guides different lead agencies and stakeholders in their activities, as they affect the environment and natural resources management; including how to minimise the impacts of environmental degradation. “The overall policy goal is the promotion of sustainable social and economic development through the sound management of the environment and natural resources”. The policy seeks, among other things, to secure for all people and future generations an environment suitable for their health and well-being. This

ESMP is to ensure that the implementation of the proposed project activities is done in a sustainable manner.

4.1.3 National HIV and AIDS Policy (2012)

The policy highlights that HIV and AIDS on the country is quite significant and affects a range of socio-economic activities. The highest rate is in the Southern Region and the lowest in the Northern Region. The rates are higher in urban areas as compared to rural areas. The Policy also identifies migrant workers and women among highly vulnerable people to transmission of HIV and AIDS and other sexually transmitted diseases.

The implication of the policy on the proposed project is that single male migrant workers would be at an increased likelihood of contracting HIV and AIDS since they may approach and indulge in casual sexual intercourse with infected local female partners in the surrounding local communities. In addition, increased disposal of income from migrant workers may encourage some workers to indulge in extra-marital affairs with either local girls or married women within the surrounding villages. These sexual activities would enhance the spread of HIV and AIDS among workers and local people if the mitigation measures in the ESMP are not implemented.

4.1.4 The National Gender Policy (2015)

The purpose of this policy is to strengthen gender mainstreaming and women empowerment at all levels in order to facilitate attainment of gender equality and equity in Malawi. This policy advocates for alternative sources of energy, women involvement and participation in Natural Resource, Environmental Degradation and Climate Change Management. The policy addresses major challenges which were not addressed in the National Gender Policy 2000 i.e. HIV and AIDS, Gender Based Violence, Human trafficking, increased environmental degradation, climate change and high levels of poverty all of which have a gender dimension.

In this project, the developer should ensure that principles that promote equity among different groups are applied.

4.1.5 National Information and Communication Technology Policy (2013)

National Information and Communication Technology Policy aims at developing the ICT sector, promoting the development and use of ICT in all sectors and enhancing universal access

to ICT services to achieve widespread socio-economic development. Specifically, the policy aims at guiding:

i. The provision of ICT services in the rural areas and to the vulnerable people;
ii. Investment in priority ICT areas;
iii. The public sector in the planning for the national development and utilisation of ICT; and
iv. Formulation of appropriate regulatory and local framework, aimed at safeguarding fundamental human rights, promoting electronic services and promoting competition in the ICT sector.

The project aims to achieve the objectives of the ICT policy by providing reliable internet to institutions of higher learning. Further, in line with the policy, the project will implement measures for managing undesirable impacts of ICTs including the violation of privacy, spread of undesirable materials, cyber-crimes, digital frauds and terrorism; and violation of human rights.

4.1.6 National Health Policy (2017)

The National Health Policy provides policy direction on key issues that are central to the development and functioning of the health system in Malawi. The Policy has been developed in line with the Constitution of the Republic of Malawi which stipulates that the State is obliged "to provide adequate health care, commensurate with the health needs of society and international standards of health care".

The Policy requires the contractors to promote the preservation of public health. It provides guidance on issues regarding infectious diseases and how to curb public health challenges. The contractor should have health policies of common diseases including the new diseases i.e. COVID 19 to safeguard its workers and beneficiary institution during the course of their construction works.

4.1.7 National Policy for Orphans and Vulnerable Children (2005)

The National Policy stipulates that a vulnerable child is a "child who has no able parents or guardians, staying alone or with elderly grandparents or lives in a sibling headed household or has no fixed place of abode and lacks access to health care, material and psychological care, education and has no shelter.**"**

The Policy upholds child protection and care in Malawi. Therefore, the contractors of the National Data Centre should not engage in any form of child abuse such as child deprivation and child labour during the course of the Construction of the National Data Centre Facility.

4.1.8 Cultural Policy (2005)

The Cultural Policy under section 5.3.1, objective 1 stresses on developing a system that would capably and adequately research, develop, preserve, protect, maintain and promote Malawi's cultural heritage.

The contractors working on the Data Centre rehabilitation and installation should ensure maximum protection of monuments and relics within their operational area. The policy does not in any way allow the National Data Centre contractors to infringe on the artefacts of the surrounding communities.

4.2 Legal Framework

4.2.1 The Constitution of the Republic of Malawi (1995)

The Constitution of the Republic of Malawi of 1995 sets out a broad framework for sustainable environmental management at various levels in Malawi. Among other issues, section 13 (d) provides for prudent management of the environment and accords future generations their full rights to the environment. The constitution aspires to prevent the degradation of the environment, provide healthy living and working environments, ensure intergenerational equity through environmental protection and sustainable development of natural resources.

Section 28 (2) of the Constitution of the Republic of Malawi states that "No person shall be arbitrarily deprived of property" and section 44 (3) of the amended Constitution of 2017 states that "Expropriation of property shall be permissible only when done for public utility and only when there has been adequate notification and appropriate compensation, provided that there shall always be a right to appeal to a court of law.

The proposed project has a responsibility of ensuring that the implementation of project activities is undertaken in an environmentally sustainable manner in order to prevent environmental degradation and not to compromise the socioeconomic environment.

4.2.2 Environment Management Act (2017)

The Environment Management Act (EMA) of 2017, provides the basic legal framework for environmental planning including the preparation of environmental management plans for

projects likely to have negative impacts on people and the environment. The Act provides for the protection and management of the Environment and the conservation and utilisation of natural resources. Section 24 of the Environment Management Act, requires environmental and social considerations to be integrated in various development activities in Malawi.

To integrate environmental considerations into the activities of the project, this ESMP will provide guidance in environmental and social management of adverse impacts to be generated by project activities.

4.2.3 Telecommunications Act (2016)

The Telecommunication Act of 2016 provides guidance for the regulation and provision of services in the Communication Sector in Malawi. The Act also provides for the establishment of the Malawi Communications Regulatory Authority (MACRA) whose major responsibility is to regulate the provision of telecommunication services through:

- Licensing of service providers;
- Providing advice to the Minister on regulations or policies;
- Monitoring the activities of licensees to ensure compliance with the terms and conditions of their license and applicable regulations, and related activities.

Other duties for the authority include to:

- Ensure that reliable, affordable and sufficient communication services are provided throughout Malawi;
- Protect the interests of consumers, purchasers and other users of communication services, in respect of the prices charged for the quality and variety of services provided and terminal equipment supplied;
- Promote open access to information by means of communication services;
- Encourage the introduction of new communication services;
- Foster the development of communications services and technology in accordance with recognized international standards; and
- Promote efficiency and competition among persons engaged in provision of communication services or supply of communication equipment.

4.2.4 Public Health Act (1948)

The Act is for the protection of the public from activities that might endanger human life. It prohibits any person from causing nuisance on any land or premises owned or occupied by another. The project activities should therefore not cause any nuisance during installation of ICT infrastructure in the country.

The Act requires developers to provide adequate sanitary and health facilities to avoid harmful effects of waste on public waters. It is therefore incumbent upon the contractor to comply with the requirements of this Act by providing potable water, toilets and proper solid waste disposal mechanisms for use by workers throughout the construction period.

4.2.5 Occupational Safety, Health and Welfare Act (1997)

The Act regulates working conditions with respect to safety, health and welfare of workers. The Act seeks to ensure that workplaces are safe and that the welfare of workers is protected. The Act also requires that workers should be provided with appropriate protective wear to ensure that they are safe while they are working. These may include gloves, heavy duty boots, helmets and overalls.

The workers who will be undertaking any civil works, cable and electrical installations under the project should be provided with proper personal protective wear that will make them comfortable and safe from occupation and health safety hazards.

4.2.6 Gender Equality Act (2013)

The Gender Equality Act of 2013 reflects the Government of Malawi's commitment to implementing the Gender Policy and makes provisions for the Human Rights Commission to:

a) Monitor and evaluate the state organs, state agencies and public bodies including the private sector to promote gender equality and make recommendations that the Commission deems necessary;
b) Carry out investigations and conduct search in relation to any gender issues on receipt of complaints or on its own accord;
c) Make recommendations to the minister on any gender issues;
d) Provide information to any party in a gender dispute on rights, remedies or obligations; and
e) Perform functions on implementation of the Gender Equality Act.

In line with the Gender Equality Act, the ESMP for the project has provided for managing and monitoring of gender equality issues. All gender related complaints must be investigated and

addressed appropriately by the responsible state agencies and the private sector where appropriate.

4.2.7 Child Care, Protection and Justice Act (2010)

The Child Care, Protection and Justice Act of 2010 consolidates the laws relating to children in terms of their care, protection and justice and for the matters relating to social development and connectedness. A child is defined in the act as a person under the age of 16. Children require care and protection from risks of emotional, psychological and physical injuries.

Children require protection from dangers including child trafficking. Child trafficking involves transactions which include recruitment, transfer, harbouring or receipt of a child for the purpose of exploitation. The act forbids any persons from forcing children into providing labour for the income of a parent, guardian or any other persons.

Contractors working on the Data Centre rehabilitation and equipment installation should ensure that no children are found on the work site as harbouring, receiving and recruitment of children amounts to child trafficking which is an offence under the Child Care, Protection and Justice Act.

4.2.8 Water Works Act 1995

The Water Works Act of 1995 stipulates under Section 29(Certain matters not to be passed into sewers or drains) that "Certain matters not to be passed into sewers or drains (1) No person shall throw, empty, or turn, or suffer or permit to be thrown or emptied or to pass, into any public sewer, or into any drain or private sewer communicating with a public sewer—

(a) Any matter likely to injure the sewer or drain, or to interfere with the free flow of its contents, or to affect prejudicially the treatment and disposal of its contents; or

(b) any chemical refuse or waste steam, or any liquid of temperature higher than forty-three degrees Celsius, being refuse or steam, which, or a liquid which when so heated, is, either alone or in combination with the contents of the sewer or drain, dangerous or the cause of a nuisance, or prejudicial to health; or

(c) Any petroleum spirit or carbide of calcium."

Contractors working on the Data Centre rehabilitation and equipment installation should possess a disposal certificate from City Councils which gives them access to certain allocated disposal sites to avoid indiscriminate disposal of wastes in prohibited areas.

4.2.9 Electricity Act 2004

The Electricity Act of 2004 stipulates under Part Viii (Rights over land) that "A licensee shall, not less than thirty days before placing, laying down or carrying any transmission line, or distribution line, water pipeline or other equipment through, over or under any land without the consent of the owner, lessee or occupier of such land, give notice of the intended work either by notice published in the Gazette or in a paper in general circulation."

Contractors working on the Data Centre rehabilitation and equipment installation should follow proper communication channels as prescribed under this Act to ensure that the beneficiary institution for the National Data Centre is adequately informed on any issues relating to electricity usage in the course of their works.

4.2.10 National Council Industry Act 1996

The National Council Industry Act of 1996 stipulates under the Registration Section 20(1) that "No person shall carry on business in the construction industry in Malawi unless registered under this Act".

The Act also highlights under Functions and powers of the Council Section 11 (f) that its mandate is to promote safety standards in the construction industry.

Contractors working on the Data Centre rehabilitation and equipment installation should be legally registered under this Act. The contractors must also put their safety and the safety of beneficiary institutions as a priority to avoid preventable accidents.

4.3.11 Electronic Transactions and Cybersecurity Act 2016

The Electronic Transactions and Cybersecurity Act of 2016 under section 3 (objectives) stipulates (a) "That the development, deployment and exploitation of Information and Communication Technology within the economy and society and related legal provisions shall balance as well as protect community and individual interests, including privacy and data protection issues." (b)" That Information and Communication Technology users are protected from undesirable impacts of information and communication technology, including the spread

of pornographic material, cyber-crime and digital fraud." (c)" The need to put in place mechanisms that safeguard information and communication technology users from fraud, breach of privacy, misuse of information and immoral behaviour brought by the use of information and communication technology.

Therefore, it is incumbent on the contractor for the National Data Centre facility to ensure that they put in strict measures to ensure that the users of the facility's rights are not violated at all costs.

4.4 Regulations

4.4.1 Waste Management and Sanitation Regulations (2008)

Among other conditions, the Waste Management and Sanitation Regulations require any person who generates or collects solid waste to separate hazardous waste from the general or municipal solid waste. The general or municipal solid waste must be further sorted into wastes that can be recycled or reclaimed and waste that is earmarked for disposal. Every generator of waste shall be responsible for the safe and sanitary storage of all general or municipal solid waste accumulated on his or her property.

Any generator of waste may, without licence under the Regulations, but with special permission from a local authority, dispose of general or municipal solid waste which is non-hazardous in an environmentally sound manner, in accordance with by-laws made by a local authority; provided that this shall not apply to the disposal of large amounts of such waste.

Regarding liquid waste, the Waste Management and Sanitation Regulations state that no person shall introduce effluent to water unless the effluent quality standards for discharges to water are met; and there is adequate proof that the receiving water body shall efficiently dilute the effluent to prevent any hazard to the environment or public health. No person shall discharge effluent into the environment unless it meets prescribed environment standards.

The Contractor must therefore adhere to the Waste Management and Sanitation Regulations in the implementation of the proposed project.

4.4.2 Public Health (Corona Virus and Management) Rules (2020)

The rules provide measures for Coronavirus (COVID 19) prevention, containment and management. They state measures to be taken by a person who has COVID 19 symptoms and

also measures to be followed by the general public. In this regard, the ESMP has incorporated these measures including the provision of adequate sanitary and health amenities. It is therefore incumbent upon the contractors to comply with the measures as reflected in the ESMP.

4.4.3 Ozone Depleting Substances Regulations 1998

The rules specify control measures under part II Section 6 that "With effect from 1st April, 1998, no person shall import second hand air-conditioners which are designed to use CFC-12(R12) or CFC-11 (R-11) as coolant".

It is therefore incumbent upon the contractors to comply with the measures as reflected in the Ozone Depleting Substances Regulations 1998.

4.5 Relevant Environmental Standards

4.5.1 Malawi Bureau of Standards

The project will trigger a number of Environmental Standards set by the Malawi Bureau of Standards (MBS), as provided in Table 2. The contractor must ensure that these standards are met.

Table 2: Statutory Relevant Environmental Standards

Standard	Title
MS 714:2005	Occupational Safety and Health Management Systems – Specification
MS 719:2005	Hazardous Waste – Management, Classification and Disposal – Code of Practice
MS 59:2002	Solid waste – handling, transportation and disposal – code of practice
MS 173:2005	Acoustics – Noise Pollution – Tolerance Limits (2 p) M
MS-IEC 61084-2-1:1996	Cable trunking and ducting system for electrical installations – Part 2

4.6 World Bank Environmental and Social Standards

The World Bank Environmental and Social Frameworks (ESF) are there to provide guidance on the management of the environmental and social risks and impacts that may be realised from the

project activities. The ESF stipulates ten (10) Environmental and Social Standards (ESSs) that the project must meet to manage and mitigate anticipated environmental and social issues. The government will implement material measures and actions so that the project meets these ESSs. Eight of the ten ESSs are relevant to the DMAP as shown in **Table 3**.

Table 3: Environmental and Social Standards Triggered under DMAP

No.	ENVIRONMENTAL AND SOCIAL STANDARDS (ESSs)	Relevance to DMAP
ESS1	Assessment and Management of ES Risks and Impacts	Relevant
ESS2	Labor and Working Conditions	Relevant
ESS3	Resource Efficiency and Pollution Prevention and Management	Relevant
ESS4	Community Health and Safety	Relevant
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
ESS7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not relevant
ESS8	Cultural Heritage	Relevant
ESS9	Financial Intermediaries	Not relevant
ESS10	Stakeholder Engagement and Information Disclosure	Relevant

4.7 World Bank Environmental, Health and Safety Guidelines

The World Bank's International Finance Corporation (IFC) general and industry specific Environmental, Health and Safety (EHS) guidelines are used to provide guidance to users on EHS issues that are potentially applicable to the respective industries and on good international industry practice. The Data Centre sub-component of the Digital Malawi Project falls under the Telecommunications industry hence is required to follow the general as well as the telecommunication EHS guidelines. The Telecommunication EHS guidelines are applicable to telecommunication infrastructure development such as fixed line and wireless voice and data transmission infrastructure including fibre optic cables, and associated telecommunication

installations and equipment.

These guidelines should be implemented to ensure effective management of the environmental, health and safety issues emanating from the Data Centre equipment installation activities. Effective management of EHS issues involves the identification of risks and hazards prior to project implementation, assessment of the likelihood and magnitude of the EHS risks and development of appropriate management measures to prevent and/or control the impacts. The environmental, health and safety issues to be considered under the Data Centre sub-component involving equipment installation include:

Environmental:

- Air emissions
- Soil erosion
- Hazardous materials
- General and e-Waste management
- Noise
- Land contamination
- Electrical magnetic fields

Occupational Health and Safety:

- Communication and training
- Physical hazards (working at heights, confined spaces(trenches), slips and falls, falling objects)
- Accidents from vehicles
- Optic fibre hazards
- Electrical accidents
- Electric magnetic fields
- Personal Protective Equipment

Community Health and Safety:

- COVID-19 risks
- Site access

5.0 APPROACH AND METHODOLOGY TO PREPARATION OF THE ESMP

This ESMP has been updated to guide the implementation of the activities at the National Data Centre in Lilongwe and its associated facilities and at the disaster recovery site at the National Data Centre in Mandala Blantyre. The methodology used for preparing and updating this ESMP included a desktop study, a visit to the project sites, and stakeholders' consultations, discussed as follows:

5.1. Desktop Study

Several project related documents such as the Project Information Document (PAD) available online on http://documents.worldbank.org/curated/en/099041024100022386 , Environmental and Social Management Framework (ESMF) available on http://documents.worldbank.org/curated/en/099101524083014292 Resettlement Policy Framework (RPF) http://documents.worldbank.org/curated/en/099110924155517319, Labour Management Procedures http://documents.worldbank.org/curated/en/099101524104020028, Revised Grievance Redress Mechanism Manual Digital Malawi Acceleration Project (DMAP) (P505095), Stakeholder Engagement Plan (SEP) Digital Malawi Acceleration Project (DMAP) (P505095) as well as the Project Implementation Manual (PIM), the Request for Bids for Design, Supply, Installation and Commissioning of a Data Centre and other government environmental and social related documents including applicable legal and policy frameworks in Malawi were reviewed during the desktop study.

5.2 Site Surveys of the Project Area

Field surveys on the proposed project plot and surrounding areas were conducted in September 2022 under Digmap. Upon consolidating additional works at the project site under DMAP, a secondary screening exercise was conducted by Environmental and Social specialists for the project under the guidance of a representative of the E-Government Department. Observations made during the field excursions informed the updating of this ESMP. The potential environment and social impacts and risks associated with the proposed project and their proposed mitigation measures has been updated in Chapters 5 and 6.

5.3. Stakeholders Consultations

To solicit and integrate the views of stakeholders on the proposed project, consultations were held with the PIU staff, representatives from the Department of Buildings, and management

and staff from E-Government and NACIT, including NACIT students. Government institutions surrounding the proposed project site, including the Malawi Revenue Authority (MRA), Pharmacy and Medicine Regulatory Authority (PMRA), Department of Irrigation, Department of Government Printing, and Department of Museums, Monuments, and Relics, were consulted. A meeting with the representatives from the Lilongwe City Council was also conducted. The list of people consulted is presented in **Appendix 2.**

Furthermore, internal consultations were conducted with e-Government Staff to understand the scope of the additional works that will be carried out under DMAP.

4.3.1 Benefits Identified by Stakeholders

Through the stakeholder consultations, benefits of the project identified are presented below.

- The Data Centre will improve the efficiency of government business through the connections of the various government systems to the servers which will in turn have a positive impact on the public.
- NACIT students and those from other colleges offering ICT courses will have opportunities to visit the Data Centre and enhance their ICT knowledge of Data Centre operations.
- The project will offer employment to both skilled and unskilled labour during its construction and operation phases.
- Jobs created during construction works and operation of the Data Centre will promote skills and knowledge to the local people involved.
- The Data Centre is an additional asset to the E-Government
- During the construction phase, the presence of the contractor and its workforce will provide an opportunity for local vendors to sell their merchandise.

4.3.2 Concerns Raised by Stakeholders and Proposed Mitigation Measures

The concerns raised by the stakeholders and their proposed mitigation measures are presented in Table 4.

Table 4. Stakeholder concerns and mitigation measures

Concerns raised	Proposed mitigation measures

Nuisance from dust emissions: The project site will be heavily impacted by dust emissions caused by the vehicle movements, excavation, demolitions and land clearing activities.	Fence the work site with a screen high enough to capture dust generated from the work activities on site. Schedule delivery of the dust-generating materials off working hours and cover the stockpiles. Regularly sprinkle water on the dusty area.
Nuisance from noise and vibrations: The project site will be heavily impacted upon by noise and vibration caused by the demolition works, vehicle movements, excavation and land clearing, welding of pre-fabricated materials activities.	Use roadworthy vehicles and serviced machinery. Schedule civil works off-working hours whenever possible. Provide earplugs to construction workers working in noisy areas. Provide notices and warning signs about noise.
Noise from the workers on site will cause disturbances to the neighbouring offices.	*Induct workers on noise management.*
Traffic disturbances: The construction activities may increase traffic inflow into the area, affecting the operation of the neighbouring offices.	*Deploy full-time personnel to control traffic, especially during delivery of construction materials* *Erect traffic warning signs across the access road.*
Generation of waste: Both the solid and liquid waste are anticipated to be generated during the demolition, construction and operational phases of the project.	Provide waste bins for solid waste and liaise with Lilongwe city council on disposal arrangement. Procure temporary toilets for both male and female workers in liaison with Lilongwe City Council. Clear rubble/heaps of excavated soils and landscape the site when construction work is completed. Recycle any packaging wastes through waste recyclers in Lilongwe

Sexual harassment may occur to ladies who would be seeking casual employment at the site	Workers should receive induction and a warning to refrain from sexual exploitation, abuse and harassment of women and girls at the site and elsewhere.
Spread of HIV and AIDS and sexually transmitted infections by contractors who come to work on the site as they engage in sexual relations with ladies within the site and in the surrounding areas.	Provide awareness messages to his workers on the vices of casual sexual relations Provide condoms to workers.
Risk of injuries to workers and communities: There is a high risk of injuries to workers and communities on the construction site	Assign duties to train workers. Provide personal protective equipment (PPE) to workers. Provide a first aid kit and an emergency procedure, to be used when a worker is injured. Have certified First Aiders on site. Fence off the construction sites
Security and theft issues: E-Government and NACIT bemoaned security issues including theft of their equipment by contractor workers who will be working on the site. They also indicated that the coming of the project will increase the workload for their guards.	Issue code of conduct to workers and induct them on various social ills including theft. Ensure adequate security at the project site to prevent theft incidences. Restrict workers to operate within the construction site only Provide workers with proper identification and uniforms to ensure that only those required to work for the contractor are allowed at the premises
Conflict over land use and ownership: There is potential conflict over land between the Department of E-Government and the neighbouring Department of Government Print. This may arise due to the need for a piece of land to allow access to the vacant plot at the E-Government premises during the construction phase of the project.	Provide a proof of land ownership prior to project kick-off. Acquire written consent from neighbouring Department of Government Print allowing creation of a temporary access road through their vacant plot.

5.4 Public Disclosures

The World Bank and the Malawi Government's environmental and social safeguards policies require that the ESMP be disclosed to the public. This is done for the public to be given a chance to verify that their concerns are considered and included in the ESMP. The Updated Data Centre ESMP, which is authored in English language will be published on the PPPC and World Bank website. Hard copies of the same will be presented at the Lilongwe City Council, where the project site is located for public viewing and reviews.

6.0 ENVIRONMENTAL AND SOCIAL IMPACTS AND PROPOSED MITIGATION MEASURES

Data centres are essential for supporting the government's digital services. Still, they are also known for their high energy consumption, which can lead to increased greenhouse gas emissions if not managed properly. In addition to the environmental impacts of energy use, data centres generate e-waste as older servers and IT equipment are replaced. Without proper e-waste management protocols, this waste can pose significant environmental hazards, including soil and water contamination.

The installation works of ICT and non-ICT facilities associated with additional works at the National Data Centre might raise occupational health and safety concerns that need to be addressed.

Using information on the nature of the project and its activities, and through the environmental and social screening exercise, both positive and adverse environmental and social impacts were identified. These impacts can easily be enhanced or mitigated through adherence and alignment to best project implementation practices, and in some cases, through specific environmental and social management plans.

6.1 Significance Rating of Project Impacts

Assessment of the significance of the identified impacts considered the size of the area to be affected (area extent), impact duration, and the magnitude. These determinants and professional judgement assisted in classifying the impacts as either Low, Medium or High as described in Table 5 below.

Table 5. Guide for significance rating for impacts

Low	Medium	High
Impacts will occur only on site	Impacts will occur within a 3-5 km radius of the site.	Impacts will occur regionally.
Short term, during the construction phase only	Medium term, during early operations.	Long term, for the entire operational phase.

A small change that is hardly detectable.	Moderate. An impact that is measurable but does not alter processes.	High. Many organisms are lost or affected. Major disruption of ecosystem processes.

6.2. Potential Positive Impacts of the Project

The Government of Malawi does not have adequate Data Centre facilities to cater for applications and services from all MDAs. As a result, serious information management issues are faced by the government and these problems cascade to various Ministries, Departments and Agencies (MDAs) as well as the private sector. With the establishment of the Data Centre, significant positive impacts to be realised, including the following:

6.2.1 Potential Positive Impacts during Planning, Construction and Installation Phase

a. Creation of employment opportunity

The project created employment of more than 70 people who undertook construction of the building and install the Data Centre equipment, and some are overseeing its operation. Some of the staff employed are civil engineers, electricians, ICT personnel, fibre optic installers, cleaners, skilled and general workers, network engineers, drivers and supervisors.

Enhancement measures

- Inform locals of work opportunities
- Prioritise the employment of local persons that qualify.
- Pay and treat workers fairly for the services rendered.
- Offer above minimum wage and adhere to the agreed payment schedules.

b. Opportunity for skills transfer

Employees and labourers on the project will have an opportunity for acquiring skills through exchange of knowledge and experience with the contractor and other experienced workers.

Enhancement measures

- The contractor must provide on job training to the employees.
- Labourers that have acquired new skills must be promoted to encourage training.
- Women and youth must be encouraged to learn new skills.

c. Increased business opportunities

Construction and installation works will require prefabricated panels and other materials such as cement, quarry stone, sand, timber, steel reinforcements and installation accessories that will be sourced locally and internationally.

Enhancement measures

- Pay suppliers within the agreed times.
- Prioritise procurement from local suppliers.
- Provide detailed specifications of required materials to the contractor
- Procure materials from licensed suppliers.

6.2.2. Potential Positive Impacts during Operation Phase

a. Improved storage, back-up and management of information

The Data Centre will promote cloud services. This service will enable all government information systems, such as Information Management Systems (IFMIS) and other data sets to be hosted at one place. This will help in keeping record of all the past activities and transactions at one place.

Enhancement measures.

- Maintain equipment timely and regularly to sustain internet reliability and speed.
- Train the operation and maintenance personnel for continued reliability of the network services.

b. Secured storage of government information

The new system will be more enhanced and secure since there will be additional layers of security to the service to prevent unauthorised people from accessing the data.

Enhancement measures:

- Allocate sufficient bandwidth to support data intensive activities such as heavy encryptions.
- Connect as many government institutions as possible;
- Train the operation and maintenance personnel for continued reliability of the Data Centre services.

c. Easy data monitoring and recovery

Since all the government data will be stored at one place, it will be easy for auditors to trace all the activities and transactions; and also recover historical data. This will reduce mismanagement of government finances among other issues.

Enhancement measures.

- Train the operation and maintenance personnel for continued reliability of the network services.

d. Direct employment opportunities

Maintenance engineers, system analysts, skilled and unskilled labourers as well as other operations' workers will also be employed through the contractors for the project;

Enhancement measures

- Inform local communities of employment opportunities.
- Prioritise employment of local persons that qualify.
- Workers must be treated and paid fairly for the services rendered.
- Wages must be above the minimum wage and must be paid on time.

6.3 Potential Negative Impacts during Construction and Installation Phase

6.3.1 Environmental Impacts

a. **Loss of trees and vegetation:** Almost 7 exotic trees were cut down to create access to the construction site for the Data Centre.

Mitigation measures

- For every tree to be cut down, replant 10 tree similar or better species and provide maintenance for them for at least 3 years or when they are self-sustaining.
- Liaise with the Forestry Department for a location to replant the replacement trees.

b. **Increased dust generation:** Dust emissions will result from construction works such as excavations, demolitions and material transfer and stockpiles of materials for construction.

Mitigation measures

- Alert people about dust through appropriate signs
- Provide dust masks to workers and ensure they use them;

- Barricade the site to minimise dust by wind action
- Spray water to dusty areas within the construction site and on the access road.
- Cover-up the idle sand, bricks, concrete stockpiles to suppress dust.

c. Nuisance from noise and vibrations: During construction works, noise would come from power equipment including drilling machines; from welding work, generators and from moving vehicles and heavy machinery. Noise could lead to hearing problems for the workers and could be a nuisance to the surrounding community. According to the General EHS Guidelines of the World Bank Group, '*no employee should be exposed to a noise level greater than 85 dB (A) for a duration of more than 8 hours per day without hearing protection*'. In case this limit is exceeded workers shall wear ear plugs.

Mitigation measures:

- Inform neighbouring offices about work start/ stop times and possibility of noise;
- Provide ear muffs to workers, as may be necessary;
- Do not have vehicles and heavy plant machinery idling on site and moving anyhow;
- Place the generator away from the nearby buildings in the immediate surrounding as well as from the workers within the construction site.

d. Increased risk of emission of air pollutants

Emissions from vehicular traffic and from power generators will result in discharge of greenhouse gases such as Sulphur, Nitrogen, Carbon dioxide and Carbon monoxide.

Mitigation measures.

- Regular servicing of the vehicle fleet and power generators;
- Using back-up power generators only when necessary;
- Using exhausts that have catalytic converters and are designed to disperse fumes.

e. Increased generation of solid and liquid waste

Solid waste will constitute metal wires and cuttings, wood remains, waste cables, packaging material and general waste produced by the construction workers on the site. Rubble will originate from demolition of the obsolete building and from construction works of the Data Centre building. The liquid waste will include sanitary wastes from mobile toilets.

Mitigation measures include:

- Develop a site-specific waste management plan outlining waste management procedure to be followed at the site for all the different types of wastes;
- Disposal of waste in designated sites, in collaboration with the Lilongwe City Council.
- Provision of well labelled waste receptacles on site for segregation of wastes;
- Train workers in the proper management of recyclable, sanitary, solid, liquid, and hazardous wastes;
- Regularly empty and clean the mobile toilets at the sewerage facility.

f. Generation of e-waste

Construction and operation of the Data Centre may result in the generation of electronic wastes such as obsolete waste cables.

Mitigation measures

- Develop a site-specific e-waste management plan outlining waste management procedure to be followed at the site;
- Identify e-waste recycling companies in Malawi who can receive the e-waste from the Data Centre operations;
- Liaise with Lilongwe City Council (LCC) for designated sites for disposal of e-wastes;
- Store the e-wastes in secure and separate waste receptacles until a disposal site is identified;
- E-wastes should be disposed of in designated disposal sites once the councils have identified the sites;
- Quantify the e-wastes that have been generated against those that have been sent to recyclers and those disposed of;
- Contractors are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas.

g. Increased generation of hazardous materials and wastes:

The electrical works may require diesel-fuelled backup generators for electricity in cases of black-outs. The vehicles and plant machinery will use hydrocarbons such as petrol, diesel and oils. The construction materials including: paints, thinners, cement, and lime are part of the hazardous wastes. These wastes will require special handling to prevent emission and spillage and to effectively dispose them. Procedures for handling hazardous wastes should be made available by the contractor.

Mitigation measures:

- Develop a site-specific hazardous waste management plan outlining waste management procedures to be followed at the site for all the identified hazardous chemicals used at the site.
- Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer's **Occupational health and safety impacts:** specifications;
- Dispose hazardous wastes as per the MSDS guidelines and in liaison with the Lilongwe City Council and obtain a hazardous waste handling and storage permit;
- Train workers in hazardous materials and wastes handling procedures;
- Ensure workers wear appropriate PPE when handling hazardous materials and wastes.

h. Risk of soil pollution from paints, diesel and oil spills: Oil spills from vehicles, construction machinery and other hazardous waste such as paints and lime are expected to contribute to soil pollution.

Mitigation measures

- Maintain/service vehicles and machinery regularly as recommended by the dealers;
- Line floors during use of paints and lubricants to catch spills;
- Dispose waste oil and oil containers in approved disposal areas, in collaboration with the Local Authority;
- Collect hydrocarbons and paint contaminated soil and treat them by bioremediation and through containment into drums.

i. Creation of borrow pits:

Borrow pits will be created through acquisition of construction materials (such as soil, sand and quarry stone). These pits pose safety risks to the surrounding communities and will be a breeding ground for mosquitoes once filled up with run-off water.

Mitigation measures:

- Contractors must source construction materials from licensed suppliers;
- Borrow pits should be properly fenced to prevent accidents.
- Ensure borrow pits are backfilled once all materials are collected.

6.3.2 Occupation Health and Safety Impacts

a) **Risk of injuries to the workers due to exposure of electrical risks:** Workers are at high risk of sustaining injuries in the course of their construction works from contact with live power lines during construction activities.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)
- Allowing only trained and certified workers to install, maintain, or repair electrical equipment;
- Electrical holds (de-energizing power sources), should be well defined prior to the start of any electrical works, and personnel should be adequately trained on how to ensure sources of energy are isolated/de-energized;
- Ensuring that all maintenance staff, including trained workers; strictly adhere to specific safety standards and code of conduct;
- Prior to excavation works, all existing underground cable installations should be identified and marked. Drawings and plans should indicate such installations;
- Ensuring that staff use appropriate special safety equipment;
- First aid training in revival techniques, should be given to workers so they can provide first aid treatment to victims of electric shock;
- Specific training, safety measures, personal safety devices and other precautions should be defined in the health and safety plan.
- Conduct risk assessment for all construction and installation works at the Data Centre.

b) **Accidents from working at heights:** Elevated platforms including ladders and scaffolding can pose a physical hazard to workers and those located below, due to the potential for falling and falling objects.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)
- Secure elevated work areas with barricades to prevent unauthorized access;
- Prohibit working beneath other personnel on elevated areas;
- Use appropriately rated and maintained hoisting and lifting equipment and train operators in their use;

- Maintain and operate elevating platforms according to established safety procedures including use of ladders in good condition, ensure acceptable ladder use measures etc;
- Use ladders according to pre-established safety procedures including proper climbing and descending from the ladder;
- Conduct risk assessments and obtain height work permits before undertaking any height work.

c) **Accidents from equipment delivery vehicles and construction machinery:** The project site is fronted by a road that is used by pedestrians, cyclists and motorists. Examples of anticipated impacts during construction include:

-Accidents from construction machinery, vehicles and other modes of transport;

-Accidents to unauthorised persons, particularly children amused by the machines.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)
- Prepare and implement motor vehicle and construction traffic safety programs to protect workers and others who pass in the area;
- Prevent unauthorised entry using security guards for site security to prevent access to the construction area;
- Erection of fence in combination with other institutional controls and management approaches, such as the posting of signs;
- Have a traffic warden and provide traffic signs to slow down or redirect traffic as may be necessary;
- Provide signage to alert workers and passers-by of any danger and safety risks
- Prohibit or regulate project material delivery during peak hours; and
- Deliver materials during weekends and off-peak hours where possible.

d) **Accidents from power tools (drilling machines):** Mounting and fixing of accessories onto the building during construction will involve use of drilling machines and other power tools which have the high risk of injuring workers.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)

- Work to be carried out in a safe manner and safe environment.
- Ensure only trained or skilled personnel to carry out the work.
- Ensure safe and well-maintained equipment is used.
- Ensure workers are adequately supervised during work activities.

e) **Trips and falls within the work area:** Trips and falls would be caused by objects and cables lying around the work area.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)
- Good housekeeping procedures including cleaning of surfaces and equipment after every activity and on a daily basis;
- Proper and adequate storage of materials and equipment, containment of loose materials;
- Ensure ladders used are certified to be fit for use and are properly secured.

f) **Cuts from sharp objects:** Workers may be cut by sharp objects including screwdrivers, screws and nails during drilling work.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)
- Workers to be trained on safe work and housekeeping practices;
- Regular disposal of wastes within the work sites;
- Workers to wear appropriate PPE including safety boots and heavy-duty gloves when handling sharp objects (Appendix 5);
- Provide first aid to the injured person.

h) **Optical fibre risks:** Construction workers may be exposed to minute or microscopic glass fibre shards that can penetrate human tissue through skin or eyes, or by ingestion or inhalation.

Mitigation measures:

- Adhere to safety standards and code of conduct (CoC)
- Worker should be trained on specific hazards associated with handling optic fibre material;
- Use of protective gloves when handling optic fiber work;

- Separation of work and eating areas to avoid exposure to fibres via food.

5.3.3. Community Health and Safety Impacts

a) **Accidents and injuries from delivery vehicles around the site area:** Increased traffic from material delivery vehicles in the area poses a risk of car accidents within the site as there are a number of other operations involving cars and people.

Mitigation Measures:

- Adhere to safety standards and code of conduct (CoC)
- All drivers must be trained on the procedures to be followed in traffic management;
- Designate some workers to be traffic controllers within the site and on the Paul Kagame road;
- Liaise with the Traffic Control Police on the need to control traffic from the Paul Kagame road;
- Place warning signs on increased traffic movements within the project area;
- Place warning signs for speed limits within the project site and along the Paul Kagame road in liaison with the Traffic Control Police.

b) **Risk of introduction and spread of STIs and HIV and AIDS:** Casual and unprotected sex between local community members and migrant workers could lead to unplanned pregnancies and transmission of Sexually Transmitted Infections (STIs) and HIV and AIDS.

Mitigation Measures:

- Employ local people as much as possible;
- Provide civic awareness on unplanned pregnancies, STIs and HIV and AIDS to workers (Appendix 11) and
- Provide condoms to workers.

c) **Risk of infection from COVID 19:** Contact between people at the work site during construction may lead to spread of COVID-19 (Appendix 12).

Mitigation Measures:

- PMT will ensure the contractor is taking adequate precautions to prevent or minimize an outbreak of COVID-19, and have identified what to do in the event of an outbreak

in line with national guidance and the World Bank's ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects;

- Provide COVID-19 preventive measures including provision of sanitation products and protective masks and shields;
- Enforce hygiene practices including hand washing and hand sanitising;
- Enforce the wearing of masks and shields all time whilst at the worksite;
- Divide the workers into shift rotations to decongest the work area and improve social distancing;
- Provide medical assistance to suspected COVID-19 cases by referring them to approved testing centres and hospitals;
- Provide continuous communication and awareness on COVID-19 issues.

6.3.4. Social Impacts

a. **Conflict over land use and ownership:** There is potential land contestation issue between E-Government and the neighbouring Government Print. This may arise due to the need for a piece of land to allow access to E-Government offices during the construction phase of the project.

Mitigation measures

- Provide a proof of land ownership for the plot earmarked for the Data Centre during the pre-construction phase of the project.
- E-Government must acquire written consent from Government Print to allow creation of temporary access to their offices through the vacant plot owned by Department of Government Print.

b. **Risk of child labour and trafficking in persons:** There is a possibility that children would come to the site, looking for employment when construction starts. Trafficking in persons is also common in Malawi.

Mitigation measures:

- Ensure that all people to be employed have genuine identification to prove that they are 18 years old and above;
- Employ workers through established recruitment agencies;

- Maintain an accurate staff register against which employee presence must be checked every day.

c. **Loss of employment due to preferential recruitment, worker harassment and marginalisation:** Job seekers may be subjected to preferential recruitment while workers may be subjected to harassment and marginalisation at work due to gender and other social differences.

Mitigation measures:

- Contractor must adhere to the labour laws and should not discriminate job seekers on the basis of gender, religion and race;
- Contractor to follow the contractor's code of conduct in managing his workers to ensure they are not harassed and marginalised.

d. **Increased instances of sexual exploitation and abuse (SEA):** Workers may be subjected to sexual exploitation and abuse in exchange for favours and/ or employment benefits. Sexual exploitation and abuse may occur to ladies who would be seeking casual employment at the site.

Mitigation measures:

- Implement the GBV-SEA/SH Action plan prepared as a part of DMAP ESMF
- Develop and implement a workplace code of conduct that addresses SEA, SH, and
- GBV. All contractor workers shall sign the Code of Conduct.
- Sensitize the contractor workers on the grievance redress mechanism (GRM) before the implementation of the project.
- Encourage a survival-centric approach for victims of any form of GBV/SEA/SH incidents.

e. **Increased instances of gender-based violence:** Constitute acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment and/or contract. All forms of Social risks including grooming are unacceptable; be it on the work site, the work site surroundings, or at worker's camps. Those who commit GBV will face penalties up to termination of employment and contract.

Mitigation Measures:

- Sensitize communities on GBV risks of the project during stakeholders' engagement prior to implementation of the project;
- Sensitize the community on the Grievance Redress Mechanism before implementation of project;
- Ensure that code of conduct is signed and understood by all contractor staff;
- Provide separate facilities for men and women; and
- Provide appropriate signage on GBV in the local language.

f. **Increased instances of violence against children:** Constitute acts of gross misconduct against children and are therefore grounds for sanctions, penalties and/or termination of employment and/or contract. Those who commit VAC including physical, psychological and emotional abuse will have their employment or contract terminated.

Mitigation Measures:

- Sensitize communities on VAC risks of the project during stakeholders' engagement prior to implementation of the project;
- Sensitize the community on the Grievance Redress Mechanism before implementation of project;
- Ensure that codes of conduct are signed and understood by all contractor staff;

g. **Disrupting locals:** The local community consists of government institutions and some private business enterprises. These are likely to be temporarily disturbed by the project activities including increased traffic, noise and dust.

Mitigation measures:

- Adequately sensitise the local community about the project, its duration and working times;
- Seek the views of the local community on how to minimise disruption.

h. **Disruption of work for E-Government and NACIT:** The construction and equipment installation work for the Data Centre will disrupt the normal flow of work for the E-Government and NACIT who will be conducting their work within the same premises.

Mitigation Measures

- Liaise with E-Government and NACIT management on the best way of minimising the disruptions.
- Ensure constant communication between contractor and E-Government and NACIT management to ensure proper accommodation of the work requirements for both parties.

i. **Risk of theft of E-Government and NACIT properties:** The presence of Data Centre construction and technical workers may compromise the safety and security of the E-Government and NACIT properties.

Mitigation measures:

- Ensure maximum security to safeguard E-Government and NACIT properties and other materials.
- Restrict access to the E-Government and NACIT premises.
- Provide restricted access signage to the E-Government and NACIT area.

6.4. Potential Negative Impacts during Operation

5.4.1. Environmental Impacts

(a) Nuisance from noise and vibrations: During operation, the principal source of noise from the project facilities would be associated with the operation of backup power generators. Hearing protection shall be worn in all areas with noise levels at or above 80 dB (A). However, such high noise levels are not to be expected to occur within the Data Centre during regular operation.

Mitigation measures:

- Install low noise diesel generators to reduce noise pollution within the Data Centre site and the surrounding offices.
- Place the generator in a closed building and, as much as possible, site the generator away from the users in the Data Centre and from the buildings in the immediate surrounding.

(b) Increased risk of emission of air pollutants

Emissions from backup power generators and cooling systems will result in discharge of greenhouse gases such as Sulphur, Nitrogen, Carbon dioxide and Carbon monoxide.

Mitigation measures:

- Regularly servicing the power generators;
- Using back-up power generators only when necessary;
- Using exhausts that are designed to disperse fumes;
- Ensuring that new replacement equipment does not contain Ozone depleting substances (ODSs);

(c) e-waste generation from maintenance of servers: Operation and maintenance activities may result in the generation of electronic wastes such as damaged servers, waste computers, printed circuit boards from electronic equipment as well as waste cables and access points.

Mitigation measures

- Develop a site-specific e-waste management plan outlining waste management procedure to be followed at the site.
- Identify e-waste recycling companies in Malawi who can receive the e-waste from the Data Centre operations;
- Liaise with Lilongwe City Council for designated sites for disposal of e-wastes;
- Store the e-wastes in secure containers until a disposal site is identified;
- e-wastes disposed of in designated disposal sites once the councils have identified the sites;
- Data Centre operators are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas;
- Quantify the e-wastes that have been generated against those that have been sent to recyclers and those disposed of.

(d) Increased energy consumption: Data Centre equipment uses a lot of energy to store and process big government data and for communication networks. The equipment requires extensive cooling which also consumes considerable amounts of energy.

Mitigation measures

- Use energy efficient Data Centre IT equipment and amenities.
- Employ energy efficient cooling processes for the Data Centre.

(e) Increased generation of hazardous materials and wastes: The operation of switching and transmitting equipment may require the use of backup power systems such as batteries (typically lead-acid batteries) and diesel-fuelled backup generators for electricity. The Novec 1230 (Perfluoro (2-methyl-3-pentanone)) a chemical used as a fire suppression agent for server rooms has hazardous by products such as Hydro fluoride which should not be exposed to the environment or humans.

These wastes will require special handling to prevent emission and spillage and to effectively dispose them. Procedures for handling hazardous wastes should be made available by the contractor.

Mitigation measures:

- Develop a site-specific hazardous waste management plan outlining waste management procedure to be followed at the site for all the identified hazardous chemicals used at the site.
- Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer Occupational health and safety impacts: specifications;
- Prevention and control of fuel spills during delivery and storage by providing secondary containment to catch and contain accidental overfill; A concrete bunded area with 110% capacity of the Fuel storage tank should be constructed. The bund should be water and oil resistant with no drain pipe to it. The area where fuel trucks will be delivering the fuel should be concrete with oil and water resistance with a mini bund to prevent fuel spill run-off to bare ground. If necessary an oil/water separator should be constructed. Hydrocarbon spill kits should be available on the site;
- Drain acid from waste batteries and neutralize with lime before disposal.
- Maintain favourable cool conditions in the Data Centre to prevent decomposition of the fire suppression agent into hazardous by product of Hydro fluoride.
- Prevent the release of the coolant and fire suppression agents int the environment especially water sources. In case of release ensure containment using absorbent materials.

- Ensuring that new replacement equipment does not contain Ozone depleting substances (ODSs);
- New electronic equipment must meet international phase out requirements for hazardous materials contents.
- Train workers in hazardous materials and wastes handling procedures;
- Ensure workers wear appropriate PPE when handling hazardous materials and wastes.

6.4.2. Occupational Health and Safety Impacts

(a) Risk of injuries to the workers due to exposure to electrical risks: Workers may be exposed to hazards from contact with live wires during maintenance and operation activities.

Mitigation measures:

- Allowing only trained and certified workers to install, maintain, or repair electrical equipment;
- Electrical holds (de-energizing power sources), should be well defined prior to the start of any electrical works, and personnel should be adequately trained on how to ensure sources of energy are isolated/de-energized.
- Ensuring that all maintenance staff, including trained workers; strictly adhere to specific safety standards and code of conduct;
- Ensuring that staff use appropriate special safety equipment;
- First aid training in revival techniques, should be given to workers so they can provide first aid treatment to victims of electric shock;
- Specific training, safety measures, personal safety devices and other precautions should be defined in the health and safety plan.

(b) Risk of fire accidents: Data Centres carry fire hazards (electrical circuits, overheating of servers) that can pose a significant threat to life, damage of infrastructure and property as well as disruption of government operations through server downtime and loss of internet access.

Mitigation measures:

- Use fireproof materials for the renovation of the ceiling, floors, walls, doors, windows and cabinets among other things to ensure structural stability of the building.

- Install active fire protection systems including heat and fire detectors, fire alarm and water/ fire suppression sprinklers to detect, control and extinguish the fire.
- Ensure the use of active fire controls that do not pose threat to damage of Data Centre equipment in the process of fire extinguishing.
- Maintenance of the active fire protection systems to ensure functionality of detectors and working fire suppressants.
- Designate a fire assembly and an evacuation plan.
- Train and induct workers and people within the Data Centre area on fire safety procedures.

5.4.3. Social Impacts

a. **Increased privacy concerns:** Vulnerability of user's personal data that is provided, stored in the cloud and used by different government departments.

Mitigation measures:

- Provide stringent privacy protection practices that are required to restore the public's trust over the privacy of their personal information.

b. **Increased security concerns:** from the public's use of the different digital platforms including applications that may require their details including financial, location, among others by different government departments.

Mitigation measures:

- Provide stringent security measures that will safeguard the public's sensitive information.

c. **Loss of employment:** The Data Centre will digitise some of the government operations and hence will lead to loss of employment as well as loss of revenue from allowances in some functions including those of messengers, drivers and secretaries.

Mitigation measures:

- Provide adequate awareness to employees on the changes that will be affected by the digitization of their functions.

- Provide training to those who are at risk of losing their job in the new functions that will be created by the digital platforms.

7.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

7.1. Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) is presented in Table 6. The table presents the predicted environmental and social impacts as well as the recommended mitigation measures. The table also presents the duration for implementation of the measures, the stakeholders responsible for implementation of the measures and the estimated annual costs.

The ESMP will apply to the contractor, contractor workers, E-Government and NACIT workers, NACIT students and the surrounding communities.

Table 6: Environmental and Social Management Plan

Item No.	Anticipated Environmental and Social impacts	Proposed Enhancement/ Mitigation Measures	Responsibility for implementing Enhancement/ Mitigation Measures	Time/ Duration for Implementation	Estimated cost in MK
1.	**Potential Positive Impacts during Planning and Design Phase**				
a.	Increased Employment opportunity	● Inform locals of work opportunities. ● Prioritise/ employ locals that qualify. ● Treat and pay workers fairly. ● Pay at least the minimum wage timely.	PPPC	During Planning and Design	N/A
2.	**Potential Positive Impacts during Construction Phase**				
a.	Increased Employment opportunity	● Inform locals of work opportunities. ● Prioritise/ employ locals that qualify. ● Treat and pay workers fairly. ● Pay at least the minimum wage timely.	Contractor PPPC	During Construction	220,000 for advertising vacancies in the newspaper

Item No.	Anticipated Environmental and Social impacts	Proposed Enhancement/ Mitigation Measures	Responsibility for implementing Enhancement/ Mitigation Measures	Time/ Duration for Implementation	Estimated cost in MK
b.	Opportunity for skills transfer	● Provide on job training to employees; ● Promote and motivate workers with new skills; ● Encourage/ support women and youth to learn new skills.	Contractor PPPC	During Construction	500,000 for trainings
b.	Increased Business Opportunity	● Pay building material suppliers in time; ● Prioritise procurement from local suppliers; ● Provide detailed specifications of required materials to the contractor; and ● Buy materials from licenced suppliers.	Contractor PPPC	During Planning and Design	N/A
3.	**Potential Positive Impacts during Operation Phase**				

Item No.	Anticipated Environmental and Social impacts	Proposed Enhancement/ Mitigation Measures	Responsibility for implementing Enhancement/ Mitigation Measures	Time/ Duration for Implementation	Estimated cost in MK
a.	Improved storage, back-up and management of information	● Maintain equipment timely to sustain the reliable and fast internet. ● Train the operation and maintenance personnel for reliable network services.	Contractor PPPC	During operation	To be determined by the Contractor
b.	Secured Storage of Government Information	● Allocate sufficient bandwidth for intensive data activities/ encryptions. ● Connect as many institutions as possible; ● Train the operation/ maintenance staff for continued reliability of services.	Contractor PPPC	During operation	To be determined by the Contractor
c.	Easy Data Monitoring and Recovery	● Train the operation/ maintenance staff for continued reliable network services.	Contractor PPPC	During operation	To be determined by the Contractor

Item No.	Anticipated Environmental and Social impacts	Proposed Enhancement/ Mitigation Measures	Responsibility for implementing Enhancement/ Mitigation Measures	Time/ Duration for Implementation	Estimated cost in MK
d.	Direct Employment Opportunities	● Inform locals of work opportunities. ● Prioritise employment of locals that qualify. ● Treat and pay workers fairly. ● Pay at least the minimum wage wages and on time.	Contractor PPPC	During operation	To be determined by the Contractor

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
4.	**Potential negative impacts during Construction /Installation**				
	Environmental Impacts				
a.	**Loss of trees/Vegetation**	• Replant 10 trees for every tree cut • Liaise with the Forestry Department or LCC for a location to replant the replacement trees.	Contractor E-Government	After Construction and installation	

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
b.	**Nuisance from dust emissions**	• Alert people about dust through appropriate signs • Provide dust masks to workers and ensure they use them • Barricade the site to minimise dust by wind action • Spray water to dusty areas and on the access roads • Cover-up the idle sand, bricks, concrete stockpiles to suppress dust.	Contractor	During Construction	To be included in contractor's bid
c.	**Nuisance from noise and vibrations**	• Inform neighbouring offices about work start/ stop times and possibility of noise • Provide earmuffs to workers	Contractor	During installation and operation	100,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Do not have vehicles and heavy plant machinery idling on site and moving anyhow; • Place the generator in a closed building and away from surrounding offices and construction workers			
d.	**Increased risk of emission of air pollutants from vehicular traffic and power generator**	• Regular servicing of the vehicle fleet and power generators. • Using back-up power generators only when necessary. • Using exhausts that have catalytic converters and are designed to disperse fumes.	Contractor PPPC	During installation and operation During Design	1,500,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
e.	**Increased generation of solid and liquid wastes from domestic and construction wastes**	• Develop a site-specific waste management plan outlining waste management procedure to be followed at the site for all different types of wastes; • Disposal of waste in designated sites, in collaboration with the Lilongwe City Council; • Provide a well labelled waste receptacles on site for waste segregation. • Train workers in the proper management of recyclable, sanitary, solid, liquid, and hazardous wastes.	Contractor	During installation and operation	100,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Regularly empty and clean the mobile toilets at the sewerage facility.			
f.	**e-waste generation**	• Develop a site-specific e-waste management plan outlining waste management procedure to be followed at the site • Identify e-waste recycling companies in Malawi who can receive the e-waste from the Data Centre operations • Liaise with Lilongwe City Council (LCC) for designated sites for disposal of e-wastes;	Contractor PPPC	During installation and operation	To be included in contractor's bid

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Store the e-wastes in secure and separate waste receptacles until a disposal site is identified. • E-wastes should be disposed of in designated disposal sites once the councils have identified the sites. • Quantify the e-wastes that have been generated against those that have been sent to recyclers and those disposed of. • Contractors are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas.			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
g.	**Increased generation of hazardous materials and wastes**	• Develop a site-specific hazardous waste management plan outlining waste management procedure to be followed at the site for all the identified hazardous chemicals used at the site. • Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer Occupational health and safety impacts: specifications.	Contractor PPPC	During installation and operation	200,000 To be included in contractor's bid

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Dispose hazardous wastes as per the MSDS guidelines and in liaison with the Lilongwe City Council and obtain a hazardous waste handling and storage permit. • Train workers in hazardous materials and wastes handling procedures. • Ensure workers wear appropriate PPE when handling hazardous materials and wastes.			
h.	**Pollution to land from paints, diesel and oil spills**	• Maintain/service vehicles and machinery regularly as recommended by the dealers.	Contractor PPPC	During Construction	100,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Line floors during use of paints and lubricants to catch spills. • Dispose waste oil and oil containers in approved disposal areas, in collaboration with the Local Authority. • Collect hydrocarbons and paint contaminated soil and treat them by bioremediation and through containment into drums.			
i.	**Creation of borrow pits**	• Contractors must source construction materials from licensed suppliers. • Borrow pits should be properly fenced to prevent accidents.	Contractor	During Construction	N/A

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Ensure borrow pits are backfilled once all materials are collected.			
	Occupational Health and Safety Impacts				
a.	**Risk of injuries to the workers due to electrical risks**	• Adhere to safety standards and code of conduct (CoC) • Allowing only trained and certified workers to install, maintain, or repair electrical equipment. • Electrical holds (de-energizing power sources) should be well defined prior to the start of any electrical works, and personnel should be adequately trained on	Contractor	During installation and operation	

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		how to ensure sources of energy are isolated/de-energized. • Ensuring that all maintenance staff, including trained workers; strictly adhere to specific safety standards and code of conduct; • Prior to excavation works, all existing underground cable installations should be identified and marked. Drawings and plans should indicate such installations; • Ensuring that staff use appropriate special safety equipment; • First aid training in revival techniques, should be given to			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		workers so they can provide first aid treatment to victims of electric shock; • Specific training, safety measures, personal safety devices and other precautions should be defined in the health and safety plan. • Conduct risk assessment for all construction and installation works at the Data Centre			
b.	**Accidents from working at heights**	• Adhere to safety standards and code of conduct (CoC)	Contractor	During installation and operation	To be included in contractor's bid

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Secure elevated work areas with barricades to prevent unauthorized access • Prohibit working beneath other personnel on elevated areas • Use appropriately rated and maintained hoisting and lifting equipment and train operators in their use • Maintain and operate elevating platforms according to established safety procedures including use of ladders in good condition, ensure acceptable ladder use measures etc		During installation and operation	N/A
				During installation and operation	N/A
				During installation and operation	N/A
				During installation and operation	N/A

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Use ladders according to pre-established safety procedures including proper placement, climbing, standing, and descending on ladder • Conduct risk assessments and obtain height work permits before undertaking any height work.			

c.	**Accidents from equipment delivery vehicles and construction machinery**	• Prepare and implement motor vehicle and construction traffic safety programs to protect workers and others who pass in the area. • Prevent unauthorised entry using security guards for site security, to prevent access to the construction area • Erection of fence in combination with other institutional controls and management approaches, such as the posting of signs • Have a traffic warden to provide traffic signs to slow down or redirect traffic as may be necessary. • Provide signage to alert workers and passers-by of any danger and safety risks	Contractor	During installation and operation	To be included in contractor's bid

		• Prohibit or regulate project material delivery during peak hours • Deliver materials during weekends and off-peak hours where possible.			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
d.	**Accidents from power tools (drilling machines)**	• Adhere to safety standards and code of conduct (CoC) • Work to be carried out in a safe manner and safe environment. • Ensure only trained or skilled personnel to carry out the work. • Ensure safe and well-maintained equipment is used. • Ensure workers are adequately supervised during work activities.	Contractor	Ongoing	2,000,000
e.	**Trips and falls within the work area**	• Adhere to safety standards and code of conduct (CoC) • Good housekeeping procedures including cleaning of surfaces and equipment,	Contractor	Ongoing	500,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Proper and adequate storage of materials and equipment, containment of loose cables. • Ensure ladders used are certified to be fit for use and are properly secured.			
f.	**Cuts from sharp objects**	• Adhere to safety standards and code of conduct (CoC) • Workers to be trained on safe work and housekeeping practices. • Regular disposal of wastes within the work sites • Workers to wear appropriate PPE, including safety boots and heavy-duty gloves, when handling sharp objects	Contractor	Ongoing	200,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Provide first aid to the injured person..			
g.	**Optical fibre risks**	• Adhere to safety standards and code of conduct (CoC) • Workers should be trained on specific hazards associated with handling optic fibre material • Use of protective gloves when handling optical fiber work • Separation of work and eating areas to avoid exposure to fibres via food	Contractor	During installation and operation	To be included in contractor's bid
			Contractor	During installation and operation	To be included in contractor's bid
	Community Health and Safety Impacts				

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
a.	**Accidents and injuries from delivery vehicles around the site area**	• Adhere to safety standards and code of conduct (CoC) • All drivers must be trained on the procedures to be followed in traffic management. • Designate some workers to be traffic controllers within the site and on the Paul Kagame road. • Liaise with the Traffic Control Police on the need to control traffic from the Paul Kagame Road. • Place warning signs on increased traffic movements within the project area.			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Place warning signs for speed limits within the project site and along the Paul Kagame Road in liaison with the Traffic Control Police			
b.	**Risk of introduction and spread of STIs and HIV and AIDS**	• Employ local people as much as possible; • Provide civic awareness on unplanned pregnancies, STIs and HIV and AIDS to workers; and • Provide condoms to workers	Contractor,	During installation and operation	TBD
c.	**Risk of infection from COVID-19**	• PMT will ensure the contractor is taking adequate precautions to prevent or minimise an outbreak	Contractor	During installation and operation	500,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		of COVID-19 and has identified what to do in the event of an outbreak in line with national guidance and the World Bank's ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects. • Provide COVID-19 preventive measures, including the provision of sanitation products and protective masks and shields; • Enforce hygiene practices, including hand washing and hand sanitising			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Enforce the wearing of masks and shields at all times whilst at the worksite. • Divide the workers into shift rotations to decongest the work area and improve social distancing. • Provide medical assistance to suspected COVID-19 cases by referring them to approved testing centres and hospitals • Provide continuous communication and awareness on COVID-19 issues.			
	Social Impacts				

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
a.	**Conflict over land use and ownership**	• Provide proof of land ownership for the plot earmarked for the Data Centre construction • Acquire a written consent from the Government Print to create a temporary road through their vacant plot to the E-Government premises.	E-Government management PPPC	Before the Commencement of the project	
b.	**Risk of child labour and trafficking in persons**	• Ensure that all people to be employed have genuine identification to prove that they are 18 years old and above • Employ workers through established recruitment agencies	Contractor, PPPC Department of Labour	During recruitment During installation and operation	N/A

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Maintain an accurate staff register against which employee presence must be checked every day			
c.	**Loss of employment due to preferential recruitment, worker harassment and marginalisation**	• Contractor must adhere to the labour laws and should not discriminate against job seekers on the basis of gender, religion or race. • Contractor to follow the contractor's code of conduct in managing their workers to ensure they are not harassed and marginalised.	Contractor, Client, Department of Labour	During recruitment, installation and operation	N/A

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
d.	**Increased instances of sexual Exploitation and Abuse and Sexual Harassment**	• Workers should receive induction and a warning to refrain from sexual exploitation, abuse and harassment of women and girls at the site and those seeking employment • Sensitise the workers on the Codes of Conduct and enforce the same. • Ensure that all employees sign the Workers' Code of Conduct	Contractor	During staff recruitment During installation and operation	To be included in the contractor's bid
e.	**Increased instances of Gender Based Violence**	• Sensitize communities on GBV risks of the project during stakeholders' engagement prior to implementation of the project;	Contractor	During staff recruitment	To be included in contractor's bid

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Sensitize the community on the Grievance Redress Mechanism before implementation of project; • Ensure that code of conduct is signed and understood by all contractor staff; • Provide separate facilities for men and women; and • Provide appropriate signage on GBV in the local language.		During installation and operation	
f.	**Increases instances of Violence Against Children**	• Sensitize communities on VAC risks of the project during stakeholders' engagement prior to implementation of the project;	Contractor	During staff recruitment During installation and operation	To be included in contractor's bid

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Sensitize the community on the Grievance Redress Mechanism before implementation of project; • Ensure that code of conduct is signed and understood by all contractor staff.			
g.	**Disrupting locals**	• Adequately sensitise the local community about the project, its duration and work times • Seek the views of the local community on how to minimise disruption	Contractor	Before the Commencement of the project	To be included in contractor's bid
h.	**Disruption of work for E-Government and NACIT**	• Liaise with E-Government and NACIT management on the best	Contractor/ E-Government/ NACIT	Before Commencement of project	NA

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		way of minimising the disruptions. • Ensure constant communication between contractor and E-Government and NACIT management to ensure proper accommodation of the work requirements for both parties.			
j.	**Increased risk of theft of E-Government and NACIT properties and other materials**	• Ensure maximum security to safeguard E-Government and NACIT properties and other materials. • Restrict access to the E-government and NACIT premises	Contractor/ E-Government/ NACIT	During Construction	5,000,000

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Provide restricted access signage to the E-government and NACIT premises.			
	Potential negative impacts during operation				
	Environmental				
a.	**Nuisance from noise and vibrations**	• Install low noise diesel generators to reduce noise pollution within the Data Centre site and the surrounding offices. • Place the generator in a closed building and, as much as possible, site the generator away from the users in the Data Centre and from	Contractor, E-Government	During operation	N/A

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		the buildings in the immediate surrounding.			
b.	**Increased risk of emission of air pollutants from backup power generators and cooling systems**	• Regularly servicing the power generators; • Using back-up power generators only when necessary; • Using exhausts that are designed to disperse fumes. • Ensuring that new replacement equipment does not contain Ozone depleting substances (ODSs)	Contractor E-Government	During operation	1,000,000
c.	**e-waste generation**	• Develop a site-specific e-waste management plan outlining waste	E-Government, Contractor	During operation	To be included in

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		management pproceduresto be followed at the site. • Identify e-waste recycling companies in Malawi who can receive the e-waste from the Data Centre operations; • Liaise with Lilongwe City Council for designated sites for disposal of e-wastes; • Store the e-wastes in secure containers until a disposal site is identified; • e-wastes disposed of in designated disposal sites once the councils have identified the sites;			contractor's bid

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Data Centre operators are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas; • Quantify the e-wastes that have been generated against those that have been sent to recyclers and those disposed of.			
d.	**Increased energy consumption**	• Use energy efficient Data Centre IT equipment. • Employ energy efficient cooling processes for the Data Centre.	Contractor	During operation	

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
e.	**Increased generation of hazardous materials and wastes**	• Develop a site-specific hazardous waste management plan outlining waste management procedure to be followed at the site. • Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer Occupational health and safety impacts: specifications • Prevention and control of fuel spills during delivery and storage by providing secondary	Contractor E-Government	During operation	N/A

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		containment to catch and contain accidental overfill; A concrete bunded area with 110% capacity of the Fuel storage tank should be constructed. The bund should be water and oil resistant with no drain pipe to it. The area where fuel trucks will be delivering the fuel should be concrete with oil and water resistance with a mini bund to prevent fuel spill run-off to bare ground. If necessary an oil/water separator should be constructed. Hydrocarbon spill kits should be available on the site;			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Drain acid from waste batteries and neutralize with lime before disposal. • Maintain favourable cool conditions in the Data Centre to prevent decomposition of the fire suppression agent into hazardous by product of Hydro fluoride. • Prevent the release of the coolant and fire suppression agents int the environment especially water sources. In case of release ensure containment using absorbent materials. • Ensuring that new replacement equipment for maintenance does			

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		not contain Ozone depleting substances (ODSs). • New electronic equipment must meet international phase out requirements for hazardous materials contents. • Train workers in hazardous materials and wastes handling procedures. • Ensure workers wear appropriate PPE when handling hazardous materials and wastes.			
	Occupational Health and Safety				

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
a.	**Risk of injuries to the workers due to exposure to electrical risks**	• Allowing only trained and certified workers to install, maintain, or repair electrical equipment; • Electrical holds (de-energising power sources), should be well defined prior to the start of any electrical works, and personnel should be adequately trained on how to ensure sources of energy are isolated/de-energised. • Ensuring that all maintenance staff, including trained workers; strictly adhere to specific safety standards and code of conduct;	Contractor E-Government	During operation	NA

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Ensuring that staff use appropriate special safety equipment; • First aid training in revival techniques, should be given to workers so they can provide first aid treatment to victims of electric shock; • Specific training, safety measures, personal safety devices and other precautions should be defined in the health and safety plan.			
b.	**Risk of fire accidents within the Data Centre**	• Use fireproof construction materials for the renovation of the	E-Government / Contractor	During Construction and operation	To be included in

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		ceiling, floors, walls, doors, windows and cabinets among other things to ensure structural stability of the building. • Install active fire protection systems including heat and fire detectors, fire alarm and water/ fire suppression sprinklers to detect, control and extinguish the fire. • Ensure the use of active fire controls that do not pose threat to damage of Data Centre equipment in the process of fire suppression.			the technical costs

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
		• Maintenance of the active fire protection systems to ensure functionality of detectors and working fire suppressants. • Designate a fire assembly point and an evacuation plan. • Train and induct workers and people within the Data Centre area on fire safety procedures			
	Social				
a.	**Increased privacy concerns**	• Provide stringent privacy protection practices that are required to restore the public's trust over the privacy of their personal information.	Contractor/ E-Government	During Operation	TBD

Item No	Expected Environmental /Social impacts	Proposed Mitigation/enhancement Measures	Responsibility for implementing Mitigation/ enhancement measures	Time/ Duration for Implementation	Estimated cost (MK)
b.	**Increased security concerns**	• Provide stringent security measures that will safeguard the public's sensitive information.	Contractor/ E-Government	During Operation	TBD
c.	**Loss of employment**	• Provide adequate awareness to employees on the changes that will be affected by the digitization of their functions. • Provide training to those who are at risk of losing their job in the new functions that will be created by the digital platforms.	Contractor/ all affected public and private institution/ Department of Human Resources Management	During operation	TBD

6.2. Environmental and Social Monitoring Plan

The Environmental and Social Monitoring Plan presented in Table 7 provides for monitoring, to check implementation of the enhancement and mitigation measures proposed in the Environmental and Social Management Plan (ESMP). The monitoring plan gives monitoring indicators, means of their verification, frequency of monitoring and the stakeholders responsible for monitoring.

The Environmental and Social Monitoring Plan helps to verify the magnitude, duration and scope of the predicted impacts during and after implementing the enhancement and mitigation measures. It also helps to detect any unforeseen impacts at an early stage so that corrective measures can be taken, before significant damage takes place on society or the environment. Hence, monitoring implementation of the ESMP requires dedication and persistent follow up, especially during the construction phase of the project. It requires coordination with professionals from the various key stakeholders to verify that all mitigation measures in the ESMP are being implemented on time and as recommended. The estimated budget for the monitoring exercises for the project is MK15 million.

Table 7. Environmental and Social Monitoring Plan

Potential Impact	Enhancement/ Mitigation Measure	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Potential Positive Impacts during Planning and Design Phase					
Increased Employment opportunities	• Inform locals of work opportunities. • Prioritise/ employ locals that qualify. • Treat and pay workers fairly. • Pay at least the minimum wage timely.	Number of local people employed	Head count and inspection of employment register	PPPC, District Labour Office, Ministry of Labour	Before commencement and during Employment
Potential Positive Impacts during Construction Phase					
Increased employment opportunity	• Inform locals of work opportunities. • Prioritise/ employ locals that qualify. • Treat and pay workers fairly. • Pay at least the minimum wage timely.	Number of adverts to locals Number of labourers promoted Number of women and youth learning new skills	Employment register, Interviews	PPPC, Ministry of Labour	Before commencement and during Employment

Potential Impact	Enhancement/ Mitigation Measure	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Opportunity for skills transfer	● Provide on job training to employees; ● Promote and motivate workers with new skills; ● Encourage/ support women and youth to learn new skills.	Number of labourers receiving on job training Number of labourers promoted Number of women and youth learning new skills	Employment register, Interviews	PPPC, Ministry of Labour	Monthly
Increased Business Opportunity	● Pay building material suppliers in time; ● Prioritise procurement from local suppliers; ● Provide detailed specifications of required materials to the contractor; and ● Buy materials from licensed suppliers.	Number of complaints on late payments Presents of quality products Presence of documents on specification of materials	Inspection, Review of specification/certificates, Interviews	PPPC, Ministry of Labour	Monthly

Potential Impact	Enhancement/ Mitigation Measure	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
		Presence of certificates for suppliers			
Potential Positive Impacts during Operation Phase					
Improved storage, back-up and management of information	● Maintain equipment timely to sustain the reliable and fast internet. ● Train the operation and maintenance personnel for reliable network services.	Number of maintenances Number of trainings on maintenances	Inspection Review of the records	E-Government	Monthly
Secured Storage of Government Information	● Allocate sufficient bandwidth for intensive data activities/ encryptions. ● Connect as many institutions as possible; ● Train the operation/ maintenance staff for continued reliability of services.	Number of government Institutions connected Number of maintenances Number of trainings on maintenances	Review of records Inspection	E-Government	Monthly

Potential Impact	Enhancement/ Mitigation Measure	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Easy Data Monitoring and Recovery	● Train the operation/ maintenance staff for continued reliable network services.	Number of maintenances Number of trainings on maintenances	Inspection, Review of maintenance and training records	E-Government	Monthly
Direct Employment Opportunities	● Inform locals of work opportunities. ● Prioritise employment of locals that qualify. ● Treat and pay workers fairly. ● Pay at least the minimum wage wages and on time.	Number of Adverts to locals Number of local people employed Presence labour policy	Review of records and labour Policy, Head count, Inspection	PPPC E-Government	Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Potential negative impacts and mitigation measures during Construction					
Environment					
Loss of trees/Vegetation	-Replant 10 trees for each tree cut -Liaise with the Forestry Department for a location to replant the replacement trees.	-Area of land provided -Number of trees or area planted with grass -Number of trees provided	-Measure the area provided -Count the trees -Measure the planted area	Contractor, PPPC	Monthly
Nuisance from dust emissions	-Alert people about dust through appropriate signs -Provide dust masks to workers - Barricade the site to minimise dust by wind action -Spray water to dusty areas and on the access roads -Cover-up the idle sand, bricks, concrete stockpiles to suppress dust.	-Dust complaints -PPE provision -Dusty areas sprayed -Dusty work notice -Work site barricaded Covered stockpiles of sand and bricks	-Grievance records -PPE Records Photo monitoring -Inspection	Contractor, PPPC	Quarterly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Nuisance from noise and vibrations	-Inform neighbouring offices about work start/ stop times and possibility of noise -Provide ear muffs to workers -Do not have vehicles and heavy plant machinery idling on site and moving anyhow; -Place the generator in a closed building and away from surrounding offices and construction workers	-Notice of working hours and noise work -Ear muffs worn by workers -No vehicles idling aimlessly -Noise level -Complaints against noise	-Noise dosimeter, -Grievance register	Contractor's ESSO and MEPA	Once a month
Increased risk of air pollutant emissions from vehicular traffic and power generator	-Regular servicing of the vehicle fleet and power generators. -Using back-up power generators only when necessary. -Using exhausts that have catalytic converters and are designed to disperse fumes.	-Records of vehicle service -Diesel usage records	-Visual inspection -Records	Contractor's ESSO and MEPA	Once a month

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Increased generation of solid and liquid wastes from domestic and construction wastes	-Develop a site-specific waste management plan outlining waste management procedure to be followed at the site for all different types of wastes; -Disposal of waste in designated sites, in collaboration with the Lilongwe City Council; -Provision of well labelled waste receptacles on site for waste segregation. -Train workers in the proper management of recyclable, sanitary, solid, liquid, and hazardous wastes. -Regularly empty and clean the mobile toilets at the sewerage facility.	-A clear Waste management plan available on site -Amount of wastes generated -Amount of waste disposed at disposal facility -Number of waste related complaints -Waste receptacles available on site -Waste disposal certificates from the City -Wastes separated according to type -Amount of recycled wastes	-Document review -Site inspections -Waste volumes register -Waste disposal records -Training records	Contractor, PPPC and MEPA	Weekly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
		-Workers trained on proper waste management -Well cleaned mobile toilets			
e-waste generation	-Develop a site-specific e-waste management plan outlining waste management procedure to be followed at the site -Identify e-waste recycling companies in Malawi who can receive the e-waste from the Data Centre operations -Liaise with Lilongwe City Council (LCC) for designated sites for disposal of e-wastes;	-e-waste management plan -Amount of e-wastes generated on site -Amount of wastes disposed -e-waste disposal certificates from the City -Waste receptacles for e-waste segregation -Amount of e-waste recycled	-Document review -Site inspections -e-waste records -e-waste recycling/ disposal records -Training records	Contractor, PPPC and MEPA	Weekly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Store the e-wastes in secure and separate waste receptacles until a disposal site is identified. -E-wastes should be disposed of in designated disposal sites once the councils have identified the sites. -Quantify the e-wastes that have been generated against those that have been sent to recyclers and those disposed of. -Contractors are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas.	-Workers trained on management of e-waste -Waste related complaints			
Increased generation of hazardous material and wastes	- Develop a site-specific hazardous waste management plan outlining waste management procedure to be followed at the site for all the	-Number of spills, -Equipment specification -Evidence of PPE -Number of incidents	-Visual inspection -Document review -Incident reports	Contractor, PPPC, MEPA	During ordering equipment and monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	identified hazardous chemicals used at the site - Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer Occupational health and safety impacts: specifications. -Dispose hazardous wastes as per the MSDS guidelines and in liaison with the Lilongwe City Council and obtain a hazardous waste handling and storage permit -Train workers in hazardous materials and wastes handling procedures.	-Amount of hazardous wastes stored on site -Number of hazardous waste related complaints -Hazardous waste treatment records and disposal certificates	-Material Safety Data Sheet -Site inspections -Waste volumes register -Laboratory results -Waste disposal records -Grievance records		

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Ensure workers wear appropriate PPE when handling hazardous materials and wastes.				
Pollution to land from paints, diesel and oil spills	-Maintain/service vehicles and machinery regularly as recommended by the dealers; -Line floors during use of paints and lubricants to catch spills; -Dispose waste oil and oil containers in approved disposal areas, in collaboration with the Local Authority; -Collect hydrocarbons and paint contaminated soil and treat them by bioremediation and through containment into drums.	-Number of vehicle services done -Oil / paint spills on site -Disposal records	-Visual Inspection -Waste Registers	Contractor, EDO, PPPC	Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Creation of borrow pits	-Contractors must source construction materials from licensed suppliers. -Borrow pits should be properly fenced to prevent accidents. -Ensure borrow pits are backfilled once all materials are collected.	-Records of material suppliers -Complaints -Number of safety incidents related to the borrow pit -Fenced borrow pits -Backfilled pits	-Supplier certification, -Grievance logs -Incident records -inspection	Site supervisor, PPPC and MEPA	Weekly during Construction
Occupational Health and Safety					
Risk of injuries to the workers due to electrical risks	-Allowing only trained and certified workers to install, maintain, or repair electrical equipment. -Electrical holds (de-energizing power sources) should be well defined prior to the start of any electrical works, and personnel should be adequately trained on how	-Worker certificates and references -Number breaches of safety (CoC) -Number trained in H&S and on first aid -Number of employees wearing PPE	-Visual inspection -Document reviews -Training records -Safety incident reports -PPE records	Contractor, PPPC, Ministry of Labour	Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	to ensure sources of energy are isolated/de-energized. -Ensuring that all maintenance staff, including trained workers; strictly adhere to specific safety standards and code of conduct; -Prior to excavation works, all existing underground cable installations should be identified and marked. Drawings and plans should indicate such installations; -Ensuring that staff use appropriate special safety equipment; -First aid training in revival techniques, should be given to workers so they can provide first aid treatment to victims of electric shock;	-Number of staff inducted in H&S and on first aid -Number of electrical injuries	-First aid treatment records		

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Specific training, safety measures, personal safety devices and other precautions should be defined in the health and safety plan. -Conduct risk assessment for all construction and installation works at the Data Centre				
Accidents from working at heights	-Secure elevated work areas with barricades to prevent unauthorized access -Prohibit working beneath other personnel on elevated areas -Use appropriately rated and maintained hoisting and lifting equipment and train operators in their use	-Number of times staff breach safety procedures -No personnel working under scaffolding -Barricaded work areas -Certified equipment in use -Ladder used according to safety procedures	-Inspection of scaffolding equipment -Inspection of height work area -Safety breach incidents -Document review	Site supervisor, PPPC, Ministry of Labour, NCIC	Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Maintain and operate elevating platforms according to established safety procedures including use of ladders in good condition, ensure acceptable ladder use measures etc -Use ladders according to pre-established safety procedures including proper placement, climbing, standing, and descending on ladder -Conduct risk assessments and obtain height work permits before undertaking any height work.	-Risk assessments and height work permits issued			
Accidents from equipment delivery vehicles and construction machinery	-Prepare and implement motor vehicle and construction traffic safety programs to protect workers and others who pass in the area.	-Traffic management plan in place -Number of accidents -Presence of unauthorised persons	-Document review -Accident records	Site supervisor, Contractor, PPPC	Weekly, Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Prevent unauthorised entry using security guards for site security, to prevent access to the construction area -Erection of fence in combination with other institutional controls and management approaches, such as the posting of signs -Have a traffic warden to provide traffic signs to slow down or redirect traffic as may be necessary. -Provide signage to alert workers and passers-by of any danger and safety risks -Prohibit or regulate project material delivery during peak hours -Deliver materials during weekends and off-peak hours where possible.	-Number of signs in strategic places	-Traffic area inspection		

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
-Accidents from power tools	-Work to be carried out in a safe manner and safe environment. -Ensure only trained or skilled personnel to carry out the work. -Ensure safe and well-maintained equipment is used. -Ensure workers are adequately supervised during work activities.	-Safety training register -Provision of PPE -Adequate supervision provided -Number of safety incidents -First aider on site	-Training Records -PPE records -Incident reports -Visual inspection -First Aid certificates	Contractor, MEPA, PPPC	Weekly, Monthly
Trips and falls within the work area	-Good housekeeping procedures including cleaning of surfaces and equipment, -Proper and adequate storage of materials and equipment, containment of loose cables. -Ensure ladders used are certified to be fit for use and are properly secured.	-Placement and condition of scaffolding and ladders -Good housekeeping of work site -Proper storage area	-Visual inspections	Contractor PPPC MEPA	Weekly Monthly Quarterly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Cuts from sharp objects	-Workers to be trained on safe work and housekeeping practices. -Regular disposal of wastes within the work sites -Workers to wear appropriate PPE including safety boots and heavy-duty gloves when handling sharp objects -Provide first aid to the injured person..	-Training records -Work site clear of waste and rubble -Workers wearing PPE -First Aid box available	-Document review -Visual inspection	Contractor PPPC MEPA	Weekly Monthly Quarterly
Optic fibre risks	-Adhere to safety standards and code of conduct (CoC) Training on safety - Workers should be trained on specific hazards associated with handling optic fibre material	-Number breaches of safety (CoC) -Number not wearing PPE Number of staff inducted in H&S	-Training records -Job Observations -Inspections	Contractor PPPC, MEPA	Weekly, Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	--Use of protective gloves when handling optic fiber work				
Community Health and Safety					
Accidents and injuries from delivery vehicles around the site area	-All drivers must be trained on the procedures to be followed in traffic management. -Designate some workers to be traffic controllers within the site and on the Paul Kagame road. -Liaise with the Traffic Control Police on the need to control traffic from the Paul Kagame road.	-Number of drivers trained in traffic management -Availability of traffic wardens -Records on police engagement -Presence of traffic warning signs	-Training records -Visual inspections -Document reviews	Contractor PPPC MEPA	Daily Weekly Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Place warning signs on increased traffic movements within the project area. -Place warning signs for speed limits within the project site and along the Paul Kagame road in liaison with the Traffic Control Police				
Risk of introduction and spread of STIs and HIV and AIDS	-Employ local people as much as possible; -Provide civic awareness on unplanned pregnancies, STIs and HIV and AIDS to workers; and -Provide condoms to workers	-Availability of local employees, -HIV/AIDS awareness -Condoms given	Employment records, Training record, PPE register c	Contractor, ESSO, DHO	Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Risk of infection from COVID 19	-PMT will ensure the contractor is taking adequate precautions to prevent or minimize an outbreak of COVID-19, and have identified what to do in the event of an outbreak in line with national guidance and the World Bank's -ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects. -Provide COVID-19 preventive measures including provision of sanitation products and protective masks and shields; -Enforce hygiene practices including hand washing and hand sanitising	-Availability of PPE, soap and sanitiser. -Workers wearing COVID-19 PPE and adherence to social distancing	PPE supplies register Inspection of adherence to COVID-19 measures Number of workers infected with COVID-19	PPPC Contractor, ESSO, DHO	During hire and Construction

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Enforce the wearing of masks and shields all time whilst at the worksite. -Divide the workers into shift rotations to decongest the work area and improve social distancing. -Provide medical assistance to suspected COVID-19 cases by referring them to approved testing centers and hospitals -Provide continuous communication and awareness on COVID-19 issues.				
Social					
Conflict over land use and ownership	-Provide a proof of land ownership for the plot earmarked for the Data Centre construction -Acquire a written consent from Government Print to create a	-Availability of title deed -Availability of written consent for access road	Document reviews	E-Government PPPC	Before commencement c project

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	temporary road through their vacant plot to E-Government premises.				
Risk of child labour and trafficking in persons	-Ensure that all people to be employed have genuine identification to prove that they are 18 years old and above -Employ workers through established recruitment agencies -Maintain an accurate staff register against which employee presence must be checked every day	No presence of under 18 children on site Availability of staff register	National identity cards Physical verification	Contractor, PPPC, Labour and Gender officer	On recruitment and during Construction
Loss of employment due to preferential recruitment, worker harassment and marginalisation	-Contractor must adhere to the labour laws and should not discriminate job seekers on the basis of gender, religion and race. -Contractor to follow the contractor's code of conduct in managing his	-Number of COC breaches by contractor -Number of employment related complaints	Employment and Grievance registers	PPPC, Contractor, Department of Labour	During employment and Construction

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	workers to ensure they are not harassed and marginalised.				
Increased instances of Sexual Exploitation and abuse (SEA) and Sexual Harassment	- Workers should receive induction and a warning to refrain from sexual exploitation, abuse and harassment of women and girls at the site and those seeking employment -Sensitise the workers on the Codes of Conduct and enforce the same. -Ensure that all employees sign the Workers' Code of Conduct	-Training records -SEA and SH Complaints. -Signed CoC by employees	-Document reviews -Interviews -Grievance log	Contractor Ministry of Gender	During recruitment and Construction
Increased instances of Gender Based Violence	-Sensitize communities on GBV risks of the project during stakeholders' engagement prior to implementation of the project; -Sensitize the community on the Grievance Redress Mechanism before implementation of project;	-Sensitisations on GBV, and on GRM -Number of signed the CoC -Availability of male and female sanitary facilities	Training records Document reviews Inspections	Contractor Ministry of Gender	During employment Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Ensure that code of conduct is signed and understood by all contractor staff; -Provide separate facilities for men and women; and -Provide appropriate signage on GBV in the local language.	Presence of GBV signage			
Increases instances of Violence Against Children	-Sensitize communities on VAC risks of the project during stakeholders' engagement prior to implementation of the project; -Sensitize the community on the Grievance Redress Mechanism before implementation of project; -Ensure that code of conduct is signed and understood by all contractor staff.	-Sensitisations on VAC, and on GRM -Number of signed the CoC -Availability of male and female sanitary facilities Presence of GBV signage	Training records Document reviews Inspections	Contractor Ministry of Gender	During employment Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Disrupting of locals	-Adequately sensitise the local community about the project, its duration and work times -Seek the views of the local community on how to minimise disruption	-Number of meetings -Number of Grievances	Meeting records and Grievance registers	PPPC, Contractor's ESSO and site supervisor,	Weekly during Construction
Disruption of work for E-Government and NACIT	-Liaise with the E-Government and NACIT management on the best way of minimising the disruptions. -Ensure constant communication between contractor and E-Government and NACIT management to ensure proper accommodation of the work requirements for both parties.	-Number of complaints -Presence communication with E-government and NACIT	Document review Grievance log	PPPC Contractor's ESSO and site supervisor,	At the beginning of Construction
Increased risk of theft of E-Government and	-Ensure maximum security to safeguards the E-Government and	-Number of guards at E-government	Inspections Training records	PPPC	During Construction

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
NACIT properties and other materials	NACIT properties and other materials. -Restrict access to the E-government and NACIT premises -Provide restricted access signage to the E-government and NACIT premises.	Worked advised to keep away from E-government premises -Availability of signage		Contractor's ESSO and site supervisor,	
Potential negative impacts and mitigation measures during operation					
Environment					
Nuisance from noise and vibrations	- Install low noise diesel generators to reduce noise pollution within the Data Centre site and the surrounding offices. -Place the generator in a closed building and, as much as possible, site the generator away from the users in the Data Centre and from the	-Low diesel gensets used -Complaints against noise	Inspection Grievance logs	PPPC, Contractor's ESSO and MEPA	Once a month

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	buildings in the immediate surrounding.				
Risk of emission of air pollutants from backup power generators and cooling systems	-Regularly servicing the power generators; -Using back-up power generators only when necessary; -Using exhausts that are designed to disperse fumes. -Ensuring that new replacement equipment does not contain Ozone depleting substances (ODSs)	Smoke, smell from the Genset Genset service records Genset design specification Cooling system design specifications	Inspection Document review	PPPC E-Government,	Quarterly
e-waste generation	-Develop a site-specific e-waste management plan outlining waste management procedure to be followed at the site. -Identify e-waste recycling companies in Malawi who can	-e-waste management plan -Amount of e-wastes generated on site -Amount of wastes disposed	-Document review -Site inspections -e-waste records -e-waste recycling/ disposal records	PPPC, Contractor, ESSO and MEPA	Weekly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	receive the e-waste from the Data Centre operations; -Liaise with Lilongwe City Council for designated sites for disposal of e-wastes; -Store the e-wastes in secure containers until a disposal site is identified; -e-wastes disposed of in designated disposal sites once the councils have identified the sites; -Data Centre operators are required to present evidence that the disposal of e-wastes has been carried out in certified/officially designated areas; -Quantify the e-wastes that have been generated against those that	-e-waste disposal certificates from the City -Waste receptacles for e-waste segregation -Amount of e-waste recycled -Workers trained on management of e-waste -Waste related complaints	-Training records		

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	have been sent to recyclers and those disposed of.				
Increased energy consumption	-Use energy efficient Data Centre IT equipment. -Employ energy efficient cooling processes for the Data Centre	Energy use records	Inspection of equipment specification records	Contractor/ ESSO/MEPA	Quarterly
Increased generation of hazardous material and wastes	-Develop a site-specific hazardous waste management plan outlining waste management procedure to be followed at the site. -Material Safety Data Sheets for all hazardous chemicals used on site should be made available to all workers for them to identify the hazards and their management as per manufacturer Occupational health and safety impacts: specifications	-Hazardous waste management plan -Number of spills, -Equipment specification -Evidence of PPE -Number of incidents -Amount of hazardous wastes stored on site -Number of hazardous waste related complaints	-Visual inspection -Document review -Incident reports -Material Safety Data Sheet -Site inspections -Waste volumes register -Laboratory results	PPPC MEPA Contractor	Weekly During procurement

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Prevention and control of fuel spills during delivery and storage by providing secondary containment to catch and contain accidental overfill; A concrete bunded area with 110% capacity of the Fuel storage tank should be constructed. The bund should be water and oil resistant with no drain pipe to it. The area where fuel trucks will be delivering the fuel should be concrete with oil and water resistance with a mini bund to prevent fuel spill run-off to bare ground. If necessary an oil/water separator should be constructed. Hydrocarbon spill kits should be available on the site;	-Hazardous waste treatment records and disposal certificates	-Waste disposal records -Grievance records		

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Drain acid from waste batteries and neutralize with lime before disposal. -Maintain favourable cool conditions in the Data Centre to prevent decomposition of the fire suppression agent into hazardous by product of Hydro fluoride. -Prevent the release of the coolant and fire suppression agents int the environment especially water sources. In case of release ensure containment using absorbent materials. -Ensuring that new replacement equipment for maintenance does not contain Ozone depleting substances (ODSs).				

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	- New electronic equipment must meet international phase out requirements for hazardous materials contents. -Train workers in hazardous materials and wastes handling procedures. -Ensure workers wear appropriate PPE when handling hazardous materials and wastes.				
Occupational Health and Safety					
Risk of injuries to the workers due to exposure to electrical risks	-Allowing only trained and certified workers to install maintain, or repair electrical equipment; -Electrical holds (de-energizing power sources), should be well defined prior to the start of any	-Safety training register -Provision of PPE -Barricading of trenches --Backfilled trenches	Staff training records Health and safety manual and procedures PPE records	PPPC, Contractor's ESSO MEPA,	Quarterly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	electrical works, and personnel should be adequately trained on how to ensure sources of energy are isolated/de-energized. -Ensuring that all maintenance staff, including trained workers; strictly adhere to specific safety standards and code of conduct; -Ensuring that staff use appropriate special safety equipment; -First aid training in revival techniques, should be given to workers so they can provide first aid treatment to victims of electric shock; -Specific training, safety measures, personal safety devices and other	-Maintenance of scaffolding and ladders -Adequate supervision provided -Good housekeeping -Number of safety incidents -First aider on site	Incident reports Visual inspection First Aid certificate		

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	precautions should be defined in the health and safety plan.				
Risk of fire accident	-Use fireproof construction materials for the renovation of the ceiling, floors, walls, doors, windows and cabinets among other things to ensure structural stability of the building. -Install active fire protection systems including heat and fire detectors, fire alarm and water/ fire suppression sprinklers to detect, control and extinguish the fire. -Ensure the use of active fire controls that do not pose threat to damage of Data Centre equipment in the process of fire suppression.	-Presence of fireproof materials -Fire detection and suppression systems installed -Well maintained fire detection and suppression system -Fire assembly point and evacuation plan -No of fire incidents -Training of fire management	Document reviews Inspections Maintenance records incident reports Training records	E-Government/ PPPC/ Contractor	Monthly

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
	-Maintenance of the active fire protection systems to ensure functionality of detectors and working fire suppressants. -Designate a fire assembly point and an evacuation plan. -Train and induct workers and people within the Data Centre area on fire safety procedures				
Social					
Increased privacy concerns	-Provide stringent privacy protection practices that are required to restore the public's trust over the privacy of their personal information.	Number of data privacy concerns raised	Grievance records	Contractor PPPC E-Government	During operation
Increased Security concerns	-Provide stringent security measures that will safeguard the public's sensitive information.	Number of security concerns raised	Grievance records	Contractor PPPC E-Government	During operation

Expected Environmental /Social impacts	Proposed Mitigation /enhancement Measures	Monitoring indicators	Means of monitoring	Responsibility for Monitoring	Monitoring frequency
Loss of employment	-Provide adequate awareness to employees on the changes that will be affected by the digitization of their functions. -Provide training to those who are at risk of losing their job in the new functions that will be created by the digital platforms.	Number of employment losses Employee awareness of the impacts of digitization of government systems	Grievance Records Training Records	Contractor/ PPPC/ E-Government/ Department of Human Resources	During operation

7.0 NSTITUTIONAL ARRANGEMENT, RESPONSIBILITIES AND ACCOUNTABILITIES

7.1 Institutional Arrangements

The institutions for the project implementation will cascade from national level to local level. The following are among the key institutions involved in the implementation of this subcomponent of the project:

PPPC, is responsible for overall coordination of the project. Particularly, it will monitor the application of this ESMP during project design and implementation. It will also be responsible for coordination with the contractor, the World Bank, Malawi Environmental Protection Authority (MEPA) and Lilongwe City Council on environmental and social safeguards requirements. PPPC will ensure that all project activities are properly screened and that appropriate instruments are used to manage environmental and social impacts. PPPC will also monitor and evaluate environmental performance of the project activities to verify compliance with applicable legal and other requirements. It will also be responsible for reporting on the contractor's performance on ES issues.

E-Government, is the custodian of the project. Its role is to ensure that the project is implemented smoothly. Coming in of the Data Centre within the premises may result in moving some offices to a new location.

The **World Bank Group** will offer support in approving the safeguards instruments to ensure that the project activities do not result in harm to the environment and communities.

Contractor will be responsible for the implementation of mitigation measures to address the project impacts and will also be responsible for inspections and monitoring the environmental and social management works required under the project.

The **Malawi Environmental Protection Authority (MEPA)** is bestowed with responsibility for reviewing the environmental and social protection aspects of projects. This is also the authority to which telecommunications operators in the country submit applications for safeguards approvals in advance of network development. MEPA will assess adequacy of the environmental and social safeguards instruments prepared by the project for approval, as per the legal framework in Malawi.

At local authority level**, Lilongwe City Council who has the jurisdiction over the project** will undertake monitoring and inspection of project activities and assist grievance redress committees in resolving grievances. Its Directorates of Town Planning and Estates Management, Health and Social Services and Recreation, Arts and Culture will jointly undertake this responsibility.

7.2 Roles and Responsibilities

The Project Implementation Unit at PPPC is responsible for ensuring compliance with the ESMP requirements. Roles and responsibilities of the key stakeholders associated with the project are provided in Table 8.

Table 8. Roles and Responsibilities of Stakeholders

Stakeholder	Responsibility
E-Government	● Provide a proof of land ownership in form of a title deed for the proposed project site to mitigate potential land contestation issues ● Provide a written consent from Government Print to allow construction of a temporary access road to the project site through their vacant plot.
Project Implementation Unit (PPPC)	● Responsible for development and review of the ESMP as required by the Malawi Environmental Protection Authority (MEPA) and the World Bank Safeguard Office. ● Review and approval of Contractors ESMP for mitigation of environmental and social impacts expected from the project. ● Ensuring that the Contractor's ESMP is implemented effectively to avoid and minimise environmental and social impacts of the project. ● Conducting environmental and social risk assessments to ensure compliance with all World Bank policies, statutory requirements and permit conditions pertaining to the ESMP; and preparing assessment reports.

Stakeholder	Responsibility
	● Ensuring that all staff follow rules and procedures set by the Contractor on site and reporting to the Site Manager. ● Closely monitoring activities related to the ESMP on site. ● Assisting the Site Manager to develop and deliver capacity development and training programs for environmental and social management plan implementation. ● Overseeing and reviewing environmental monitoring/reporting and assistance to the Site Manager in implementing the ESMP. ● Overseeing the implementation of the Grievance Redress Mechanisms.
Contractor – (Site /Project Manager)	● Ensuring that all site staff, including sub-contractors comply with this ESMP or revision thereof and instructions given by the relevant licensing authorities. ● Planning and mobilization of manpower. ● Determining equipment to be used and ensuring that they are in good working condition; guaranteeing safety for the workers and operators. ● Ensuring that all activities are carried out to schedule and in accordance with Project specifications, procedures and environmental and social requirements, including codes of conduct. ● Ensure workers have the required PPE
Contractor – (Supervisor/ Foreman)	● Working in close coordination with the ESS Officer. ● Providing supervisory roles to contractor employees working on the project. ● Responsible, with the assistance of the Site Environmental Team, for ensuring that all site staff, including sub-contractors, work in

Stakeholder	Responsibility
	accordance with the environmental and social requirements relevant to their activity. ● Reporting to the Project Manager any deviation from the environmental and social management requirements, or any environmental incident that occurred and observed on the site. ● Ensure all workers are using the required PPE at all times ● Recording incidents including those for GBV, SEA, SH and OHS and reporting the same to the Manager ● Ensure workers are aware of the Grievance Redress Mechanism
Malawi Environmental Protection Authority	● Ensure that environmental and social regulations are complied with and that the ESMP is followed. ● Conduct periodic monitoring visits and safeguards document review to verify compliance with this ESMP.
Ministry of Labour	● Ensure good working conditions and labour practices at the project site.
Ministry of Gender	● Ensuring good gender management practices and protection of women, children and the vulnerable during the project implementation.
Lilongwe City Council	● Ensuring that local development projects are implemented sustainably.

8.0 GRIEVANCE REDRESS MECHANISM

8.1 Grievance Redress Mechanism Structures and Processes

Grievances, concerns and problems are inevitable during project implementation and an effective mechanism is needed to address them. Failure or delays to resolve the grievances and concerns can derail the implementation of the project. The Public Private Partnership Commission has a

Grievance Redress Mechanism (GRM) for the Digital Malawi Acceleration Project, which provides a platform for reporting and addressing project related grievances. This GRM will be accessed and used by all project affected persons including project workers, project beneficiaries, communities, community leaders, contractors' workers; and institutions that are affected by or have an interest in Project.

A GRM manual for DMAP has been developed to provide guidance through a set of procedures that are to be undertaken when reporting a complaint as well as during redressal processes. The GRM Manual can be accessed through the link https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099091124095036361

8.2 GRM Uptake Channels

The uptake channels for the DMAP include a Toll-free number **3108** with voice functions, which can be used by subscribers from all service providers in the country at no cost. In addition to the toll-free number, another mobile number +265999988870 with WhatsApp, text and voice functions and an email address: digitalmalawi.grm@pppc.mw can also be used to lodge grievances. All three digital uptake channels mentioned above will be domiciled at the PIU. In addition to the digital platforms, GRM reporting and resolution agreement forms presented through logbooks are available at the project site where details of the grievances will be registered as well as the outcome of the resolution processes. A suggestion box are also available at the project sites. and other GRC locations where those who do not wish to register their grievance directly through the committees will deposit their grievances.

9.0 CAPACITY BUILDING AND AWARENESS TRAINING

For the implementation of this ESMP to be successful and effective, there is a need to sensitise and capacitate all relevant stakeholders responsible for the operationalization and monitoring of the ESMP. The Project Safeguards team will therefore be required to ensure that allcontractors for the Data Centre works, contractor workers, staff working within the project beneficiary institution and relevant stakeholders are aware of the ESMP and their responsibilities for implementation to ensure compliance with the ESMP requirements. Capacity building will be integral to support the stakeholders in appreciating their roles in providing supervision, monitoring, evaluation and environmental reporting on the project's activities. Therefore, a special initiative is needed to develop the capacity of the contractor, contractor workers, staff from line ministries and the city council to support implementation of the project including social and environmental aspects.

To permit this the following will be undertaken by the PIU:

- On boarding of the contractor – on the World Bank Safeguards and EHS Guideline requirements, compliance requirements, labour laws and working conditions, pollution control, waste management, occupational health and safety, community health and safety, Code of Conduct, Grievance Redress Mechanisms, inspection and monitoring and reporting that is required when working at the project sites. PIU will be responsible for training the contractor through their safeguard's personnel on the ESMP requirements. This will be done through project kick-off meetings as well as specific safeguards training sessions. Once the contractor is well versed in the safeguard's requirements, they will in turn be responsible for training the contractor workers and sensitising beneficiary institutions.
- On boarding of contractor workers – on the ESMP requirements including: safe work practices, safe work environment, PPE requirements, labour law and working conditions, waste management, Contractor's Code of Conduct, the Grievance Redress Mechanism, emergency procedures, COVID-19 mitigation measures. All workers will undergo the training and will be required to sign an attendance sheet. No worker will be allowed to work before they are trained on these requirements.
- On boarding of the relevant private and government institutions (Malawi Environmental Protection Authority, Department of E-Government, Directorate of Occupational Health and Safety, Department of Labour Services, Department of Lands, Lilongwe City Council and Project

beneficiaries) – on the World Bank Safeguards and EHS Guideline requirements, compliance requirements, labour laws and working conditions, pollution control, waste management, occupational health and safety, Government worker and public health and safety, Code of Conduct, Grievance Redress Mechanisms, inspection and monitoring and environmental reporting that is required for the project.

9.1 Capacity Building and Training for Contractor's Workers

The Contractor is required to employ a qualified and experienced safeguards specialist who will undertake all the safeguards work stipulated in the ESMP and the contract and guide all workers in the implementation of the works. The contractor is obligated to train his workers and subcontractors on their environmental and social safeguards obligations to ensure they are well informed and equipped to work in a manner to minimise environmental and social impacts.

The contractor through their safeguard's personnel shall develop an in-house training and awareness program to promote effective implementation of this Environmental and Social Management Plan. The contractor shall identify training needs for his work force and develop a program to train his workers in the implementation of the ESMP. The training program should specifically be targeted to increase the capability of different workers and the roles they will play in the mitigation measures including waste management, use of appropriate PPE and provision of first aid treatment to injured workers. In addition to training, the contractor should put in place measures and resources that are necessary for the effective implementation of the ESMP. The workers should also be trained on their labour rights, and the presence of a project GRM and procedures for raising grievances.

The PIU will ensure these trainings are undertaken for all workers and beneficiary site workers before the start of any works by the contractor. Awareness raising will be carried out before commencement of any works at the Data Centre site and surrounding communities including posting of notices, posters and safety and social signage.

The PIU Environmental and Social Safeguards department will work hand in hand with the Contractor's Environmental and Social Safeguards Specialist on the training and awareness program. PIU shall approve the training materials and other related IEC materials before they are used for training and sensitization purposes to ensure relevant and adequate information is captured.

The Contractor workers will undergo inductions on the environmental and social issues expected from the project's works and their role in managing the impacts. The Contractor is responsible for the budget for training his workers.

Table 9. Training Plan for Contractor Workers

Type of Training	Responsibility	Duration	Who to be trained
Induction	Contractor's ESSS	Before start of project activities	Contractor Workers
ESMP Implementation	Contractor's ESSS	Before start of project activities/ Ongoing	Contractor, Contractor Workers
World Bank and MEPA safeguards Compliance Requirements	PIU	Before start of project activities	Contractor, Contractor ESSS
Health and Safety	Contractor's ESSS	Before start of project activities/ Ongoing	Contractor, Contractor Workers
Grievance Redress Mechanism	PIU/ Contractor's ESSS	Before start of project activities	Contractor, Contractor Workers

9.2 Capacity Building and Training for Stakeholders

The PIU shall be required to conduct a training session for the project staff members and stakeholders from various institutions including the contractor's safeguards personnel in order to improve their technical capacity to effectively implement the ESMP and related safeguards requirements. This training will be conducted per individual sub-component of the DMAP. However, where two or more sub-components are commencing their respective project implementation works at the same period, the training may be combined as almost the same institutions will be required in all the sub-components. The training activities presented in table 11 are designed to suit the technical capacity needs of the project workers, contractors and relevant stakeholders at the district and national level for the Data Centre sub-component. The training, which should include practical sessions for the use of the Environmental and Social Management and Monitoring Plans (Tables 6 and 7), is designed to cover other aspects of the ESMP such as the COVID-19 management, Grievance Redress Mechanism and other social issues like gender-based violence, child labour, safety and protection among others. The objective is that the project

implementers and key stakeholders will have to understand the ESMP requirements for effective and efficient management of the environmental and social impacts of the Data Centre construction and equipment installation activities as well as activities for the other sub-components under DMAP.

A total of 21 persons comprising representatives from the Lilongwe City Council, E-Government, PPPC and the Contractor will need to be appraised on the critical components of the ESMP and how they will be applied on the Data Centre project works:

a. Six (6) officials from the PPPC who will be in the Project Grievance Redress Committee (PGRC).
b. One (1) official from MACRA who will be a member in the PGRC.
c. Four (4) officials from the Lilongwe City Assembly. Two of the officials shall be from the Environmental, Health and Planning sections, while the other two will be from the GRC.
d. Eight (8) officials from the E-Government department, some of which will be part of the PGRC
e. Two (2) officials from the Contractor. These should be the Environmental and Social Safeguards Specialist and the Site Supervising Engineer.

Table 10. Training Programme for PIU and Public and Private Sector Institutions

Training Program for PIU and Stakeholders		
Days of Training	**Recommended Type of Training (Training Activity)**	**Target Group**
Day 1	**Environmental and Social Management Plan** 1. Brief description of the Project 2. World Bank safeguard policies 3. Environmental and social screening process, 4. Public consultations and engagement 5. Environmental and Social Impacts and their mitigation 6. Environmental and Social Management Plan development and approvals 7. Disclosure, Capacity building and awareness of the ESMP 8. Implementation of the Environmental and Social Management Plan 9. Contract management - Supervision, inspection and monitoring of contractor works 10. ESS Reporting	All

Day 2	**Grievance Redress Mechanism** Project GRM Objectives of the GRM GRM Manual GRM Institutional Framework GRM Procedures Grievance handling timelines GRM Communication GRM Reporting GRM publicity and awareness campaign	Members of Grievance Redress Committees and Contractor ESSS

9.3 Proposed Capacity Building and Training Budget

The training will be conducted in Lilongwe where the Data Centre site is located. Logistical arrangements will be made for those coming from outside of Lilongwe. The budget has therefore considered the travel, accommodation, venue, meals and refreshments for the two-day training. Table 11 provides a breakdown of the training expenses for the Data Centre sub-component whose total is **$6,694.20**. For the combined training that will be conducted for all the sub-components, the individual budgets will be consolidated.

Table 11. Training Budget

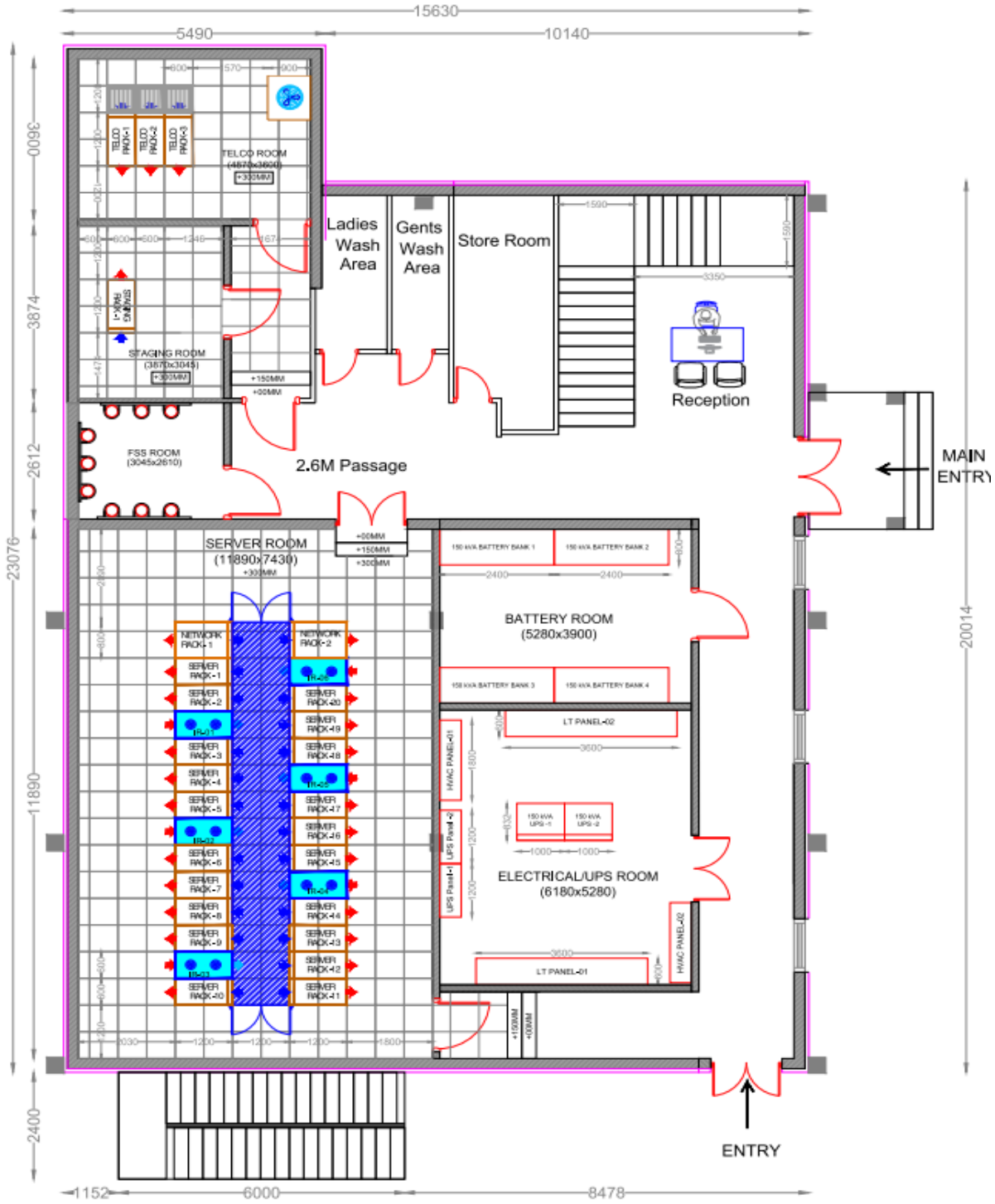
Training Budget					
Item	**Number of Participants**	**No of Nights**	**Quantity**	**Unit price**	**Total**
Allowances Drivers	8	3	1	28	672.00
Allowance Participants	2	3	1	28	168.00
Allowance Participants	4	3	1	32.7	392.40
Allowance Participants	4	3	1	46.2	554.40
Fuel (BT-LL)	4	2	7	146.2	1023.40
Fuel (Local Running)	8	2	12	12	144.00
Refreshments	1	2	33	20.00	1320.00

Lunch	1	2	33	20.00	1320.00
Conference	1	2	2	550	1100.00
TOTAL					**6,694.20**

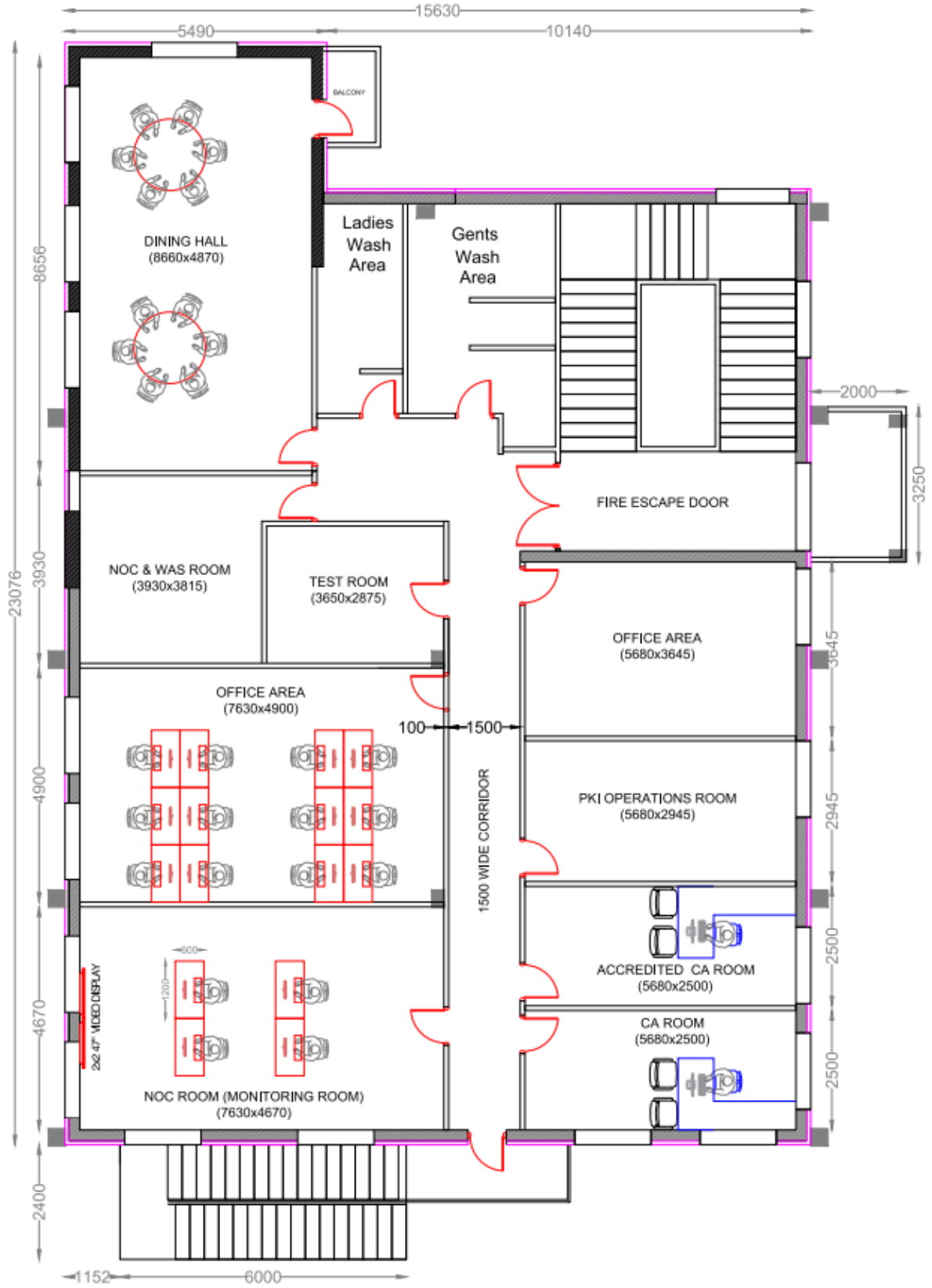
APPENDICES

Appendix 1: Proposed sketches for Data Centre Facility

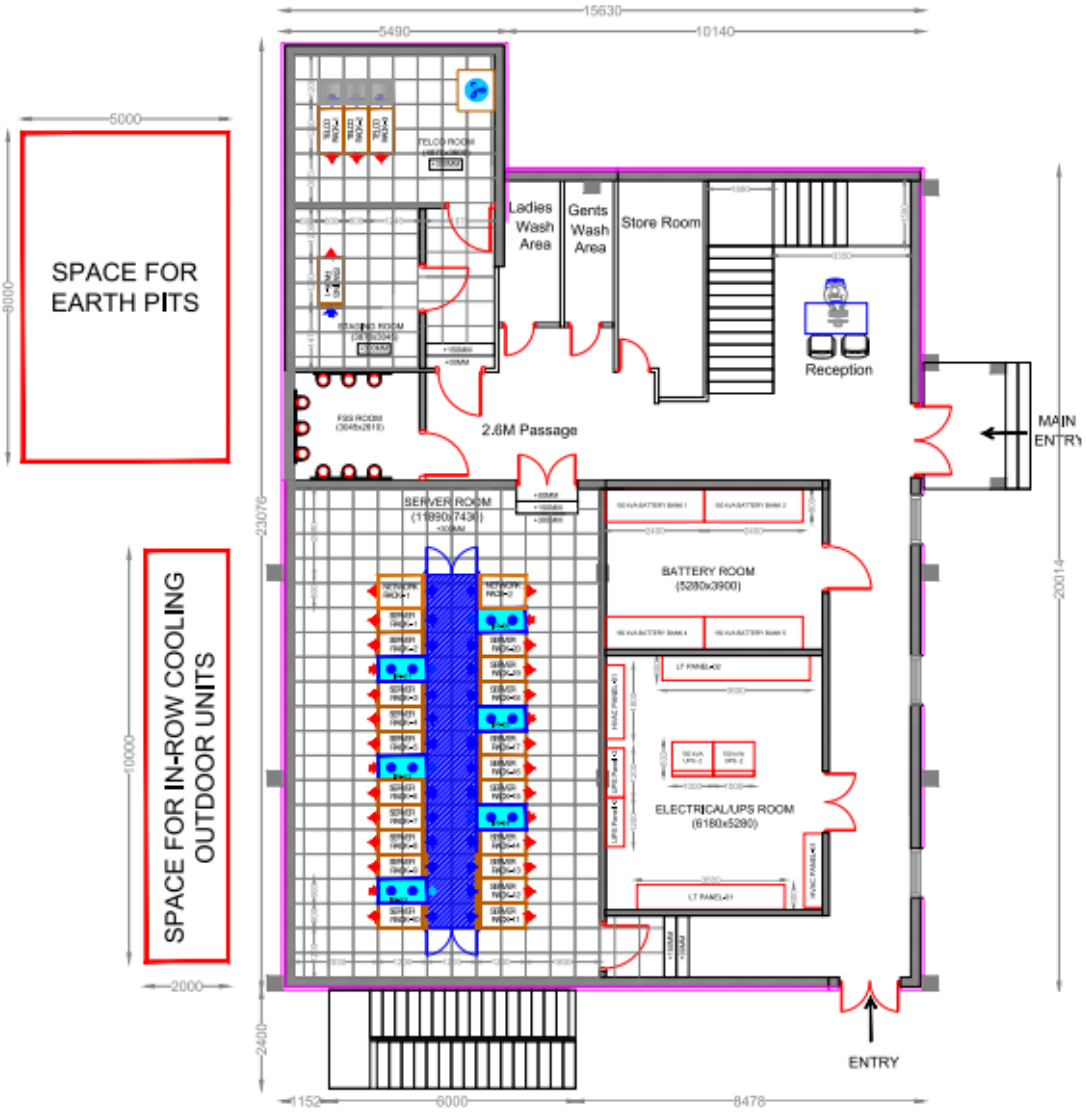
Ground floor layout for the Data Centre building (All dimensions in mm)



First floor layout for the Data Centre building



Ground floor layout and exterior space requirements for the Data Centre



OVERALL LAYOUT

Appendix 2:Consultation Register

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DIGITAL MALAWI PROGRAM PHASE 1: DIGITAL FOUNDATIONS PROJECT

PUBLIC CONSULTATION REGISTER

SUB-COMPONENT: DISTRICT:

DATE	NAME	GENDER	POSITION	INSTITUTION	CELL NO & EMAIL	SIGNATURE
23/7/22 23/6/22	Fraris Bisika	M	Principal Secretary	Department of e-Govt	0999972900	
23/6/22	PATRICK MACHIRUM	M	Director	"	0999842402	
23/6/22	Constance Chongwe	F	Systems Analyst	"	0881200860	
23/6/22	Andrew Kachikho	M	Programmer	"	0999957720	
23/6/22	Pamela Kabwadza	F	Principal Administrative Officer	"	0999810908	
23/6/22	Samson C. Kondowe	M	Principal Human Resource Management Officer	"	0999007126	

Samsonkondowe@ict.gov.mw or Samsonikondowe@gmail.com

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Public Private Partnership Commission

DIGITAL MALAWI PROGRAM PHASE 1: DIGITAL FOUNDATIONS PROJECT

PUBLIC CONSULTATION REGISTER

SUB-COMPONENT: DISTRICT:

DATE	NAME	GENDER	POSITION	INSTITUTION	CELL.NO & EMAIL	SIGNATURE
23/06/22	Antony Gomani	Male	Messenger	E- Government	0996446423 antonygomani@gmail.com	[illegible]
23/06/22	Jeston Chipote	Male	Driver	E- Government	0999258942	[illegible]
23/06/22	Agness Kawiza (Mrs)	Female	Machine Operator	E - Government	0882385511	[illegible]
23/06/22	Fyson Mdaba	Male	Driver	E - Goverment	0999639258	[illegible]
23/06/22	Racheal Mtambo	female	Cleaner	E - Goverment	0995416629	[illegible]
23/6/22	Eunice Bandah	Female	cleaner	E - Gorvernent	0996392753	E-Banda

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DATE	NAME	GENDER	POSITION	INSTITUTION	CELL.NO & EMAIL	SIGNATURE
23/06/22	Isaac Kanyemba	Male	Student	NACIT LL	0881335614	
23/06/22	Caleb Namwila	male	Student	Nacit LL	0992247334	
23/06/22	Lonjezo Dzvedzeke	Male	Student	Nacit LL	0993456899	
23/06/22	Tanondwa Phiri	Female	student	Nacit LL	0884333777	
23/06/22	Zenab Patel	Female	student	Nacit LL	0994440464	~~Zpatel~~
23/06/22	JAMES SULUMA	MALE	STUDENT	NACIT LL	0993709826	
24.06.2022	ENG. G. C. MAMBA	M	DIRECTOR IRRIGATION	IRRIGATION HQ	0888851821	

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DIGITAL MALAWI PROGRAM PHASE 1: DIGITAL FOUNDATIONS PROJECT

PUBLIC CONSULTATION REGISTER

SUB-COMPONENT: **DISTRICT:**

DATE	NAME	GENDER	POSITION	INSTITUTION	CELL.NO & EMAIL	SIGNATURE
24/06/22	MOSES MKUMPHA	M	CHIEF MONUMENTS OFFICER	DEPT. OF MUSEUMS & MONUMENTS	0999111029 mosesmkumpha@yahoo.com	
30/06/22	THEMBA NYIRENDA	M	ASS. SERVICES ENGINEER	DOB - SOUTH	0998186220 thembanyirenda@yahoo.com	
30/06/2022	IVY PHIRI	F	SENIOR ARCHITECT	BUILDINGS DPT - SOUTH	0881923584 nankapaivy@gmail.com	
11	LIMBIKANI JULIASUICA	M	ASSISTANT CHIEF ARCHITECT	11	0888376545 lisuka0409@gmail.com	
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DATE	NAME	GENDER	POSITION	INSTITUTION	CELL.NO & EMAIL	SIGNATURE
23/06/2022	A. Kanyanta	female	Principal	NACIT	0881626 23	
23/6/2022	D. Manyauka	female	Principal lecturer	NACIT	0999105420	
23/6/22	ANDREW NKHOMA		DRIVER	NACIT	0999523022	
24/6/22	M. CHINGACHA	male	AD	PMRA	0991496675	
24/6/22	Modester Chunda	female	Development Control Officer	LCC	0888149772	
24/06/22	T. MKAKA	MALE	DEPUTY DIRECTOR HEALTH	LCC	0955572208	
11	JORLEX KAMTOLOMA	M	DD-PHS	LCC	0993388979	

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DATE	NAME	GENDER	POSITION	INSTITUTION	CELL.NO & EMAIL	SIGNATURE
24.06.22	R. C. HAMISI	M	SENIOR PRINTER	GOVERMENT PRINT	0999939067	
24/6/22	G. Phiri	F	Senior P. Asst.	Government Print	0993755022	
24/6/22	M. KAPASULA	M	Senior P Assistant	Government Print	0999747466	
24/6/22	M. Nkhoma	M	Senior Ass. Printer	Government Print	0994[illegible]	

Appendix 3: Environmental and Social Rules for Contractors

These Environmental and Social Rules for Contractors are prepared for all the contractors and their subcontractors to be engaged for the Construction of an existing building, supply, installation and commissioning of a Data Centre facility project. The guidelines include provisions for proper management of the construction site, safe storage of construction materials and safe disposal of wastes.

General Considerations

- The contractor shall, in all his activities, ensure maximum protection of the environment and the safety and health of his workers as well as the communities around the physical boundaries of the project area.
- Before any construction works begin, the contractor shall ensure that the relevant environmental permits and title deeds for land where the project is sited have been obtained from the Director General of Environmental Affairs and/or the Commissioner for Lands.
- In general, the contractor shall familiarize himself with the Environmental and Social Management Plan. Specifically, the contractor shall make every effort to follow and implement the mitigation measures of the ESMP to the satisfaction of the client and all relevant agencies.
- The contractor shall work in cooperation and in coordination with the PIU's Environmental and Social Safeguards Department and/or any other authority appointed to ensure that the social and environmental work is performed according to the provisions of the Environmental and Social Management Plans for Data Centre sub-component.
- The contractor shall always keep on site and make available to Environmental Inspectors or any authorized persons, copies of the Contractor- ESMP for the monitoring and evaluation of environmental and social performance of the mitigation measures.

Acquisition of Construction Materials

- The contractor shall ensure that construction materials such as sand, quarry stone, soils or any other construction materials are acquired from approved suppliers and that the production of these materials by the suppliers or the contractor does not violate the environmental regulations or procedures.

Movement and Transportation of Construction Materials

- The movement and transportation of construction materials to and within the construction sites shall be done in a manner that generates minimum impacts on the environment and on the community, as required by the ESMP.

Storage of Construction Materials and Equipment

Construction materials shall be stored in a manner to ensure that:

- There is no obstruction of service roads, passages, driveways and footpaths;
- Where it is unavoidable to obstruct any of the service paths, the contractor shall provide temporary or alternate by-passes without inconveniencing the flow of traffic or pedestrians;
- There is no obstruction of drainage channels and natural water courses;
- There is no contamination of surface water, ground water or the ground;
- There is no access by public or unauthorized persons, to materials and equipment storage areas;
- There is no access by staff, without protective clothing, to materials and equipment storage areas;
- Access by public or unauthorized persons to hazardous, corrosive or poisonous substances including lagging, sludge, chemicals, solvents, oils or their receptacles such as boxes, drums, sacks and bags is prohibited;
- Access by staff, without the appropriate protective clothing, to hazardous, corrosive or poisonous substances including asbestos lagging, sludge, chemicals, solvents, oils or their receptacles such as boxes, drums, sacks and bags is prohibited.

Community Interaction

- The Contractor and workers will be lodging in a camp to minimize community interaction with the aim of lowering the risk of spread of HIV/AIDS and disturbing marriages.
- Workers will be subjected to the laws of the land should they be found in gender violence, inappropriate relationships with minors, rape and impregnation without consent.
- Interaction with the community will be overseen by the community leadership who will hold the mandate to report to Government authorities any contractor workers proved to breach peace of the community. The law shall also take its course in such incidents.

- The contractor and workers will settle all bills incurred within the community before their final payment is made by the client.
- The contractor will enable free and open access of the Grievance Redress Mechanism as needed by the communities.
- The contractor has the responsibility to relay these rules to workers.

Commitment to Abiding by the Rules

- All contractors will distribute and explain these rules and all workers regardless of rank, position, origin, skills, race and qualifications will be required to sign the commitment.

Appendix 4: Construction Waste Management Plan

Safe Disposal of Construction Waste

- Construction waste includes but is not limited to combustion products, dust, metals, cables, rubble, timber, and oil. Hence construction waste in the case of this project constitutes solid, and gaseous waste.
- In performing his activities, the contractor shall use the best practical means for preventing emissions of noxious or offensive substances into the air, land and water. He shall make every effort to render any such emissions (if unavoidable) inoffensive and harmless to people and the environment.
- The contractor shall, in particular, comply with the regulations for disposal of construction/installation wastes, dust, metals, cables, rubble and timber.
- Hazardous wastes shall be treated and disposed of in conformity with the national regulations and where applicable, with the supervision of qualified personnel.

Appendix 5: Occupational Health and Safety of Workers Commitment

- The contractor shall prepare a Health and Safety management plan including a Health and Safety Manual and Policy.
- All workers shall be regularly sensitized on safety regulations on the site.
- The Contractor shall ensure employment of skilled workers and endeavour to train all employees in health and safety management.
- The contractor shall provide all necessary protective clothing for workers exposed to hazardous and risky work activities.
- The contractor shall be guided by and shall adhere to the relevant national occupational health and safety regulations on the site.
- The contractor will enable facilitation of the Grievance Redress Mechanism (GRM) to be freely used and accessed by contractor workers and managed by PIU.
- The contractor shall maintain on the site first aid kits for male and female workers.
- Workers shall be provided with clean potable water whilst on the site.
- Workers shall be provided with washrooms.

Appendix 6 Labour Management Measures

The contractor will commit to to abide by the LMP for DMAP and do among other things:

- recruit skilled labourers from within the local community where possible. However, most of the unskilled labour will be sourced within the local community.
- The contractor will be expected to draw contracts for all workers and a simplified version for non-skilled labourers. The contracts should be in the preferred language that the workers will be able to understand
- The contract/MOU will contain commitments on remuneration amounts to be paid during the works period, holidays, leave grants if applicable, dates of payments, modalities of payments and commitment to accepting the offer as proposed.
- Workers' rights relating to working hours, wages, occupational health and safety of workers, forced labour etc. shall be addressed through the set GRM for the project. Supervisors will also be required to sign and adhere to a code of conduct that includes clauses on protection of workers' rights.
- The contractors will ensure that the rights of the children will be protected from any environment, which abuses their rights through GRMs and codes of conduct.
- Develop and implement procedures to identify trafficking victims among vulnerable populations. These standard operating procedures should include indicators of human trafficking tailored to local circumstances.
- The contractor shall ensure that no trafficked persons will be employed in connection with the project.
- The contractor will work with local leaders in the project areas to sensitize communities on human trafficking.
- The contractor should make reference to the project's labour management procedure provided in the link:

Appendix 7: Child Protection Plan

The safety of the children in the surrounding community is paramount. The objective of this procedure is thus to ensure that all construction works are done in a safe manner safeguarding the lives of the children. This Plan provides simple steps for safeguarding children for the duration of the project. It is the responsibility of all construction personnel to ensure that the guidelines stipulated in this plan are adhered to.

Highlighted on this document are the actions and procedures that they are expected to adhere to during the construction phase.

- It is strictly forbidden for Employees of this Project to engage in sexual relations with a minor. According to the laws of Malawi, a minor is classified as 18 years and below. Such an act will entail immediate dismissal as well as reporting to the Malawi Police Service.
- All construction team members will go through the safety induction prior to commencement of works. Child safety is of paramount importance and this will be part of the initial induction.
- Traffic control plans highlighting specific routes to be used by construction and delivery vehicles and equipment will be prepared which will take into consideration the safest routes to each site.
- The basic principle used to determine these routes will be to ensure, wherever possible, that access routes are set out to minimize driving in areas where children frequent to play such as soccer fields and schools.
- All equipment operators will be informed to always be aware that there may be children in the vicinity of their operations and to exercise caution when driving and operating equipment.
- Flag persons will be posted on areas where delivery and construction vehicles and construction equipment cross or enter public roads used by the general public and children.
- The flag persons will not only direct delivery and construction vehicles and construction equipment; they will also alert drivers and operators of children crossing or moving along the roads.
- Construction warning signs will be posted to notify children of the construction activities.

- Any pedestrian routes which are used by children that pass through the construction sites will also be barricaded off for the children's safety.
- The barricades around the construction sites will always be maintained in a good state so that they will always be visible anytime.
- The construction area will be strictly off-limits to all children so that they will not be exposed to any construction hazards.

Appendix 8: Gender based Violence Prevention Plan

Gender Based Violence is any conduct, comment, gesture, or contact perpetrated by an individual based on gender on the work site or in its surroundings, or in any place that results in, or is likely to result in, physical, sexual, or psychological harm or suffering to another individual without his/her consent, including threats of such acts, coercion, or arbitrary deprivations of liberty.

The populations at high risk of GBV are women and girls because gender-based violence is largely rooted in societal norms that perpetuate power differentials between men and women. Some of the forms of gender based violence that could arise from the project includes: Rape and sexual assault; Sexual harassment; Unwanted sexual advances including touching Physical violence/ assault; Use of abusive, sexually provocative, demeaning or culturally inappropriate language; Domestic violence; Sexual interactions that are not agreed to with full consent by all parties; Exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading or exploitative behaviour; Discrimination against women and children;

Generic mitigation measure

To mitigate the risks of the GBV risks associated with the project, the following general mitigation measures will have to be applied before and during the implementation of subprojects:

- Sensitize communities on GBV risks of the project during stakeholders' engagement prior to implementation of subprojects;
- Develop and institute an effective grievance redress mechanism and sensitize the community on the same before implementation of subprojects;
- Ensure that code of conduct is signed and understood by all contractor staff;
- The contractor should include a GBV response proposal in the contractor ESMP and should be evaluated prior to project implementation;
- Provide separate facilities for men and women; and
- Provide appropriate signage on GBV in the local language.
- Some serious risks of GBV such as rape, sexual assault and physical violence should be reported to the Police as early as possible as they are criminal in nature.

Appendix 9: HIV/AIDS Workplace Policy and Training on HIV/AIDS for workers.

- The contractor shall prepare and adopt an HIV/AIDS Workplace Policy for the construction site.
- The contractor shall arrange for HIV/AIDS training programmes for the construction crews to ensure their understanding of the relevant issues. These will be budgeted elements within the Bill of quantities for a construction project.
- Appropriate IEC materials shall be distributed to workers on the site.
- Both male and female condoms shall be distributed to workers on the site.

Appendix 10: COVID-19 Response and Management Plan

The COVID-19 pandemic has warranted projects to undertake extra measures to ensure the protection of work sites and project employees and the surrounding communities. In addition to mitigation measures provided in this document, further guidance is provided in this section to assist contractors and their employees in managing and responding to COVID-19.

COVID-19 Information

Information dissemination and training are an effective way to reduce the risk for both the company and the general public.

- The Contractor is advised to develop and provide information on good practices for preventing COVID-19 transmission, particularly observing recommendations on social distancing, and for training staff to recognize the symptoms of COVID-19 and understand their required response, following suggestions provided within this document.
- There should be no discrimination against or stigmatization of persons affected by COVID-19 or their families.
- The Contractor should identify communication channels (for example, SMS, WhatsApp and email) within the company to address workers' concerns on an ongoing basis.

Management of Sick or Potentially Sick Employees

To prevent potentially infected staff from entering the workplace and infecting co-workers, the company should ask workers to stay away from work in cases where they exhibit any COVID-19 symptoms or have been in close contact with a confirmed COVID-19 patient during the previous 14 days.

The company should review its human resources policies related to sick leave and consider changes, which may be temporary, to ensure that potentially sick staff do not feel pressured to attend work, thereby risking transmitting the virus to the rest of the workforce.

A short questionnaire could be used. Workers should only report to work if they answer "no" to all the questions.

The following is an example:

- Have you, in the last two weeks, been in close contact with a person who has COVID-19?
- Have you, in the last two weeks, been in a country/region with a high number of cases of COVID-19?
- Do you have a fever?
- Have you used medications such as paracetamol or aspirin to suppress fever in the last 24 hours?
- Are you coughing (even mildly)?
- Do you currently experience shortness of breath?

COVID-19 Prevention measures

Cough hygiene

Workers should be instructed to follow the cough etiquette outlined below to reduce these risks: Cover the mouth and nose with a tissue when coughing or sneezing, and dispose of the used tissue in a wastebasket.

When no tissue is available, cough or sneeze into the upper sleeve or elbow, not into the hands. Clean hands after coughing or sneezing, preferably by thorough water-soap handwashing or use a hand sanitizing gel.

Social distancing

To prevent person-to-person infection, it is important to minimize direct contact as much as possible. Where people are regularly working or meeting, a safe distance of 2 meters (six feet) between people should be observed.

The Contractor should Adjust workplace design and work processes to improve social distancing.

Inform people about the hazards of close contacts, including with direct co-workers, and promote alternative behaviours, such as maintaining safe distances and using alternatives for handshakes.

Consider establishing alternating work days or adding extra shifts to reduce the total number of employees in a facility at a given time, allowing them to maintain the recommended distance from each other, while maintaining a full onsite work week.

Hand sanitation

Frequent water-soap handwashing is critical in preventing infection in the workforce. WHO recommends rinsing and washing hands with soap for at least 20 seconds, rinsing again, and then using paper, such as a paper towel,
when turning off the faucet.
The company should promote frequent and thorough water-soap hand washing and provide enough places for employees to wash their hands. If soap and running water are not immediately available, provide alcohol-based hand rubs containing at least 60% alcohol.

Cleaning and disinfecting

To prevent the spread of the virus, the Contractors employees should frequently – and at least daily - clean touched surfaces, instruments and equipment used in the project.

Health care in remote areas

Ensure, where possible, that staff have adequate access to medical consultation.

Primary health care should always be provided by qualified medical professionals in accordance with local regulations.

Appendix 11: Emergency Preparedness Plan

An emergency event is an unanticipated incident, arising from both natural and manmade hazards, typically in the form of fire, explosions, leaks or spills, which may occur for a variety of different reasons, including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather or lack of early warning.

The contractor will prepare an Emergency Response Plan (ERP) in coordination with the relevant local authorities and the affected community, and will consider the emergency prevention, preparedness and response arrangements put into place with project workers.

An ERP will include, as appropriate:

- Engineering controls (such as containment and shutoff systems) proportionate to the nature and scale of the hazard;
- Identification of and secure access to emergency equipment available on-site and nearby;
- Notification procedures for designated emergency responders;
- Diverse media channels for notification of the affected community and other stakeholders;
- A training program for emergency responders including drills at regular intervals;
- Designated coordinator and contact details for ERP implementation; and
- Measures for restoration and clean-up of the environment following any major accident.

The contractor will document its emergency preparedness and response activities, resources, and responsibilities, and will disclose appropriate information, as well as any subsequent material changes thereto, to affected communities, relevant government agencies, or other relevant parties.

Appendix 12: Codes of Conduct

This Appendix presents two Codes of Conduct (CoC) for use as:

1. Contractors Code of Conduct: Commits the contractor to addressing Gender Based Violence (GBV) and Violence Against Children (VAC) issues.
2. Individual Code of Conduct: Code of Conduct for each individual working on the Digital Malawi Program Phase I: Digital Foundations Project.

Contractors Codes of Conduct

Contractors are obliged to create and maintain an environment which prevents social risks. They have the responsibility to communicate clearly to all those engaged on the project, the behaviours which guard against any form of abuse and exploitation. In order to prevent Social risks, the following core principles and minimum standards of behaviour will apply to all employees without exception:

1. GBV or VAC constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment and/or contract. All forms of Social risks including grooming are unacceptable, be it on the work site, the work site surroundings, or at worker's camps of those who commit GBV or VAC will be pursued.
2. Treat women, children (persons under the age of 18) and people with disability with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic, cultural beliefs/practices, or other status.
3. Do not use language or behaviour towards men, women or children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
4. Sexual activity with children/learners under 18 (including through digital media) is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.
5. Exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading or exploitative behaviour is prohibited.
6. Sexual interactions between contractor's employees and communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited (see definition of consent above). This includes relationships

involving the withholding, promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex.

7. Where an employee develops concerns or suspicions regarding acts of GBV or VAC by a fellow worker, whether in the same contracting firm or not, he or she must report such concerns in accordance with established Grievance Redress Mechanism (GRM) that protects the identities of victims and whistle-blowers.
8. All contractors are required to attend an induction prior to commencing work on site to ensure they are familiar with the social risks and Codes of Conduct.
9. All employees must attend mandatory training once a month for the duration of the contract starting from the first induction prior to commencement of work to reinforce the understanding of the institutional social risks Code of Conduct.
10. The Contractor shall ensure provision of financial resources and support compliance to occupational health and safety requirements for all workers.
11. The Contractor shall ensure that workers dress appropriately i.e. dress in a way that: -
    - Is unlikely to be viewed as offensive, revealing, or sexually provocative.
    - Does not distract, cause embarrassment or give rise to misunderstanding
    - Is absent of any political or otherwise contentious slogans
    - Is not considered to be discriminatory and is culturally sensitive
12. The Company shall ensure provision of financial resources and training to prevent spread of HIV/AIDS.
13. The company shall comply with the national, international labour laws and all applicable laws.
14. All contractors must ensure that their employees sign an individual Code of Conduct confirming their agreement to support prevention of social risks activities.
15. The contractor should ensure equitable access to limited natural resources (e.g. water points) to avoid conflicts with local communities
16. Contractors shall ensure that the rights of workers including working hours, wages etc are protected at all times.
17. Where possible, the contractor should ensure employment of local workforces especially where unskilled labour is required to mitigate social risks

18. Contractor should provide hoarding around the construction site

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities. I understand that any action inconsistent with this Code of Conduct or failure to act mandated by this Code of Conduct may result in termination of the contract.

FOR THE CONTRACTOR

Signed by: _____

Signature: _____

Title: _____

Date: _____

Workers' Code of Conduct

I, _____, acknowledge that preventing any misconduct as stipulated in this code of conduct, including gender-based violence Gender Based Violence (GBV), child abuse/exploitation (CAE) are important. Any activity which constitutes acts of gross misconduct are therefore grounds for sanctions, penalties or even termination of employment. All forms of misconduct are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit any such misconduct will be pursued as appropriate.

I agree that while working on this project, I will:

1. Consent to security background check;
2. Treat women, children (persons under the age of 18) and persons with disability with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, birth or other status; Not use language or behaviour towards men, women or children/learners that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate;
3. Not participate in sexual activity with children/learners—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defence;
4. Not exchange money, employment, goods, or services for sex, with community members including sexual favours or other forms of humiliating, degrading or exploitative behaviour;
5. Not have sexual interactions with members of the communities surrounding the work place, worker's camps and fellow workers that are not agreed to with full consent by all parties involved in the sexual act (see definition of consent above). This includes relationships involving the withholding, promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex - such sexual activity is considered "non-consensual" within the scope of this Code;
6. Attend trainings related to HIV/AIDS, GBV, CAE, occupational health and any other relevant courses on safety as requested by my employer;

7. Report to the relevant committee any situation where I may have concerns or suspicions regarding acts of misconduct by a fellow worker, whether in my company or not, or any breaches of this code of conduct provided it is done in good faith;

With regard to children under the age of 18

- Not invite unaccompanied children into my home, unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labour, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labour laws in relation to child labour.

8. Refrain from any form of theft for assets and facilities including from surrounding communities.
9. Remain in designated working area during working hours;
10. Refrain from possession of alcohol and illegal drugs and other controlled substances in the workplace and being under influence of these substances on the job and during workings hours;
11. Wear mandatory PPE at all times during work;
12. Follow prescribed environmental occupational health and safety standards;
13. Channel grievances through the established grievance redress mechanism.

I understand that the onus is on me to use common sense and avoid actions or behaviours that could be construed as misconduct or breach this code of conduct.

I acknowledge that I have read and understand this Code of Conduct and the implications have been explained with regard to sanctions on-going employment should I not comply.

Signed by: _____

Signature: _____

Date: _____

FOR THE EMPLOYER

Signed by: _____

Signature: _____

Date: _____