University of Malawi

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

FOR

CONSTRUCTION OF THE UNDERGRADUATE TEACHING COMPLEX FACILITY AT THE UNIVERSITY OF MALAWI, ZOMBA

University of Malawi
P. O. Box 280
ZOMBA

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CERC	Contingent Emergency Response Component
CESMP	Contractor's Environmental Social and Management Plan
CGRC	Community Grievance Redress Committee
CoC	Code of Conduct
DC	District Commissioner
DEC	District Executive Committee
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMA	Environment Management Act
ENRMC	Environment and Natural Resources Management Consultants
ESCOM	Electricity Supply Corporation of Malawi
ESIA	Environment and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GBV	Gender Based Violence
GDP	Gross Domestic Product
GIS	Geographic Information System
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
IDA	International Development Association
IIT	Institutional Implementation Team
MAREP	Malawi Rural Electrification Programme
MEPA	Malawi Environmental Protection Authority
MGDS	Malawi Growth and Development Strategy
ODeL	Open Distance e-Learning
NCHE	National Council for Higher Education
NCIC	National Construction Industry Council
NEP	National Education Policy
NSO	National Statistical Office of Malawi
PAPs	Project Affected Persons
PPE	Personal Protective Equipment
PSIP	Public Sector Investment Programme
RRI	Respiratory Related Infections
SAVE	Skills for a Vibrant Economy
SEA	Sexual Exploitation and Abuse
SDG	Sustainable Development Goal
SEP	Stakeholder Engagement Plan
SME	Small and Medium Enterprises
SRWB	Southern Region Water Board
SSB	Stabilized Soil Blocks
STI	Sexually Transmitted Infection
TA	Traditional Authorities
ToRs	Terms of Reference
TEVET	Technical, Entrepreneurial, and Vocational Education and Training

TEVETA	Technical, Entrepreneurial, and Vocational Education and Training Authority
UDHR	Universal Declaration of Human Rights
UNIMA	University of Malawi
VSBK	Vertical Shaft Brick Kiln
WB	World Bank
WSP	Wastewater Stabilization Pond
ZCH	Zomba Central Hospital

EXECUTIVE SUMMARY

The University of Malawi, with support from the World Bank through the Skills for a Vibrant Economy (SAVE) project, plans to construct an undergraduate teaching complex facility at the University of Malawi in Zomba. SAVE is a five (5) year project from 2021 -2026, with a combination of funding from a loan and grant totaling US$100 million from the International Development Association (IDA) of the World Bank Group to the Government of the Republic of Malawi.

SAVE has four Components which are; 1- Supporting increased access to skills development programmes in higher education; 2- Supporting increase in access to TEVET skills development; 3- Tertiary education system strengthening, project management, Monitoring and Evaluation, and Communications; and 4- Contingent emergency response component.

UNIMA will implement the project in a four-pronged approach within improving access and equity, improving market relevance and capacity building. The first involves development of curriculum documents for certificate and diploma programmes for natural sciences and short courses for the industry; reviewing existing programmes within social science and education to come up with degree programmes that should inculcate a culture of inclusiveness in all working or social environments beyond the teaching fields and; management, leadership, planning and financing in education; reviewing the current University Certificate of Education (UCE) programme and mounting regular short programmes targeting higher education lecturers and mangers; and introducing short programmes for higher education non-teaching managers. The second shall involve increasing enrolment in the developed target programmes. Thirdly, the University shall concentrate on construction of classroom complex to support increased enrolment and newly developed programmes. The fourth shall be human resource capacity development which includes training for faculty and support staff. These activities are expected to be implemented with SAVE implementing period from 14th October 2022 to 30th June 2026 as indicated in the Project Appraisal Document (PAD).

The total cost for the project is 5.5 million US$ of which 3.84 million US$ will be used for increasing access 0.11US$ million will be used for improving equity and 1.55US$ million for improving quality and market relevance.

Construction of the undergraduate teaching complex facility aims at improving academic excellence, quality research, and access to market-relevant skills development programs. Specifically, the project will be implemented in order to increase student enrollment, improve the quality of teaching and research, training high-level human resources, provide research and consultancy services, and disseminate knowledge for societal advancement. Construction activities for the project will involve building of a three-story undergraduate teaching complex facility, which will comprise lecture rooms, offices, pantries, and washrooms. The construction phase will span from November 2023 to December 2024, employing approximately 100 workers, 40% of whom will be women. The project will be implemented in four phases, namely planning, construction, demobilization, and operation and maintenance phase. Construction will be of plain concrete strip footing, load bearing cement block walls in foundations, load bearing cement block walls, reinforced concrete ground slab, steel roof structure, steel door frames and windows, timber doors, lime putty

plaster and paint to the rest of the walls internally, fair face pointed externally, joinery fittings and electrical services.

To ensure compliance with environmental and social management practices, an environmental and social management plan was conducted for the project. The ESMP has been developed to comply with both national as well as World Bank Environmental and Social Standards (ESS 1, ESS 2, ESS 3, ESS4 and ESS 8) requirements and the World Bank Environmental, Health and Safety Guidelines to ensure that the project is in line with sound national and international environmental and social management practices. The environmental and social assessment identified and evaluated potential environmental and social impacts, proposed measures to enhance positive impacts and measures to mitigate the negative impacts, and developed a monitoring plan for enhancing the positive impacts and mitigating the negative impacts.

The environmental and social assessment followed a methodology, which involved desk review, site investigation, and stakeholder consultations. The assessment identified some positive and negative impacts. Some of the positive impacts included increased student intake at the university, increased employment opportunity of skilled and non-skilled workers and academic staff and non-academic members of staff at the university, and improved teaching and learning at the University. Negative impacts include increased air pollution due to increased dust emission; increased noise pollution due to construction works; increased soil erosion; increased soil and water pollution due to spillage of hazardous materials; increased accident incidences due to construction works; increased generation of solid waste; increased risk of illicit behavior and crime; increased risk of HIV and AIDS and transmission of other sexually transmitted infections (STI); increased risk of safety of staff and students at the university during construction phase; increased risk of disturbance of teaching and learning activities at the university; increased risk of Gender Based Violence (GBV); increased risk of Sexual harassment; increased risk of Sexual Exploitation and Abuse (SEA); increased risk of domestic violence and marriage breakdown; increased risk of defilement and early marriages; increased risk of child and forced labour; increased risk of construction works induced traffic – traffic congestion; and increased risk of cholera cases.

To mitigate the negative impacts, the Contractor will implement various measures. The measures will require the Contractor to employ more people from the project area; cover all haulage vehicles carrying sand, aggregate and cement; wet and cover with tarpaulin during windy conditions all stockpiles of fine materials (e.g. sand and ballast); wet all access roads and exposed grounds in a manner and at a frequency that effectively keeps down the dust; inform local residents beforehand, via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of any noisy activities; plan properly for site clearance works so as to minimize the area of exposed soil at any given time; use tarpaulin to cover open piles of fine-grained materials (sand, marl, etc.) to prevent them from being washed away when it rains heavily; store and place all hazardous materials in appropriately bunded containers and on concrete floors; engage only those workers that are trained to operate specific machines and heavy equipment; provide mobile toilets; provide waste disposal bins; employ most of the unskilled workforce from the local communities who already have homes within the project area and therefore live with their families; sensitize all employees and the community at large on the dangers of

contracting HIV and AIDS and STIs and their prevention measures such as abstinence; sensitize community members on the different signs and their meanings; vehicles speed limit to be 20 km/hr; liaising with the university management from time to time on the critical times high noise levels will be generated; orient workers on the GBV issues; orient workers on sexual harassment issues; orient workers on Sexual Exploitation and Abuse issues; orient workers on Domestic Violence and Marriage Breakdown Management issues; coordinate with the Ministry of Gender, Children, and Social Welfare and the Police Department to carry out child marriage and early marriage awareness campaigns to workers and communities around the project site; orient the contractor and community members on child safety management; and prohibit employment of children under the age of 18 years.

Findings from the environmental and social assessment of the proposed construction of the undergraduate teaching complex facility at the University of Malawi showed that the proposed project will bring significant benefits in terms of increasing students intake at the university, increasing employment opportunity of skilled and non-skilled workers and academic staff and non-academic members of staff at the university, and improving teaching and learning at the University. Despite the benefits that the project will bring, the project will also trigger some negative impacts, which relate to the biophysical and socio-economic environment. The impacts are those with well-known mitigation measures typical of projects of this nature. The identified negative impacts can easily be mitigated thereby avoiding, minimizing or even eliminating their effects on the biophysical and socio-economic environment.

It is therefore recommended that the University should construct the proposed undergraduate teaching complex facility. The project will bring significant socio-economic benefits as observed. To enhance the positive impacts and mitigate the negative impacts, the Contractor will be obliged to develop the Contractor Environmental and Social Management and Monitoring Plan (CESMMP) to guide implementation of the mitigation measures that have been outlined in this ESMP during construction phase. The University will also be required to monitor implementation of the ESMP and ensure that the contractor makes environmental and social management an integral part of the construction and operation activities.

CHAPTER 1 INTRODUCTION AND BACKGROUND

1.1 Introduction

The University of Malawi (UNIMA), with support from the World Bank through the Skills for a Vibrant Economy (SAVE) Project (P172627) intends to construct an undergraduate teaching complex facility at the University of Malawi in Zomba. The construction works will complement the recently completed World Bank-financed Skills Development Project (P131660), which supported selected tertiary institutions in the country to improve access and market relevance of training in priority areas. When the construction activities are completed, the facilities will be used by academic and non-academic staff and students for academic excellence and quality research at the university.

Considering that construction activities for the project will generate a number of impacts on the bio-physical and socio-economic environment in the project area and beyond, the University of Malawi conducted an environmental and social assessment in accordance with the Terms of Reference (ToRs) provided in Annex 1 to identify potential environmental and social issues that the activities of the project will generate; assess the extent and significance of both positive and negative impacts; and come up with measures to enhance the positive impacts and measures to mitigate the negative impacts.

1.2 Project background

The SAVE project is a skills development project, with project development objective is to increase access, particularly for females, to labor market-relevant skills development programs, in participating institutions, targeting priority areas of the economy. The project is providing support to tertiary institutions (universities, colleges and technical and vocational institutions) to expand access to market-relevant skills and qualifications through a combination of demand and supply interventions. The proposed period of the project is five years, from 2021 to 2026. The source of funding is a combination of a loan and grant totaling US$100 million from the International Development Association (IDA) of the World Bank Group to the Government of Republic of Malawi.

The SAVE project is demand-driven where relevant institutions and training centers develop training programs to support various levels of occupations and skills from artisan to technicians and vocational trades, to managers and professionals. The focus is on developing market-relevant skills in collaboration and/or partnership with the private sector. The project focuses on women's empowerment through ensuring increased participation of female students. The focus of this project is also on digital technology as a mechanism to expand and improve access to skills training opportunities. This will be done through promoting utilization of existing open distance e-Learning (ODeL) facilities in universities, colleges and technical colleges and use of innovative technology for delivery of skills training in priority areas of the economy such as energy, education and skills, climate-smart agriculture, health, ICT etc.

1.3 Components of the SAVE project

The SAVE project consists of 4 Components which are; 1- Supporting increased access to skills development programmes in higher education; 2- Supporting increase in access to

TEVET skills development; 3- Tertiary education system strengthening, project management, Monitoring and Evaluation, and Communications; and 4- Contingent emergency response component

1.3.1 Component 1: Supporting Increased Access to Skills Development Programs in Higher Education

Under this component, nine public higher education institutions, Malawi University of Business Studies and Applied Sciences, Lilofngwe University of Agriculture and Natural Resources, Malawi University of Science and Technology, Mzuzu University, University of Malawi which is the subject of this ESMP, Kamuzu University of Health Sciences, Domasi College of Education, Nalikule College of Education, are being supported to expand enrollment from almost 31,000 in 2020 to over 60,000 by 2029 in priority areas of the economy. The project finances institutions to provide skills development opportunities offered through ODeL, face-to-face and blended models of instruction. The project supports increased market-relevance of the programs by ensuring private sector and industry engagement, updating existing curricula and developing new courses by participating institutions, expanding and improving existing infrastructure, providing students and staff opportunities for practical experience and industry attachments and supporting instructor and faculty professional development.

1.3.2 Component 2: Supporting Increase in Access to TEVET Skills Development

Under this component, the project will increase access to formal TEVET-level tertiary education in seven National Technical Colleges (Lilongwe, Soche, Salima, Nasawa, Mzuzu, Livingstonia and Namitete), selected public and private technical colleges and community skills development centers doubling the intake capacity. This will be done by targeting youth, particularly females, strengthen training capacities in priority sectors of the economy, providing grant funding especially to female students, investing in safe and gender-friendly facilities, supporting systematic development and application of institutional gender policies, and further training of teaching staff in gender sensitization and other measures to improve attractiveness of technical college training among girls. The project will also support building and rehabilitating training infrastructure, improve training quality including acquisition of needed equipment, machinery and tools or technologies, creating capacities to provide incubation services for self-employment promotion through national technical colleges taking their role as innovation hubs, spearheading digital skills development, deepening cooperation with industry, and piloting new curricula to serve wide variety of target groups including workers in industry, informal sector operators, unemployed, and others.

1.3.3 Component 3: Tertiary education system strengthening, project management, Monitoring and Evaluation and communications

Under this component, the project will support system-level capacity building to create a conducive policy environment for tertiary education including the provision of student financing through increased financing for student grants and loans by the Higher Education Student Grants and Loans Board, amendment of Student Grants and Loans Board Act and student financing options for TEVET. This component will also support

overall project management and implementation, M&E and communications to ensure effective coordination, implementation and reporting.

1.3.4 Component 4: Contingent Emergency Response

The Contingent Emergency Response Component (CERC) is included under the project in accordance with Bank Policy Investment Project Financing, for situations of urgent need of assistance and rapid reallocation of financing in the event of a natural, man-made disaster or crisis that has caused or is likely to imminently cause a major adverse economic and/or social impact.

1.4 Nature and scope of the construction works

The project is about construction of the undergraduate facility at the University of Malawi in Zomba, which will include seminar rooms, lecture rooms, laboratories, a mini conference room, office spaces, pantries, and washrooms. The infrastructure will be a single floor building. Construction activities will be carried out for a period of one year (November 2023 – December 2024) at the estimated cost of K4,000,000, 000.00.

About 100 people will be employed, including 6 civil engineers, 18 Contractor staff, 26 skilled workers, and 50 general workers. The target will be that 40% of the workers shall be women. Mechanisms/measures will be implemented to promote this target's achievement (e.g., incentives/penalties for the contractors).

Activities of the project will be implemented in four phases namely planning, construction, demobilization, and operation and maintenance phases. At present, the project is at planning and design stage where the developer is obtaining different permits and approvals for the project; conducting perimeter and topographic surveys; conducting feasibility studies, detailed engineering designs; preparing drawings; and conducting environmental and social impact assessment for the project.

1.5 Project Location

The University of Malawi is located in Zomba, the old Capital City of Malawi. It is about 2 km from Zomba’s main business center at a location called Chirunga. The proposed undergraduate facility will be constructed at an open space, which is surrounded by the Brown Chimphamba laboratory complexes and School of Education Offices, as shown in Figure 1.1.

Figure 1. 1 Land proposed for construction of the undergraduate facility.

The geographical coordinates of the proposed site for the undergraduate facility are 750785 Eastings and 8297527 Northings. Figure 1.2 provides a location map for the proposed undergraduate facility while Figure 1.3 shows existing establishments around the proposed undergraduate facility.

Figure 1. 2 Location map for the teaching complex to be constructed

Figure 1. 3 Site specific map of the undergraduate facility to be constructed

1.6 Project Proponent

The project proponent is, University of Malawi. Details of the project proponent are provided as follows:

Project Developer: University of Malawi
Project details: Construction of the undergraduate facility at the University of Malawi
Postal Address: University of Malawi, P. O. Box 280, Zomba
Contact Person: The Vice Chancellor
Email: vc@unima.ac.mw
Phone Number: +265 1 524 222

1.7 Project justification

The University of Malawi is a multidisciplinary institution founded on the philosophy of liberal education consisting of School of Education and faculties of Science, Law, Social Science, and Humanities. Given the diversity and size of faculties and programmes, the University is, and has been since its inception, the primary and largest source of trained human capital in Malawi for science and socio-economic development. Table 1.1 provides details of enrolment trends at the university from 2015 to 2020.

Table 1. 1 Details of enrolment trends from 2016-2022

	2016		2018		2019		2021		2022	
School	**Total**	**%F**	**Total**	**% F**	**Total**	**% F**	**Total**	**%F**	**Total**	**%F**
Education	936	42	1248	39	1458	36	1682	35	2165	34
Humanities and Social Science	693	51	990	52	1248	52	1501	52	2129	50
Law, Economics and Governance	396	42	607	43	879	42	988	42	1295	41
Natural and Applied Science	412	31	729	29	1209	31	1670	34	2375	35
School of Arts, Communication and Design	246	52	343	52	425	53	448	51	547	48
Total	**2506**	**49**	**2728**	**45**	**3619**	**43**	**4392**	**41**	**5030**	**40**

Source: UNIMA SARIS, 2016-2022

From Table 1.1, the University currently enrolls about 5,030 undergraduate students and a further 800 undergraduate students are enrolled in various programmes. With the increasing demand for university education, the university proposes to increase students' enrolment to 10,000 by 2025 in order to provide equitable access to quality market relevant education and to develop skills for sustainable growth of the country in line with the National Education Sector Investment Plan (2020 - 2030) and Malawi Vision 2063, which will in turn require construction of additional infrastructure at the university through the economic priority area of Education and Skills Development.

1.8 Project objectives

The objective of setting up the proposed project is to construct teaching and learning facilities enough to be used by staff (academic and non-academic staff) and students for academic excellence and quality research. Specifically, the project will assist to:

a) Increase student enrolment with emphasis on female students;
b) Improve the quality of teaching, learning, research and outreach activities through enhanced infrastructure, facilities and technology;
c) Train high level human resource that can meet development needs of the country and the international labor market;
d) Sustain provision of high-quality research and consultancy services; and
e) Disseminate knowledge, skills and competencies for advancement of humanity.

1.9 Justification of the ESMP

Section 31 of Environment Management Act (EMA) of 2017 provides that all development projects must get environmental clearance from the authority prior to obtaining other licenses and their implementation while the Environmental Impact Assessment Guidelines of 1997 provide guidance on the nature and size of projects that should be subjected to environmental and social impact assessment. Screening for the project as provided for by the guidelines showed that construction of the undergraduate facility at the University of Malawi requires preparation of an Environmental and Social Management Plan (ESMP). Further, the Environmental and Social Management Framework (2020) for the project showed that an ESMP should be developed for the project activities. This ESMP has therefore been developed to comply with both national as well as World Bank Environmental and Social Standards (ESS 1, ESS 2, ESS 3, ESS4 and ESS 8) requirements and the World Bank Environmental, Health and Safety Guidelines to ensure that the project is in line with sound national and international environmental and social management practices. Furthermore, screening of the project that was conducted by District Environmental Sub-Committee at Zomba District Council showed that an ESMP should be developed for the project rather than an ESIA, Annex 2.

1.10 Objectives of the ESMP

Specifically, the University of Malawi prepared this ESMP for the project in order to:

- identify and assess key potential environmental and social impacts including those on gender, which may be caused by the proposed construction works.
- propose measures that would enhance the positive effects of the proposed constructions and operation activities on both the environment and social components including gender issues in specific sites;
- propose measures that will mitigate the anticipated negative impacts of the proposed constructions and operation activities on both the environment and social components, including gender concerns in specific sites;
- conduct stakeholder consultative meetings which inform project key environment, social risks, and mitigation measures; and
- develop a costed ESMP monitoring plan with clear lines of responsibilities for key stakeholders.

1.11 Potential users of the ESMP

The ESMP has been prepared for use by different stakeholders to be involved in the planning, implementation, management and monitoring of the proposed project activities. Some of the users will include the University of Malawi; World Bank; Contractor; Zomba District and City Councils; Malawi Environmental Protection Agency (MEPA); and Ministry of Lands, Housing and Urban Development. The report contains useful information on policies and procedures to be adhered to, implementation modalities, analysis of potential environmental and social impacts and suggested mitigation measures at various stages of the project activities.

1.12 Methodology for preparing the ESMP

Environmental and social assessment for preparing the ESMP for the project was conducted between January and June 2021 and between June - November 2022. Environmental and social assessment for the project was conducted through literature review, field assessments, and stakeholder consultations.

1.12.1 Literature review (desk study)

Literature review reviewed different documents related to the project. The documents included the design report, feasibility study report, Environmental and Social Framework for the project, Zomba District Social Economic Profile, Environmental and Social Screening report for the project, Environment Management Act (EMA) of 2017 and other related national laws, guidelines and standards; and international frameworks and guidelines and standards such as the World Bank Environmental and Social Standards and the International Finance Corporation Performance Standards.

1.12.2 Field assessments

Field assessments involved physically going to the project sites to collect baseline information such as physical, biological and social economic information. The assessments were conducted initially from January - June 2021 and were validated from June – November 2022.

The assessment on the physical environment looked at climate, topography, soils, water resources geology, and land cover, which was collected through literature review and physical observations. The assessment on the biological environment looked at the existing flora and fauna, types and diversity both for the terrestrial and aquatic environment, which was collected through literature review, transect walks, and interviews with the local community members.

Assessment of flora and fauna included flora surveys, bird surveys, mammal surveys, reptiles and Amphibians Surveys, and macro-invertebrate Survey. The Consultant assessed ecosystem conditions and their services using the IFC Performance Standard 6, with particular attention on the Section articulating Protection and Conservation of Biodiversity. The Consultant conducted a subjective assessment of expected and observed abundance and diversity of sensitive species and ecosystems to supplement the categorization of the Ecosystem condition and their services.

1.12.3 Stakeholder Engagement Plan and Public Participation

Stakeholder Engagement and Public Participation Process with the community members affected by the proposed project is considered an important aspect of successful decision making in any of the environmental and social assessment processes. As such, Stakeholder engagement is a requirement by the Malawi Government and a mandatory process as stipulated in Section 2.2.2 of the Malawi EIA Guidelines of 1997 and the International Finance Corporation (IFC) Performance Standards (PSs). It is an important process through which stakeholders, including beneficiaries and members of the public living in the project areas, both public and private, are given an opportunity to contribute to the overall project design by making recommendations and raising concerns about the proposed project before the project is implemented. Specifically, stakeholder engagement was conducted in order to:

a) Inform stakeholders about the project, how the project may affect them, and solicit their opinions to manage such impacts;
b) Provide opportunities for stakeholders to discuss their opinions and concerns;
c) Manage expectations and misconceptions regarding the project;
d) Verify the significance of environmental and social risks and impacts identified;
e) Discuss potential impacts;
f) Verify the significance of environmental, social, and health impacts identified; and
g) Promote a sense of ownership for the Project.

Stakeholder engagement enabled the establishment of a communication channel between the general public and the team of consultants, the project proponents, and the Government, and the concerns of the stakeholders to be known to the decision-making bodies at an early phase of project development.

Stakeholder engagement was conducted using public meetings (where general information about the project was delivered, Q & A conducted), Focus Group Discussions with only those who will be potentially affected by the project' and Key Informant Interviews (KII) covered traditional leaders and other key figures in February 2021 and in July 2022 and a Stakeholder Engagement Plan is provided in Table 1.2.

Table 1. 2 Stakeholder Engagement Plan

Type of stakeholder	Meeting place	Date of the meeting	Objective	Message	Issues discussed	Method
Traditional leaders and community members around Chancellor College	Brown Chimphamba complex	16/2/2021 09:00 am	To brief the student representatives about the project and to solicit their inputs on the different impacts and how the impacts can be managed	Introduction of the project, background information to the project, providing a picture of the project, brief introduction of the roles of the environmental and social consultants	• Nature of the project; • Impacts that the project will generate in the project area and beyond; • most important features in the project area (protected areas, graveyards, historical sites, etc.) in the project impact area; • land ownership; • livelihood activities in the area; • employment opportunities; • Gender and Social Inclusion; • Counter – Trafficking in Persons; • Sexual Exploitation and Abuse (SEA); • Sexual Harassment (SH) risks; • gender and HIV and AIDS risks; • Access to natural resources; • The different impacts that the project will cause; • economic activities of the area; and • Assessment of environmental and social impacts that the project will bring.	Public meetings FGD and KII
Students representatives	Brown Chimphamba complex	17/2/2021 09:00 am	”	”	”	”
DESC (District Environment and Social Committee) members, Zomba District Council	Brown Chimphamba complex	26/2/2021 09:00 am	”	”	”	”
Academic members of staff	//	18/06/2022 09:00 am	”	”	”	”

1.12.4 Public meetings

The Consultant conducted a number of consultation meetings with different stakeholders at national, district, and community levels who were identified together with the client, University of Malawi during the kick-off meeting. At national level, the stakeholders consulted included Ministry of Education; University of Malawi; PIU; Ministry of Local Government; Ministry of Lands; Malawi Environmental Protection Authority; Ministry of Labour; Ministry of Women, Children and Social Welfare; Buildings Department in the Ministry of Transport and Infrastructure Development; Safeguards Unit and Water Resources Department.

At District level, the consultation meeting was held with the Environmental Sub – committee members, who were represented by Environmental Officer, Agricultural Officers, Irrigation Officer, Land Resources Officer, Youth Officer, Social Welfare Officer, Public Works Department, Health Officer, Forestry Officer, Labour Officer, Lands Officer; and Information Officer.

At community level, the Consultant conducted consultation meetings with Traditional leaders, Community members, Area Development Committee members, Village Development Committee members from Chikanda area; women groups, men and the youth. Specifically, the Consultants conducted stakeholder consultation meetings in order to:

- Inform the stakeholders about the project and its land requirements (if any);
- Provide opportunities for stakeholders to discuss their opinions and concerns;
- Manage expectations and misconceptions regarding the project;
- Verify the significance of environmental and social impacts identified;
- Disseminate concepts of the proposed Project activities to increase Project interest and awareness amongst the communities;
- Promote a sense of ownership for the Project; and
- Inform the process of developing mitigation measures for the negative impacts and enhancement measures for the positive impacts.

Some of the areas discussed at the different meetings included:

- Nature of the project;
- Impacts that the project will generate in the project area and beyond;
- most important features in the project area (protected areas, graveyards, historical sites, etc.) in the project impact area;
- land ownership;
- livelihood activities in the area;
- employment opportunities;
- Gender and Social Inclusion;
- Counter – Trafficking in Persons;
- Sexual Exploitation and Abuse (SEA);
- Sexual Harassment (SH) risks;
- gender and HIV and AIDS risks;
- Access to natural resources;
- The different impacts that the project will cause;
- economic activities of the area; and
- Assessment of environmental and social impacts that the project will bring.

1.12.5 Key Informant Interviews

Key informant interviews were held with traditional leaders in the project area to identify the different impacts that the project will generate in the project area and beyond and how the impacts will be managed. Some key informants included the Education Division Manager; Director of Planning and Development; District Education Manager; Environmental District Officer; District Social Welfare Officer; District Water Development Officer; District Lands Officer; Zomba Police Public Relations Officer; District Environmental Health Officer; District Disaster Management Officer; University Registrar, Director of Student Affairs, a Representative of the Students Council; Representatives of the Academic members of Staff and a Representative of the non-Academic members of Staff.

Key issues raised during stakeholder consultation meetings are provided in Table 1.3 while Figure 1.4 provides a picture of some consultation meetings with student representatives at the University of Malawi. Annex 3 presents a list of various stakeholders and government entities consulted during the two phased studies. In these meetings, general information about the project was discussed and a number of issues were raised pertaining to how the project will affect them. Details of the consultants who conducted the assessments are provided in Annex 4.

Table 1. 3 Key issues raised during Consultation meetings

S/N	Issue raised during the community consultation meetings	Response provided to the issues raised during meetings
1	Members of the DESC wanted to find out how issues of noise, dust pollution will be managed during the construction phase	The consultant informed the DESC members that to manage noise pollution the Contractor will: • Restrict noisy construction activities to normal working hours (7:30 am – 4:30 pm); • Inform local residents beforehand, via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works; • Equip workers operating equipment that generate noise with noise protection gear including earmuffs and plugs. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 – 80 dBA should wear earplugs; • Limit pickup trucks and other small equipment to an idling time of five minutes, observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible; • Regularly inspect and service all construction equipment; and • fit construction vehicles with silencers to reduce the noise. The consultant informed the DESC members that to manage dust pollution the Contractor will: • Cover all haulage vehicles carrying sand, aggregate and cement; • Wet and cover with tarpaulin during windy conditions all stockpiles of fine materials (e.g. sand and ballast); • Wet all access roads and exposed ground in a manner and at a frequency that effectively keeps down the dust; • issue all workers in dusty areas on the site with dust masks during dry and windy conditions; • Provide appropriate enclosure for the concrete mixer; and

		• Use of dust nets at high levels of the building
2	The DESC members informed the consultants that in other projects, sexual exploitation was a big concern as most women were victims of this malpractice	The Consultant informed the DESC members that to manage sexual exploitation, the Contractor will: • Orient workers on the sexual harassment issues; • Ensure that all workers sign the code of conduct developed by the project; and • Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out sexual harassment awareness campaigns around the project area.
3	The DESC members observed that issues of Gender Based Violence would increase in the university with the increased number of temporary workers and students intake and staff employment	The consultant informed the DESC members that to manage issues of Gender Based Violence, the Contractor will: • Orient workers on the GBV issues; • Ensure that all workers sign the code of conduct developed by the project; and • Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry GBV awareness campaigns around the project area.
4	DESC members observed that some contractors use treated tap water for construction thereby depleting the scarce resource	The Consultant informed the DESC members that the Contractor will: • Provide adequate water storage reservoirs at the construction site to meet Project needs during periods of high demand externally and refill the tanks during periods of low demand (e.g., late at night); and • Use for construction activities water from the surrounding rivers, Mulunguzi and Mponda.
5	DESC members informed the consultant that the Contractor will be required to collect construction materials such as sand, aggregate stone and fill material from the approved sites	The Consultant informed the DESC members that the Contractor will collect construction materials such as sand, aggregate stone and fill materials from licensed sources or get new permits to use the different sources
6	DESC members observed that construction activities of this magnitude will generate a lot	The consultant informed the DESC members that the Contractor will:Provide waste disposal bins;

	of solid waste that will require to be managed properly	• Collect and dispose waste in places designated by the districts and city councils; • Reuse removed rubble for other tasks such as paving and backfilling; and • Develop a coherent waste management plan Sensitize workers in management of wastes
7	The DEC members through the District Labour office advised the consultants that the contractor should ensure that during construction phase most of the unskilled labour force should be employed from the surrounding communities.	The Consultant informed the DESC members that the Contractor will employ most of the unskilled labour force from the surrounding communities.
8	The DESC members observed that with the other projects in Zomba, theft and other elicit behavior will be on the rise in Zomba	The DESC members were informed that to manage elicit behavior, the Contractor will: • Employ most of the unskilled workforce from the local communities who already have homes within the project area and therefore live with their families; • Integrate migrant workers and local communities by engaging local chiefs to conduct awareness and sensitization meetings with their community members to ensure mutual and equal access to existing socio-economic opportunities; • Deploy social security staff and regular engagement of the police in the project areas to ameliorate occurrence of mischiefs; and • Sensitize the workers and the local community members on security matters.
9	The community members expressed fear that with the coming of contractors in the project area, there is a potential threat that the migrant workers will in one way or another increase domestic violence and marriage breakdown in the project areas. There could also be the increase of HIV and AIDS and other sexually transmitted infections (STIs) and immoral behavior.	The community members were informed that to manage increase domestic violence and marriage breakdown, the Contractor will: • Orient workers on the Domestic Violence and Marriage Breakdown Management issues; • Ensure that all workers sign the code of conduct developed by the project; and • Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out domestic violence and marriage breakdown awareness campaigns around the project area. The community members were informed that to manage HIV and AIDS and other sexually transmitted infections (STIs) and immoral behavior, the Contractor will:

		• Employ most of the unskilled workforce from the local communities who already have homes within the project area and therefore live with their families; • Sensitize all employs and the community at large on the dangers of contracting HIV and AIDS and STI and their prevention measures such as abstinence; and • Ensure availability of free condoms

Figure 1. 4 A meeting with students representatives at the University of Malawi

1.13 Existing land use in the project area

Land for the proposed project belongs to the University of Malawi. The project therefore will not require any additional land outside the University of Malawi campus hence no issues of land take, resettlement and compensation will arise.

1.14 Grievance redress mechanism

1.14.1 Grievance redress mechanisms for the workers

Dealing with a grievance promptly and fairly is vital for employers aiming to reduce the risk of employment tribunal claims. Below is a five-step guide for HR on how to conduct a successful grievance procedure.

a) Informal action

If the grievance is relatively minor, the employer should have a discussion with the employee to see if it can be resolved informally. In most cases, a quiet word is all that is needed to prevent an issue from escalating. An employer should keep a paper trail of all stages of the grievance procedure, including any informal resolution that has been agreed. If the grievance is serious, or the employee feels that it has not been satisfactorily resolved, the employer should deal with the complaint under its formal grievance procedure, and ask the employee to put his or her grievance in writing. All employers should have a written grievance procedure in place and HR should ensure that line managers familiarise themselves with it.

b) Investigation

As soon as possible after receiving a grievance, the employer should carry out an investigation. In many cases, this will be a relatively straightforward fact-finding exercise. If the grievance involves other members of staff, they should be informed and given an opportunity to provide their own evidence. The investigation process will depend on the specific circumstances of the case. Ultimately, the aim of the investigation is to establish the full facts of the grievance before any decision is taken.

c) Grievance meeting

After the investigation, the employer should hold a meeting with the employee so that he or she has an opportunity to explain the complaint. The employee should be asked how he or she thinks the grievance should be resolved and what outcome he or she is seeking. An employee should be given a statutory right to be accompanied by a companion at a grievance meeting. Tribunals take the code into account when considering relevant cases, and can increase awards of compensation by up to 25% for an unreasonable failure to comply with it.

d) Decision

Having considered the evidence, the employer will need to decide whether to uphold or reject the grievance. The decision should be communicated to the employee, in writing, as soon as possible. If the grievance is upheld or partially upheld, the employer should tell the employee what action it proposes to take and how this will be implemented. The letter should also provide the employee with a right of appeal.

e) Appeal

If the grievance has been rejected or partially rejected, the employer should be prepared for an appeal. This should be dealt with by an impartial manager and, where possible, a more senior manager than the person who dealt with the grievance. Most appeal hearings will be in the form of a review but can take the form of a rehearing if the initial stage was procedurally flawed. After the hearing, the employee should be informed in writing of the outcome of the appeal.

1.14.2 Grievance redress mechanism for the project

The project will adopt the University's Grievance Redress Mechanism (GRM) structure, which will be activated to support the project. The grievance procedure will have five major stages. These stages include: (i) complaint or grievance uptake (ii) assessment, analysis and response (iii) resolution and closure (iv) registry and monitoring (v) GRM Evaluation. The GRM will assist to address a number of issues that will arise as a result of implementation of the project. These will include but not limited to increased risk of Gender Based Violence (GBV), increased risk of Sexual harassment, increased risk of Sexual Exploitation Abuse, increased risk of domestic violence and marriage breakdown, increased risk of defilement and early marriages, and increased risk of child and forced labour. The Contractor will employ a number of interventions to minimize and completely eliminate the impacts as presented in Section 6.3.2 under negative social impacts from construction.

1.14.3 Grievance Redress Mechanism for communities and individuals

Grievance and complaints about construction, expropriation, construction activities, social issues and any other subjects related to the project from the start of project till the end of the monitoring will be redressed for effective project implementation. In this respect, all grievances and complaints will be recorded and processed at all stages of the project implementation.

a) The aim of Grievance Redress Procedure

The aim of Grievance Redress Procedure is to settle or redress any individual grievance or complaint of Project Affected Persons (PAPs) promptly, fairly and as much as possible in a manner that is acceptable to all parties. The general approach will be to seek a solution to the problem in the earliest stage of the project and avoid taking complaints to courts for redress. The GRM also seeks to establish continuous feedback mechanism between beneficiaries and implanting agencies to encourage increased citizen engagement. The following will be considered when applying this approach:

i) Provide straightforward and accessible ways to PAPs for making complaints or resolving any disputes that may arise due to the project activities;
ii) Identify and implement appropriate and mutually acceptable actions to address complaints;
iii) Ensure that complainants are satisfied with outcomes of the corrective actions; and
iv) Avoid the tendency to resort to judicial proceedings.

Grievances are useful indicators of a project performance. A high number of grievances may point out a need to adjust work practices or procedures in order to mitigate adverse impacts or conflicts with the PAPs. In this respect, the effectiveness of the related procedures will be evaluated at all stages of implementation.

b) Establishment of the Grievance Redress Committee

The project will establish a Grievance Redress Committee (GRC) to handle grievances related to environmental and social concerns. The committee will be established as soon as the project is approved. The GRC will be ad hoc institutions established primarily for the sub project investment and will have no legal mandate and will follow the Grievance Redress Process provided in Table 1.4 where taking the grievances to the court of law will be the last resolution. The GRC will be established under the guidance of the District Commissioner of Zomba and will be composed of the following:

i) Project Affected Communities or Individuals representation;
ii) University of Malawi;
iii) District Environmental Officer;
iv) District Lands Officer; and
v) Contractor/Engineers.

Table 1.4 Grievance Redress Process

Process	Description	Time Frame	Other information
Identification of grievance	Face to face; phone; letter, e-mail; recorded during public/community interaction; others	1 Day	Email address; hotline number
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book)	4-7 Days	Significance criteria: Level 1 – one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law or policy or this ESMP provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	7-14 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-7 Days 7-14 Days	
Response signed off	Redress action approved at appropriate levels	4-7 Days	Project staff to sign off
Implementation and communication of response	Redress action implemented and update of progress on resolution communicated to complainant	10-14 Days	
Complaints Response	Redress action recorded in grievance log book Confirm with complainant that grievance can be	4-7 Days	

	closed or determine what follow up is necessary		
Close grievance	Record final sign off grievance If grievance cannot be closed, return to step 2 or refer to sector minister or recommend third-party arbitration or resort to court of law.	4-7 Days	Final sign off on by University of Malawi Project Management Unit Manager in liaison with Zomba District Council

c) Duties and Responsibilities

The grievance redress mechanism will be managed by the University of Malawi. The University will put in place a Grievance Redress Committee (GRC), which will be comprised of the representatives of District Commissioner of Zomba District, The Vice Chancellor of the University of Malawi, Commissioner for Lands, and PAPs representative.

The purpose of including these institutions into the grievance redress committee is to ensure the participation of local authorities and associations into the problem-solving processes. Thus, these institutions functioning as a balancing body between the PAPs and the project, will contribute to the fairness and transparency of the grievance redress mechanism. The decisions of the Committee will be binding for all the local implementing agencies.

The committee will meet twice a month to propose corrective/precautionary actions. If required, the committee may also invite the applicants, relevant governmental authorities and/or third parties to these meetings. The committee will also monitor the grievance mechanism via the reports and propose improvement when necessary.

d) Types of Grievances

All types of grievances related to the project will be received at the project implementation unit at the University of Malawi. In addition, grievances can be received through the project-dedicated phone line, which will be active throughout the project. By this phone line, PAPs who cannot come to the project office or are away from the affected areas, can express their concerns and grievances regarding the project. The phone number shall be widely advertised in the project area through the community information meetings. In addition, each site will have grievance boxes where affected PAPs can deposit grievances. These are likely to include:

- Damages to buildings and assets;
- Disruption or damages to local roads;
- Closure of passage ways;
- Gender Based Violence (GBV);
- Sexual harassment;
- Sexual Exploitation and Abuse (SEA);

- Domestic violence and marriage breakdown;
- Defilement and early marriages;
- Child and forced labour
- Damages to lands outside the project demarcated working area;
- Reinstatement of immovable assets after temporary use (establishment of easement rights, rental or temporary occupation);
- Nuisance from dust, noise and vibration;
- Disruption or damages to water sources and infrastructures;
- Increase in the traffic load;
- Health problems, injuries and accidents;
- Misconduct of project personnel/workers; and
- Unfair selection practice of employees for project-related jobs.

e) Procedure for receiving and responding to complaints, Grievances, Appeal and Claiming Process

All types of complaints, appeals and claims related to the project will be received by the Grievance Committee located at the project office at the University of Malawi. Complaints can be lodged through the toll-free phone line, which will be shared in the course of project implementation and complaint boxes to be located on project sites.

At the beginning of the project, the grievance mechanism will be disclosed to all stakeholders through meetings with the Project Affected Persons. All types of grievances will be received by the Social Expert (or other designated project official in person or via project dedicated phone/site boxes) at the project office, which will operate throughout the project cycle. These grievances will be recorded in Grievance Forms, which contain the details regarding the grievance as well as the name and address of the applicant, application date, type of application and the name of the person receiving the grievance. For proper functioning of this procedure, all grievances will be recorded by the PIU Social Expert and Gender Experts located at the University of Malawi. Social expert will monitor implementation of different social impacts, which will include increased students' intake at the University, improved teaching and learning at the university, increased traffic flow – increased accidents, increased incidences of Cholera cases, creation of employment opportunities, skills transfer to local community, creation of market for goods and services in the project area, increased business activities within the project area, source of government revenue, anxiety about disruption of teaching and learning activities, increased accident incidences due to construction works, increased risk of illicit behavior and crime, increased risk of communicable diseases such as HIV and AIDS, increased risks of workers and community members to occupational, health and safety, disruption of teaching and learning activities at the university, increased risk of child and forced labour, loss of employment for workers, and loss of business opportunities.

Gender expert will monitor implementation of different social impacts, which will include increased risk of Gender Based Violence (GBV), increased risk of Sexual harassment, increased risk of Sexual Exploitation Abuse, increased risk of domestic violence and marriage breakdown, and increased risk of defilement and early marriages.

When receiving the grievances of the vulnerable PAPs such as elderly, disabled and illiterate people, the PIU will pay special attention and help them to receive their grievances properly. The grievances depending on the gravity of the matter will be solved via the Grievance Committee and in consultation with the contractor if it occurs during the implementation period of the project. When required, site investigations will be undertaken involving technical staff from relevant organizations such as the Developer, District Lands Officer, District Council officials, and PAPs representatives. Technical reports to serve as a basis for the discussions will be prepared and tabled before the Grievance Redress Committee. During this site observation, the complainant or his/her representative shall also be present.

The committee will inform the complainant about the status of their grievances within 10 working days after receiving the complaint and carrying out the investigations. In case the applicant is not satisfied with the result, the Social Expert will forward the case to the Grievance Redress Committee and notify the applicant. In addition, in case the applicant cannot receive a response within the designated time frame, s/he can apply directly to the Grievance Redress Committee.

1.15 Institutional structure, implementation arrangements, roles and responsibilities, and capacity building

1.15.1 Institutional structure

The University of Malawi will have a Project Implementation Unit to supervise and implement the project. The PIU will have a team of well-trained staff to look at issues of environmental and social safeguards and will have an Environmental and a Social Performance Specialist. The PIU will ensure that the Contractor implements all the measures outlined in the ESMP report. The Contractor will develop his own site-specific Construction ESMP (CESMP), and a Health and Safety Plan based on this ESMP before commencing any civil works. PIU will review and approve these. The PIU will work with the Supervising Engineer responsible for supervising the works and ensure mitigation measures and any necessary corrective actions are being followed for the smooth execution of the works. The monitoring results will be used to improve project implementation and provide information for project supervision. MEPA will use the legal mandate to monitor project activities' implementation and enforce compliance with national and international laws and regulations.

1.15.2 implementation arrangements

The successful implementation of this ESMP lies on the concerted efforts from various key stakeholders and these include MEPA, University of Malawi, SAVE- PIU, Zomba District Council, Zomba City Council, and the Contractor. The responsibilities of each of the key role-players have been provided as follows:

1.15.2.1 **SAVE-PIU** will be responsible for coordinating, planning, implementing and monitoring environmental and social issues. In addition, the PIU will conduct inspections and monitoring of the activities, as well as reviewing monthly and incidence reports from the project.

1.15.2.2 Contractors will develop contractors ESMP (C-ESMP) and associated auxiliary management plans and ensure their implementation and compliance. In addition, the contractor will ensure that all workers have signed *'Code of Conduct'* and are compliant to it. The contractor will be responsible for the orientation of the workers.

1.15.2.3 Zomba City Council and Zomba District Council will work with PIU to monitor the implementation of the CESMP and auxiliary plans. Therefore, Zomba District Council's Environmental Officer will work with the SAVE-PIU Safeguards Team in monitoring the implementation of the ESMP.

1.15.2.4 University of Malawi IIT will ensure that financial resources for capacity building and implementation of the ESMP are allocated. Further, it will be responsible for carrying out regular maintenance of the proposed project structures during operational and maintenance (O & M) phase. The University of Malawi will:

- Ensure coordination between the communities and contractor during the construction phase;
- Ensure there is proper management of the project
- Participate in supervision of works at the site; and
- Monitor the implementation of CESMP

1.15.2.5 Malawi Environmental Protection Authority (MEPA) will conduct inspections and monitor compliance with the implementation of the ESMP during the construction, demobilization, operation and maintenance phases of the project.

1.15.3 Capacity Building

As the mitigation and enhancement measures will be implemented for the multiple impacts, there will be a need to provide the necessary training and capacity building programs for the PIU as well as the different agencies and state institutions that will be responsible for environmental and social actions, including monitoring important parameters over time as well as the implementation of mitigation and enhancement measures. The training will assist in building the capacities of the agencies to be responsible for monitoring activities to effectively determine compliance of the project activities with national and international laws, regulations, and guidelines.

The following training requirements have been planned to facilitate capacity building of the implementing stakeholders in order for them to effectively execute the roles and functions they have been assigned under this project. Table 1.5 provides areas that require training and target audience including time frame and responsible institution to deliver.

Table 1.5 Required training on Environmental and Social Safeguards

#	Type of Training	Targeted Stakeholder	Responsible Institution	Time Frame
1	ESMP and Auxiliary Management Plans	Project staff, supervising engineers, contractors, and contractor workers	SAVE PIU/ IIT	Planning, Construction Phase

#	**Type of Training**	**Targeted Stakeholder**	**Responsible Institution**	**Time Frame**
2	Occupational Safety and Health,	Project staff, supervising engineers, contractors, and contractor workers, Sewer attendants,	SAVE PIU/ IIT	Construction; Operation and Maintenance Phases
3	Emergency prevention and preparedness and response arrangements to emergency situations	Project staff, supervising engineers, contractors, and contractor workers	SAVE PIU/ IIT	Construction; Operation and Maintenance Phases
4	Grievance Redress Mechanism	GRM Committee members	SAVE PIU/ IIT	Construction; Operation and Maintenance Phases
5	Code of Conduct	Contractor	SAVE PIU/ IIT	Construction; Operation and Maintenance Phases
6	GBV, SEA and Child Labour	GRM Committee members	SAVE PIU/ IIT	Construction; Operation and Maintenance Phases
7	Risk Management	Project staff	IIT	Construction; Operation and Maintenance Phases

CHAPTER 2 PROJECT DESCRIPTION

2.1 Description of main project activities

The proposed project will comprise construction of an undergraduate teaching complex facility, which will comprise lecture rooms, offices, pantries, and washrooms. Details, size and capacity of the undergraduate facility are provided in Table 2.1 and the proposed designs are presented in Annex 5. Figure 2.1 provides a site plan, which provides the location of the undergraduate teaching facility to be constructed in relation to other facilities on the project site.

Table 2. 1 Details, size and capacity of the undergraduate teaching complex facility

Item	Description	Unit of measure	Quantity
1	Building Footprint	m^2	1000
2	Number of Floors	No	3
3	Total Floor Area	m^2	3000
4	Total Number of Occupants	No	1900
5	Total Number of Toilets	No	87

The undergraduate teaching complex facility will be a three-story building with the associated external works. Construction will be of plain concrete strip footing, load bearing cement block walls in foundations, load bearing cement block walls, reinforced concrete ground slab, steel roof structure, steel door frames and windows, timber doors, lime putty plaster and paint to the rest of the walls internally, fair face pointed externally, joinery fittings and electrical services. Construction activities will be done by a private contractor and the University of Malawi will hire an architect to supervise the construction works to ensure that the contractor complies with the design standards. Construction activities of the project will promote use of construction materials, which are environmentally friendly, durable, and vandal-proof and those, which require minimal periodic maintenance.

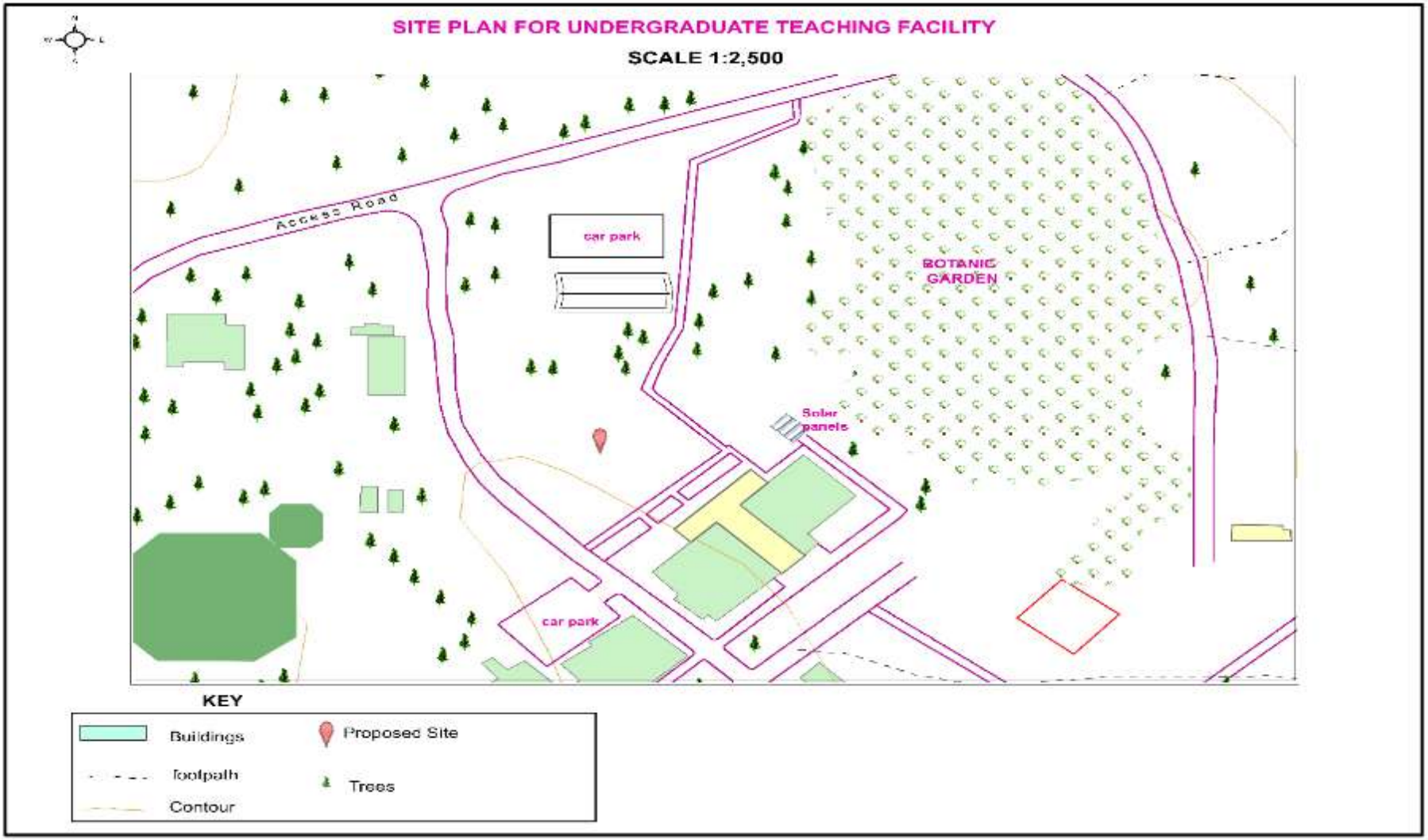


Figure 2. 1 Site plan for the proposed undergraduate facility

2.1 Project design considerations

The overall design of the undergraduate teaching complex facility has taken into consideration the different local government building guidelines and standards developed by National Construction Industry Council (NCIC) and the National Council for Higher Education (NCHE) Architectural Metric Handbook and different disasters that Malawi faces from time to time. The design has taken into consideration the following:

a) **Ventilation:** The design caters for natural ventilation with features that encourage natural air circulation (including use of permanent air vents above all doors and windows). Malawi's prevailing wind is Easterly, from the Indian Ocean. An East-West orientation, with windows facing North and South will be preferred as the low morning and evening sun will not penetrate the rooms of the building.

b) **Lighting**: The design caters for various types of energy efficient luminaries including fluorescent lamps and natural lighting through glass windows and doors as appropriate for both security and lighting;

c) **Sustainable resource use:** The design of the development incorporates landscaped gardens, which will be planted with suitable species of trees / shrubs and grass to prevent ecological deterioration and improve aesthetic value of the site. Part of the excavated soil will be used for landscaping therefore reducing the amount of soil to be transported away from the site;

d) **Fire protections**: The design of the proposed developments incorporates fire- fighting equipment to be installed in each building;

e) **Building resilience to heat waves:** Climate change is affecting temperature patterns worldwide and in Malawi in particular, which at times is resulting into heat waves. The design of the proposed facility should take into consideration resilience to heat wave and other heat effects;

f) **Building resilience to drought:** Climate change is affecting rainfall patterns across the world and in Malawi in particular. The design of the proposed facility should take into consideration resilience to drought;

g) **Building resilience to flooding:** Climate change is affecting rainfall patterns across the world and in Malawi in particular. The design of the proposed facility should take into consideration resilience to flooding; and

h) **Building resilience to cyclones and strong winds:** Climate change is affecting temperature patterns worldwide and in Malawi in particular, which at times is resulting into strong winds, storms and cyclones. The design of the proposed facility should take into consideration resilience to strong winds, storms and cyclones;

i) **Disability friendly structures:** The Undergraduate facility has been designed to provide access to all students and staff including those with disability by providing two lifts and a ramp with slopes of not more than 1:10. The surface will be designed to be non-slippery to prevent any trips and falls; and

j) **Earthquake resistant:** The University of Malawi does not experience earthquakes but experiences tremors. This is because the campus is not directly situated in the East African Rift Valley, which is prone to earthquakes. The design of the structure has taken into consideration requirements to withstand considerable levels of tremors, which are in most cases not very devastating.

2.2 Climate Change vulnerability, climate resilient structures and hazard consideration

2.2.1 Climate Change Vulnerability

Climate Change is a development challenge and should be considered carefully during the Detailed Design to ensure the long-term viability of the projects. An effective way to increase the resilience of an infrastructure is to identify, develop, revise, and subsequently implement design and construction standards. These activities should be incorporated into a standardized and well-described process aiming at increasing the overall resilience of the infrastructure.

The design for construction of the undergraduate infrastructure has incorporated climate-smart development and sustainable infrastructure as per GoM focusing on the needs of women and those most vulnerable to climate change. From an engineering design perspective, the team has considered the temperature and hydrological regimes, any options for reducing embodied carbon in materials, identifying local sources of materials to the greatest possible extent, etc. GHG accounting estimates can be obtained from a number of existing models and economic analysis from the RED/HDM models.

The Consultant has assessed critical locations along the selected road corridors to assess their vulnerability to climate effects and explored the adaptation measures in the study and design of the AGC roads. A climate-resilient road comprises a set of technological measures rather than a single technology. Engineering Measures included are:

a) Slope stabilization structures;
b) Constructing the infrastructure with durable materials;
c) Proper siting of the infrastructure to avoid vegetative loss;
d) Improved drainage systems to avoid erosion ;
e) Where possible, use naturally occurring gravels and low-carbon materials instead of high-carbon footprint materials such as cement-stabilized materials; and
f) Bio-engineering Measures such as grass, shrub, and tree planting in conjunction with engineering structures:

2.2.2 Climate resilient structures

Drainage structures such as storm water drains are most at risk due to climate change. Increased precipitation intensity and frequency can cause severe scour due to increased water flow. Increased flow can also cause increased overtopping of these drainage structures. The hydrological and hydraulic studies have considered the need to make the drainage structures climate resilient. The design concluded that the design flow must be increased by 20% to cater to the increased extreme weather events and precipitation intensity and frequency.

2.2.3 Green House Gas (GHG) Emission Baseline

Most GHG emissions from vehicles and construction trucks are associated with decisions made by private vehicle users, and the designer has little ability to affect those decisions where designers can have a more immediate impact on how teaching complex will be constructed and maintained over time. Construction activities will generate carbon emissions from a variety of direct and indirect sources, including:

a) Construction work includes land preparation, embodied carbon in concrete, steel, and other raw materials used to build the infrastructure and emissions from construction vehicles;
b) Tree felling to make way for the infrastructure to be constructed, reducing carbon capture; and
c) Maintenance and servicing work.

The Designer recognizes the importance of the GoM strategies to integrate climate change considerations more fully into its core business components and the benefits of greenhouse gas reductions, increased resilience, and improved natural resource management. The Team during the detailed design, selected feasible materials used for inclusion in the project that have the lowest footprint for GHG emissions.

In addition, the Team has considered opportunities to further reduce greenhouse gas (GHG) emissions by adopting design specifications, material specifications, material transport and storage, material sourcing, etc., with the lowest footprint for GHC emissions.

2.2.4 hazard consideration

The design of the Undergraduate facility was guided by Safe School Construction Guidelines of 2019, which promote local practices, low-cost technologies and identify strategies for multi-hazard risk reduction. The most prevalent hazards in Malawi are floods, strong winds, earthquakes, landslides and wildfires. Annex 6 provides details for an Emergency Management Plan. For this reason, in most cases site assessment considers these key issues. Table 2.2 provides guidelines that are considered when selecting a site for constructing different structures.

Table 2. 2 Guidelines for site selection

Potential hazard	Preventive measure at site selection
Flooding	• Site is on elevated place • Site is away from a water body • Site is away from an area that has history of being a flood hazard zone

Strong winds	• Site is not under tree. There is a good distance from trees.
Earthquake	• Site does not have fault lines • Site has firm sub-soil, to avoid liquefaction • Site does not have ground water levels above foundations.
Landslides	• Site is away from escarpments • Site does not have deep cuts into a hill or slope • Site has relatively stiff and compact soil • Site does not have uncompacted fill material
Wildfires & Fires	• Site is away from forests to protect against wildfires • Site is large enough to allow safe distance between buildings • Site is not too close to power lines

2.3 Description of main project activities

Activities for the project shall be implemented in four phases namely planning, construction, demobilization, and operation and maintenance phases. Details of each of the phases are provided in the sections that follow.

2.3.1 Planning phase

Planning phase for the project commenced in April 2022 and will be concluded in December 2023. Activities during planning phase include identification of land for the project; land surveying; preparation of a master plan; preparation of detailed lay out plans; preparation of building designs, tender processing, obtaining approvals under the Physical Planning Act No 17 of 2016 and the Bye-Laws; and obtaining different approvals necessary for construction and operation of the project facilities and preparation of an Environmental and Social Management Plan for the project.

2.3.2 Construction phase

a) Consideration for constructing different structures

Different considerations will be given when constructing the teaching complex facility. The considerations will aim to provide stability and durability of the facility to make it climate resilient. Some of the considerations are discussed in the sections that follow:

i) Drainage system

Construction of the drainage system will consider occurrence and form of water that will be drained, slope shape, slope gradient, slope length, stream drainage characteristics, depth to bedrock, bedrock characteristics and soil texture and permeability. A drainage system taking into consideration all the factors mentioned above will be constructed to maintain the grey water from overflowing to roads and lawns, which will divert storm water to the natural watercourses. To maintain safety within the university campus and to prevent students and staff from injury by falling into drains, the drainage system should adopt a closed drainage channels system.

ii) Foundation conditions

The undergraduate facility will require foundation on a good and uniform soil to avoid deferential settlement. A full geotechnical investigation shall be conducted to ascertain the exact foundation conditions of the structures for the buildings. A soil raft of min 300 mm thick G 5 material will be used as pioneer layer.

iii) Durability of the concrete

Durability of any concrete is dependent on the cement being used, aggregates, admixtures, concrete mix design and curing. Ordinary Portland cement shall be used to construct the different infrastructures. Rapid hardening cements will be avoided due to greater evolution of heat, which can lead to increased shrinkage cracking.

Local quarries will be inspected and quarry stone, which will be used will be tested and certified. Care shall be taken not to use admixtures containing calcium or chlorides, as these will increase the risk of reinforcement corrosion. Plasticizers will be considered, as increased workability is advantageous when working with complex shaped structures and structural forms.

b) Construction workers

In all, about 100 people will be employed during construction phase. The people to be employed will include a minimum of 40% women in the workforce. The people will include supervisors, skilled and unskilled laborers. For the semiskilled and unskilled workers, the Contractor will employ people from the communities, which live around the project area as a way of making sure that the project benefits the community members in the project area.

c) Construction equipment

Different machinery will be used to construct the project facilities as provided in Table 2.3.

Table 2. 3 Different construction materials and their functions

Construction materials	Functions that the materials will perform
Bull Dozers for clearing the site	removal of top soil and vegetation materials, and pushing out stumps
Graders	grading and levelling land for buildings and access road formation
Tippers/lorries	Transporting construction materials and workers
Light and heavy rollers	Compaction
Front end loader	Loading materials onto tippers and lorries
Light equipment like wheel burrows, shovels, picks	Different construction activities
Concrete mixers	Mixing concrete
Earth mover	Removing earth materials
Compactor	Compacting the soils
Excavator	Excavation

d) Construction materials

Different raw materials will be required during construction phase. Materials such as sand, gravel and quarry stone will be sourced from the surrounding areas. Quarry stone will be obtained from Njuli Quarry. Sand will be obtained from Mchengawedi or Sinuzi while gravel will be obtained from Changalume borrow pits. The sites where quarry stone, gravel and sand will be collected from are approved existing sites while water for construction activities and for reducing the impacts of dust and for domestic use by the contactors work force will be obtained from Mulunguzi and Mponda rivers, which flow throughout the year. This demand for water will exert pressure on the existing water supply sources. The Contractor will give serious consideration when abstracting water for construction purposes to the requirements for local potable water supplies and take into consideration the riparian rights of the people downstream. The Contractor will not use piped water for construction activities and for reducing the impacts of dust.

Use of concrete blocks for construction of different infrastructure will be more environmentally friendly than use of burnt bricks, which contribute to deforestation and green gashouse emission. The concrete blocks are stronger and long lasting, do not lead to deforestation as burnt bricks do. Procurement of large quantities of cement for making the concrete blocks will also contribute to increased growth of the local economy.

Other materials such as cement, paints, timber, roofing materials, windows, doors and other joinery, tilt and roller doors, wallboard and plasterboard, light fittings, fuel and oil, electricity, water, ceramic tiles, polythene, steel, steel pipes, PVC pipes, adhesives, copper wires, gas (acetylene and oxygen), cardboard will also be sourced for the project. Construction materials will be sourced depending on the construction stage.

Construction will be done by a contractor and a design and supervision firm will be hired to supervise the construction phase of the project to ensure that the contractor complies with the design standards. The developer together with the Ministry of Transport and Public Works Officials (Buildings Department) will work hand in hand in supervising works and monitoring progress. Construction will require various input materials to produce several outputs. Table 2.4 outlines the inputs and outputs during the construction and operation phases.

Table 2. 4 Overview of the main inputs and outputs from the proposed project

Category of developments on the site	**Main inputs into the activities**	**Main outputs from the activities**	**Waste produced**
Construction of service infrastructure			
Site clearing, land surveying	Excavators, hoes, graders and surveying equipment, cement, quarry stones, sand, gravel and water,	Cleared area for construction of different infrastructures	Dust, noise, Fumes, smoke, oils and top soils

	picks, shovels, water bowsers and cement mixers, planks		
Site development activities			
Land harrowing and land levelling	Excavators, hoes, graders and surveying equipment, cement, quarry stones, sand, gravel and water, picks, shovels, water bowsers and cement mixers, planks	Cleared area for construction of different infrastructures	Dust, noise, fumes, smoke, oils and top soils
Construction of access roads	Graders, caterpillars, compactors, gravel	Earth access road upgraded to gravel standard	Dust, noise, fumes, smoke, oils and top soils
Reticulation of water facilities	Water pipes and accessories	Underground reticulation of water facilities	Dust, noise, fumes, smoke, oils and top soils, broken pipes and water reticulation materials
Reticulation of electricity facilities	Wooden poles, a transformer, Electrical wires and tubes	Installation of electricity facilities in the new and rehabilitated structures	Dust, noise, fumes, broken wooden poles, cables etc
Telecommunication	Poles, wires, radio receivers, dual channel lines	Installed telecommunication network	Dust, noise, fumes, broken wooden poles, cables etc
Construction of undergraduate facilities			
Construction of undergraduate facility	Cement blocks, cement, quarry, planks, iron sheets, aluminum windows, pressed metal door frames, window panes, sand, gravel and water	Completed undergraduate teaching complex, access roads and car parks	Dust, noise, Fumes, smoke, oils, construction materials and top soils
Construction of waste water management systems			
Construction of sewer lines to connect the sewer system to University of Malawi WSP	Pipes and channels	Sewer line to connect the sewer line to University of Malawi WSP	Dust, noise, Fumes, smoke, oils, construction materials and top soils

e) Construction activities

The construction activities will span from November 2023 to December 2024, employing approximately 100 workers, 40% of whom will be women. Construction activities will be done by a contractor and the University will hire an architect to supervise the construction works to ensure that the contractor complies with the design standards. Activities under construction will involve land clearing; landscaping; grading; excavation; compacting; trenching; backfilling with compaction consolidation; levelling and earth marking; and transportation of construction materials, excavation of foundation footing, laying down a brick base; pouring a concrete slab, installation of framework, installation of plumbing workers, putting a wall frame, roofing and finishing.

Construction will generally be of plain concrete strip footing, load bearing cement blocks walls in foundations, load bearing cement block walls, reinforced concrete ground slab, steel frame structure, steel roof structure, steel door frames and windows, timber doors, ceramic tiles to some floors and glazed tiles to walls in toilets, lime putty plaster and paint to the rest of the walls internally, fair face pointed externally, painted ceiling, joinery fittings, sanitary, plumbing and electrical services.

Construction of external works infrastructure will consist of paved access and parking areas, lined storm water drains, foul and waste drainage system and landscaping. Sidewalks will be provided for pedestrians. Storm water drains will assist to control water movement with the project site into natural drains.

Once construction activities are finalized and before the facility is handed over to the University of Malawi, Zomba City Council and NCIC will test the integrity of the structure in order to ascertain its safety for use for the intended purpose.

2.2.3 Demobilization Phase

Decommissioning of the new infrastructure is not expected to occur under the project, and potential future issues can be minimized by avoiding use of hazardous materials in the initial construction. Decommissioning of auxiliary facilities such as quarries/ borrow pits could be an issue, but these are unlikely to be opened specifically for the construction of the proposed project infrastructure hence construction works will use existing quarries/borrow pits to obtain aggregate stone and gravel.

The main activities to be undertaken during demobilisation phase shall include demolition of the workers' offices on site which will take place from February – April 2025. Rubble from construction activities and demolished workers' site office and other waste from construction activities will be used as fillers during foundations. Any leftover solid materials likely to be composed of bricks and crumbles of cement will be disposed by levelling off other degraded areas within the project area and within the surrounding communities in collaboration with Council Engineer responsible for roads.

Demobilization will further involve laying off some workers, removal of construction equipment and left-over materials, dismantling of workers' site office and levelling the site, landscaping, filling of borrow pits.

2.2.4 Operation and maintenance phase

Activities during operation and maintenance phase will include commissioning the use and regular maintenance of the new infrastructure. The effect of this is that different wastes both solid and liquid waste will be generated. In a day one person will generate 200 – 300 litres of wastewater (https://environment.des.qld.gov.au), which will require to be managed properly. Solid waste will be managed through waste bins which will be collected by Zomba City Council for further management at the waste management site around 6 miles while liquid waste will be managed through university sewer line. It is expected that 1 person will be able to generate 0.11 – 4.54 kg (https://datatopics.worldbank.org) of solid waste per day, which will require to be managed properly.

2.3 Environmental planning and design

Environmental planning and design will look at environmental and social issues that will be considered during detailed design stage of the project. The inclusion of these issues in the detailed designs will ensure that identified negative impacts are mitigated and positive ones are enhanced. There is a need for environmental planning and design on issues relating to natural hazards (flush floods, earthworks; sources of construction material and handling of such materials; safety and public health issues; labour issues; and rehabilitation/revegetation issues. This is because with the climate change effects, of late we have seen cyclones and floods which have destroyed a number of structures and caused loss of property and life. Hence the need to design a structure which will be climate change resilient and stand different natural hazards.

2.3.1 Safety and risk reduction measures

Public consultations with key informants at Zomba City Council and the University showed that flash floods and strong winds do not occur in the area where the undergraduate teaching complex will be constructed. However, the district experiences heavy rains in some years, which do result in some flash floods and cyclones in some parts. The design of the undergraduate teaching facility therefore has included relevant aspects for climate resistance, resilient buildings or disaster risk reduction as follow:

a) Site selection of the proposed undergraduate facility has been approved by the District Council who screened the site. The council has historical knowledge of the sites in Zomba in relation to flood risks of the sites;
b) The site for the undergraduate facility is on an elevated area;
c) The design has included drainage structures that will collect and direct water from the area to existing drainage system or other natural water ways; an
d) Natural wind blockades such as trees will be planted around the structure to help decrease buildings exposure to heavy wind.

The project will be required to develop a disaster risk management plan which shall follow principles outlined in Annex 7.

2.3.2 Labour management

The proposed project is expected to create job opportunities in the project area. This may be a training ground for the local people who may not have been employed before elsewhere. It is recommended that the local pool of labour should be used. For some of the less complex tasks, local unskilled labour should be given short term contracts and on the job training. For work that can be done using human labour the use of machinery will be discouraged. To ensure that local people are being employed, Zomba District Labour Office and traditional leaders will be involved in the recruitment of the workers.

2.3.3 Source of sand for construction

There will be a need to take extra care in sourcing raw materials especially sand for the construction works. The project will obtain written approval from the District Council where the sand is to be extracted. The local council, through the Environmental District Office, will also guide the project on any required permits or licences they are to obtain.

2.3.4 Construction and general operations

Precautionary measures for environmental health and safety procedures will be taken into consideration. The contractor will ensure that precautionary measures for safety procedures are taken into consideration to prevent accidents. The contractor will submit to the project proponent a Contractors Environmental and Social Management Plan for approval before start of works.

2.3.5 Water abstraction

The contractor will give due consideration to the abstraction of water for construction purposes to ensure that he does not affect the water needs of the downstream users. Since the project area has rivers, Mulunguzi and Mponda, the Contractor will be required to obtain a water abstraction right from the National Water Resources Authority.

2.3.6 Tree planting

Planting of trees at the University campus is a continuous activity that is done with the guidance of the District Forestry Office, which advises on the choice of tree species to be planted. The university has land designated for a woodlot and has a full time forestry section which takes care of the same. In addition, some trees will be planted around the teaching complex by the contractor as part of the landscape as will be outlined in the contract.

CHAPTER 3 CONSIDERATION OF ALTERNATIVES

Alternatives to projects are different ways to achieve the same purpose that the proposed project intends to achieve. Environmental and Social Assessments require looking into alternatives to the proposed projects in order to make prudent decisions.

3.1 Alternatives considered

3.1.1 Policies, legislation and standards regarding construction industry alternatives

A review of available policies, legislation and standards of construction industry in Malawi was carried out to ensure that the teaching complex facility that will be constructed conforms to the required standards to ensure safety of the facility.

3.1.2 Environmental alternatives

Environmental alternatives were considered in the choice of building materials, citing of other facilities such as storm drains, wastewater treatment facilities and choice of wastewater treatment technologies. This was done to ensure that the project does not cause irreparable damage to the environment.

3.1.3 Cost benefit analysis alternative

An analysis of technologies to be used was made to ensure that the cost of the proposed project is adequate. In addition, consideration on climatic conditions were also put into perspectives. Further, functionality, in terms of required class size of the rooms and supporting facilities were also important factors in the design.

3.1.4 Location and layout alternatives

Location alternative was not considered as the teaching complex facility is expected to be constructed at the university main campus, where other facilities that support learning and teaching are located.

3.2 Project alternatives

The assessment has considered the following alternatives: Do-nothing / No action alternative; Develop the project; Technologies alternatives; Alternatives to building materials; and environmental and social considerations alternatives.

3.2.1 Do nothing / No action alternative

This alternative describes a situation where the proposed project is not implemented. If this happens, the university will not get the benefits that the project would generate. However, from an environmental and social management perspective, this alternative will be beneficial in the sense that any negative impacts that the project would generate will not occur. Table 3.1 presents the advantages and disadvantages of the Do nothing alternative. The Do nothing alternative should not be adopted, as we need to encourage development as long as it is undertaken in a sustainable manner.

Table 3. 1 Advantages and disadvantages of the "Do nothing alternative"

Advantages	Disadvantages
The natural resources meant to be used for construction of the teaching complex facility such as sand, water, and quarry will not be exploited	The teaching complex facility at the University of Malawi will not be constructed. Instead, access to university education will still be limited and students learning and academic performance will be affected negatively as the institution will not have modern and adequate facilities to assist with student learning and teaching.
The different social - economic impacts the project would generate in the project area and beyond will not be generated.	The access roads that will connect the different facilities at the University will not be constructed.
	There will not be increased employment opportunities for both skilled and non-skilled workers both during construction and operation of the teaching complex facility.
	There will not be modern and adequate infrastructure at University of Malawi which would assist to increase students' enrolment and their academic performance.

3.2.2 Develop the proposed project alternative

The alternative is about implementing the proposed project at the University of Malawi. There is a lot of space at the University, which is not developed. The alternative will generate various positive and negative impacts. Table 3.2 provides the positive impacts (advantages of the alternative) and the negative impacts (disadvantages of the alternative).

Table 3. 2 Advantages and disadvantages of the "Develop the project alternative"

Positive impacts (advantages of the alternative)	**Negative impacts (disadvantages of the alternative).**
Increased employment opportunities at local and national level especially during construction phase	Increased waste generation (solid and liquid) from construction site office and construction sites
Creation of market for goods and services	Population influx due to migration of construction workers to the site
Increased economic activities within the project area	Generation of construction waste
Skills transfer to different people at local and national level	Construction related accidents
Increased students' enrolment	Increased risk of illicit behavior and crime
Improved students' performance	

The alternative will generate a number of positive and negative impacts once the project activities proceed as proposed. However, the anticipated negative impacts can be easily mitigated during construction and operation phase. The "Develop the Proposed Project" alternative is therefore a preferred alternative since it will lead to socio- economic development of the country through increased employment opportunities for academic and non-academic members of staff, increased students' intake and improved students' performance.

3.3 Alternative building technologies

In the construction industry, there are a number of choices on the building materials. The choice of building materials can determine the durability of the structures, the beauty of the structures, the cost of building the structures and the damage that the environment can suffer. The options that were considered included use of burnt bricks, use of eco bricks, use of stabilized soil blocks and use of cement blocks.

3.3.1 Use of burnt bricks

In Malawi, most people use burnt bricks for constructing different structures because they made locally and can be close to the project site. The bricks are made from soil, which is mixed with water. The dough is moulded into bricks that are dried in the sun and thereafter baked using wood fuel.

Disadvantage of burnt bricks

For large projects, large amounts of firewood and soil will be required to produce adequate number of bricks. This can lead to destruction of natural forest and land degradation due to formation of borrow pits.

Advantages of burnt bricks

a) Bricks are strong and durable;
b) They require low maintenance cost;

c) Have excellent thermal mass i.e., in winter they keep the buildings warm while in summer they keep the buildings cool; and
d) They are fire resistant.

3.3.2 Stabilised soil blocks (SSB)

Stabilised soil blocks are made by mixing soil and cement in appropriate proportions. The process requires skilled labour because the strength of the bricks depends on the mixture and quality of soil used.

Disadvantage of SSB

The use of soils for large projects can lead to borrow pits, which can lead to ponding and creation of breeding grounds for disease victors. However, the cost is lower than the cement blocks.

Advantages of SSB

a) SSB allows users to produce uniform blocks of greater strength than typical fired blocks that provide better thermal insulation;
b) The total cost of building a structure with SSB is 20%-30% cheaper than building with fired bricks because far less mortar is required;
c) SSB can be made on site so transportation costs are minimized;
d) SSB are environmentally friendly because they are cured in the sun as such do not contribute to deforestation as compared to fired/burnt bricks; and
e) The bricks have an appealing aesthetic with an elegant profile and uniform size that doesn't require plastering.

3.3.3 Cement blocks

Cement blocks are made from a mixture of quarry dust and cement to which water is added. Like SSB, the mixture is compacted using a manual machine to ensure strength and quality.

Disadvantage of concrete blocks

The bricks are usually expensive due to increasing costs of cement.

Advantages of Concrete blocks

a) Like SSB, concrete blocks allow users to produce uniform blocks of greater strength;
b) Concrete blocks can be made on site so transportation costs are minimized;
c) Because Concrete blocks are cured in the sun, there is no fuel needed thereby helping to curb deforestation as such they are environmentally friendly like SSB;
d) Concrete blocks are strong and durable; and
e) Concrete blocks are fire resistant.

3.3.4 Eco bricks

Eco bricks are made using the Vertical Shaft Brick Kiln (VSBK) Technology for firing the green bricks. The VSBK (Eco Kiln) technology is based on vertical shaft principles and is the most energy efficient and environmentally friendly brick production technology available globally. The technology does not use fuel wood. Instead, it uses waste material

containing carbon to fire green bricks. Thus, if VSBK is adopted to replace clamps, then it will result in:

a) Improving the quality of housing in Malawi and incurring a saving of around 40% from bricks and mortar alone;
b) Reducing the embodied energy in housing, thereby pioneering the path of energy saving in Africa;
c) Greenhouse gas emissions are also enviably less making it an obvious choice for the carbon market; and
d) VSBK is versatile and can be adapted to any scale of production;
e) It produces consistent quality bricks with higher returns than clamp brick production.

After analysing advantages and disadvantages of using SSB, concrete blocks, burnt bricks, and eco bricks, it was recommended that cement blocks would be cost effective and have better precision. The blocks can also be produced on site with convenience.

3.4 Alternative sewage disposal methods

During operation phase, more than 1,000,000 liters of wastewater will be generated on daily basis. This volume was calculated based on the assumption that one individual generates about 100 liters of wastewater per day (Ng'ong'ola et.al 2010). As such, there is need to consider how to manage and dispose of this volume of wastewater. Most private units in Zomba are not connected to any sewerage for wastewater treatment, options such as use of septic tanks and use of wastewater stabilization ponds were considered and are discussed as follows:

3.4.1 Use of septic tanks

Use of septic tanks to manage wastewater was one of the options that were considered. Advantages of using septic tanks over wastewater stabilization ponds (WSP) include:

a) Septic tanks are easier to operate than WSP as such they do not require personnel to manage its operations except when there are blockages;
b) Septic tanks do not generate odor as they are usually under cover;
c) Septic tanks do not require a lot of space as compared to WSP; and
d) Septic tanks are not left open as the case is with WSP which become breeding ground for vector insects and pose as potential hazards to the general public and children in case of drowning.

The main disadvantage of using septic tanks is that they need periodic emptying, and this could raise the operation cost over time. With the large volume of effluents that will be discharged from the project during operation, the septic tanks will need to be emptied time and again making the alternative not viable for management of wastewater discharged at the University. However, due to proximity of the University WSP from the proposed new

infrastructure, it is proposed that the wastewater from the proposed new infrastructure will be treated at the University's wastewater Stabilizing Pond.

3.4.2 Use of wastewater stabilization ponds

Use of wastewater stabilization ponds is one of the commonly used methods of treating wastewater in the tropics. Although this is one of the cheapest ways of treating wastewater, the method requires more space than the other wastewater treatment facilities. Considering that the University already has wastewater stabilization ponds, the alternative was preferred for the addition teaching complex facility.

Disadvantages of using WSP include:

a) WSP require more space than other wastewater treatment facilities;
b) If not properly managed, wastewater stabilization ponds result into breeding grounds for mosquitoes;
c) Can generate odour if the system is not operating effectively; and
d) Has the potential to pollute recipient water body if there is system failure as such it needs personnel to manage to ensure that it operates effectively and efficiently;

Advantages of using WSP include:

a) As compared to septic tanks, WSP do not require emptying of wastewater as it is discharged into the environment after its treatment;
b) Cheap and easy to operate;

3.4.3 Discharging liquid waste to the sewer line at University WSP

The University campus already has wastewater stabilization ponds (WSP). Considering that a large volume of liquid waste will be discharged from the campus on daily basis, it will be environmentally friendly to discharge the liquid waste into the sewer line for treatment at the WSP. The alternative was preferred for the additional teaching area complex, the library extension and the faculty of law extension.

Advantages of discharging liquid waste to the sewer line to the University WSP:

a) No space will be required at the campus for treating waste water as in the case of waste stabilization ponds;
b) If not properly managed, wastewater stabilization ponds result into breeding grounds for mosquitoes. With the sewer lines, no breeding grounds for vector insects will be constructed on site;
c) There will be no odor at the campus as the case is with stabilization ponds;
d) The waste water is contained properly with no potential to pollute recipient water body if there is no system failure and
e) No need for periodic emptying as the case is with septic tanks.

3.5 Alternative solid waste disposal methods

3.5.1 Biowaste

With the increased number of students at the campus, it is expected that biowaste will be generated on daily basis and an analysis of alternative disposal methods was made as follows:

3.5.1.1 Use of rubbish pits

The use of rubbish pits inside the university compound to dispose of biowaste was considered as one of the alternatives. However, this option was not favored because this could lead to breeding of houseflies and could attract scavengers such as dogs and cats. Despite this, advantages include low cost in terms of operation because there will be no costs related to transportation and handling of the waste.

3.5.1.2 Use of waste disposal site operated by Zomba City Council

This method involves arranging with Zomba City Council to collect biowaste for disposal at designated dumping site for the council. However, in an event that the council fails to collect the biowaste, the biowaste can produce bad odour, which can attract flies, dogs etc. As such for this arrangement to work properly, the university needs to have a standby vehicle to assist when such a situation arises. In addition, in order to reduce the volume of biowaste, an arrangement will be made with people/institutions that are in piggery business to come and collect biowaste to feed their stock. This alternative was considered to be favourable for the disposal of biowaste.

3.5.2 Waste paper

The teaching and learning activities at the university are likely going to generate waste paper that will need to be disposed of. There are a number of disposal alternatives that were analyzed and these include:

3.5.2.1 Use of rubbish pits

This alternative was not favored because waste paper could easily be blown off by wind from the rubbish pit and litter the university campus. An advantage to this alternative includes low cost in terms of operation because there will be no charges related to transportation and handling of the waste.

3.5.2.2 Recycling of wastepaper

The university will either embark on waste recycling project or arrange with waste paper recycling companies to come to collect waste paper periodically. It was envisaged that this initiative will not only benefit the university but also the whole of Zomba City Council will be reduced. As such this was the favored option in the management of waste paper.

CHAPTER 4 LEGAL AND POLICY FRAMEWORK

4.1 MALAWI'S ENVIRONMENTAL REGULATORY FRAMEWORK

Malawi has over the years, developed a number of policies and legislation to guide implementation of environmentally and socially sustainable development projects in various sectors of the economy. The policies and legislation have assisted to mainstream environmental and social issues in different development projects during planning, construction, operation and maintenance, and decommission phases of the projects. Besides, Malawi also uses different international procedures, policies and guidelines where national laws, policies, procedures, guidelines and legislation are falling short to guide implementation of environmentally and socially sustainable development projects in various sectors of the economy.

This chapter therefore outlines the policies, legislative and administrative frameworks relevant to guide implementation of various activities of different projects.

4.2 POLICY FRAMEWORK

The different policies that Malawi has developed to guide implementation of different project activities in the country that are relevant to the project under discussion are discussed below.

4.2.1 National Environmental Policy, 2004

The National Environmental Policy, 2004, aims at narrowing the gap between degradation of the environment and depletion of natural resources on one hand and development on the other. The Policy promotes sustainable social and economic development through sound management of the environment and natural resources.

Activities of the project shall among other things involve clearing, excavation and levelling of soil, extraction of gravel and quarry, transportation of materials, compaction of sub-base material and construction of the undergraduate teaching complex, which will generate negative impacts in the project area and beyond. Some of the impacts will include increased generation of waste; injuries due to construction works; increased dust emission and air pollution; risk of social conflicts; increased risk of illicit behavior and crime; impacts on community dynamics; increased risk of communicable diseases; increased cases of accidents; possible disruption of public service utilities; increased demand for sanitary facilities; and increased disruption of activities at the university premises. As a requirement under the environmental policy, the developer will therefore prepare an environmental and social management plan, which will be implemented during project construction and operation phases. The ESMP will put in place measures to reduce adverse impacts arising from the activities of the project and that implementation of the activities of this project will take sustainable environmental and social issues on board.

4.2.2 Gender Policy, 2015

The Gender policy specifies that Government has a responsibility to integrate gender issues into the development, design, implementation, and monitoring of different development programs. As stipulated in Section 1.3, the national Gender policy provides guidelines for mainstreaming gender in various sectors of the economy to reduce gender inequalities and

enhance participation of women, men and youth for sustainable and equitable development; as well as poverty eradication in the country.

Section 3.7 of the policy recognizes that Gender Based Violence (GBV), especially violence against women, girls and the vulnerable groups, is a severe impediment to social well-being and poverty reduction.

The proposed project will integrate consideration of the needs of women, men, boys and girls in all project activities. The project will ensure that wherever there are any employment opportunities, women will be given equal chances as men for employment. Deliberate effort will be made to ensure that among the employees, at least 40% should be women.

4.2.3 National Water Policy, 2005

The policy as outlined in Section 1.3, provides an enabling framework for integrated water resources management in Malawi. The Policy covers areas of water resource management and development, water quality and pollution control, and water utilization. If not properly managed, the activities of the have the potential to negatively affect the water resources of Mponda and Mulunguzi rivers. It is therefore recommended that implementation of the activities of the project should minimize pollution of the public water thereby promoting public health and hygiene and environmental sustainability. The university will ensure that solid waste and wastewater from construction the site and the university campus during operation phase do not pollute the water bodies.

4.2.4 Decentralization Policy, 1998

The Decentralization Policy devolves administration and political authority to district level in order to promote popular participation. One of the key responsibilities of the district councils is to assist government in managing and preserving the environment and natural resources. In the course of their development work the Councils are required to provide for local people's (communities) participation in the formulation and implementation of the District Development Plans. It is in this respect that the councils have been requested to form action committees at Area, Ward or Village level.

In light of this devolution, the District and City Councils will play a very important role in implementing Environmental and Social Management Plans that have been developed for this project.

4.2.5 National Construction Industry Policy, 2017

Construction of the proposed undergraduate teaching complex will trigger the Construction Industry Policy in that the project developer must ensure that the contractor protects the environment, in line with national and international policies for environmental sustainability. Areas of focus include occupational health and welfare; gender; and HIV and AIDS. Section 3.7 part (a) of the policy recognizes that the Construction Industry greatly contributes to deforestation, noise, dust and chemical pollution, soil erosion and physical disruption. In addition, there have been a number of abandoned quarry sites, which have been left without being rehabilitated and bitumen wastes dumped carelessly in roads

projects. Some of these result in pollution of rivers and annihilation of aquatic life. While the Environmental Impact Assessment is mandatory for certain projects, however, there are no mechanisms for effective reinforcement. To that effect, the Policy ensures that the Construction Industry protects and harnesses the environment in line with national and international policies;

Furthermore, the developer will ensure that only qualified and registered contractors with the National Construction Industry Council (NCIC) will be considered for the works contracts of the project to ensure that standard structures and standard procedures are followed which will ensure that only durable structures are constructed and in an environmentally and socially sustainable manner.

4.2.6 HIV and AIDS Policy, 2012

The Policy highlights that impacts of HIV and AIDS on the country are quite significant and affect a range of socio-economic activities. HIV and AIDS prevalence in the country varies from one district to another and from the rural to urban areas. The highest rate is in the Southern Region and the lowest rate is in the Northern Region. Prevalence rate is high in urban areas as compared to rural areas.

The Policy identifies migrant workers and women among highly vulnerable people to transmission of HIV and AIDS and other sexually transmitted diseases. In addition, increased disposal of income from migrant workers may enhance some workers to indulge in extra-marital affairs within the surrounding villages, which will enhance the spread of HIV and AIDS among workers and local people. The project will have the potential to increase the number of people in the project area due to an increase in the number of temporary workers who will be employed to work at the project. This will likely cause spread of HIV and AIDS. As a way of implementing the Malawi National HIV and AIDS policy, the proponent will implement an HIV and AIDS workplace policy and prevention, treatment, care, support and impact mitigation programmes as one way of effectively preventing, reducing and managing the impact of HIV and AIDS in the work place. It is also proposed that during construction and implementation phases of the project, workers as well as surrounding communities, should be sensitized on the prevention of HIV and AIDS. Further, Information, Education and Communication (IEC) materials on HIV and AIDS should be distributed.

4.2.7 Guidelines of Environmental Impact Assessment in Malawi, 1997

The EIA Guidelines of 1997 outline the process for conducting EIAs to ensure compliance with the EIA process, as required in the Environment Management Act and Sections 2.2, 2.3 and 2.4 of the 1997 EIA Guidelines for Malawi. The Guidelines contain a list of prescribed projects for which EIA is mandatory and those that may not require an EIA. The Guidelines further prescribe the requirement for conducting environmental and social screening of different projects to determine, which projects require and EIA and which projects do not require EIA. Screening was conducted for the project. Screening showed an EIA is not required for this project. An Environmental and Social Management and Monitoring Plan was therefore recommended for this project.

Preparation of this ESMP therefore followed closely all the provisions of the requirements of the EMA, 2017 and the EIA guidelines of 1997 as discussed above.

4.2.8 National Sanitation Policy, 2006

The National Sanitation Policy provides a vehicle to transform the hygiene and sanitation situation in Malawi. Section 1.2 of the policy provides both guidelines and an action plan where, by 2020, all the people of Malawi will have access to improved sanitation, safe hygienic behavior will be the norm and recycling of solid and liquid waste will be widely practiced leading to healthier living conditions, a better environment and a new way for sustainable wealth creation.

One of the policy objectives as highlighted in section 3.1.1 of the policy is the improvement of hygiene, sanitation and recycling of waste in the country. The proposed project will ensure that liquid and solid waste management encourages the reduction, recycling and reuse of waste before final disposal hence complying with the provisions of the policy. Furthermore, appropriate waste management facilities will be provided for the project.

4.2.9 Public Health (Corona Virus Prevention, Containment and Management) Rules, 2020

The objective of these Rules is to enable the Minister to implement measures to prevent, contain and manage the incidence of COVID-19. Section 3 of the regulations provides for prevention measures on the spread of Corona virus, which Section 13 provides for regulations of work places. The Minister may prescribe the following measures on workplaces employers and employees: operation of shifts for employees; the spacing between shifts for employees at a workplace; restrictions on the number of persons at any workplace at any time; prescribe the spacing between employees at a workplace; prevention of persons showing general symptoms of COVID-19 from accessing a workplace; where applicable, provision of isolation facilities at a workplace for employees showing symptoms of COVID-19; provision of personal protective equipment for all persons at a workplace; and observance of sanitary and hygienic practices, including disinfection of the workplace and in between shifts.

These Rules are enforceable whether or not a state of disaster in relation to COVID-19 is in force under the Disaster Preparedness and Relief Act. To prevent, contain and manage COVID – 19 at the work place, the contractor will train the employees on the provisions of these rules.

4.2.10 National Educational Policy, 2020

The National Education Policy (NEP) is the Government of Malawi's document that spells out Government policy on education. It outlines the sector's priorities and defines the country's education policies that will guide the development of the education sector in Malawi. The Government recognizes that education is the backbone for socio-economic development, economic growth and a major source of economic empowerment for all people especially women, the youth and the physically challenged. It also has a strong impact on literacy; behavior in terms of reproductive, maternal and child health; and on knowledge of HIV and AIDS. The policy also subscribes itself to the Sector Wide

Approach (SWAp) to development, planning and financing of the education sector in line with the Malawi Development Assistance Strategy and Sector Working Group Guidelines. The NEP is designed to respond to the Malawi Growth and Development Strategy II and various related national regional and international policies and protocols on education. The policy recognizes that early childhood development and early childhood education, primary and secondary education are critical foundations to further education. It further recognizes the importance of inclusion of special needs education, out-of-school youth education (complementary basic education) and adult literacy in the education sector. The NEP attempts to define the provision of quality education in a holistic manner through expanded access and equity, improved quality and relevance, and improved governance and management. Furthermore, the NEP recognizes the government's commitment to related international protocols such as the Education for All Jomtien (1990), Millennium Development Goals (2000) and Sustainable Development Goals (2015) which recognize the importance of making education available to all. It is therefore expected that the coming together of all key players in the education sector will make a significant difference in and to Malawi, and thereby respond to the national and international aspirations and expectations. By building an educated and highly skilled population, Malawi will not only achieve accelerated economic growth and development, but it will also aim towards the achievement of the Sustainable Development Goals. The Government is committed to spearheading the implementation of specific strategies and focused actions pursued to ensure that the NEP becomes the center of the education sector.

The project is in line with the policy as it aims to increase annual intake of students and train high-level human resource that can meet development needs of the country and the international labor market.

4.3 LEGAL FRAMEWORK

The section provides a review of key national legislation pertinent to development and operation of the project. The project proponent intends to develop and operate the project in line with all relevant national laws. Details of the legal frameworks considered are presented in the sections that follow.

4.3.1 The Constitution of the Republic of Malawi, 1995

The Constitution of the Republic of Malawi (1995) is the supreme law of the land. Section 13 of the policy sets out a broad framework for sustainable environmental and social management at various levels in Malawi. Section 13 (d) of the Constitution provides that the state shall actively promote the welfare and development of the people of Malawi by progressively adopting and implementing policies and legislation aimed at managing the environment responsibly.

The Constitution further provides for a framework for the integration of environmental and social consideration into any development programs. The implication of this provision is that Government, its cooperating partners and the private sector have a responsibility of ensuring that development programs and projects are undertaken in an environmentally and socially responsible manner, hence the development of this ESMP for the project.

4.3.2 Water Resources Act, 2013

The Act makes provision for the control, conservation, apportionment and use of water resources in Malawi. Under the Act, the right to use public water may be limited if the use may cause damage to natural resources of the area or in the vicinity. The Act defines pollution or fouling of public water to mean the discharge into or in the vicinity of public water or in a place where public water is likely to flow, of any matter or substance likely to cause injury whether directly to public health, livestock, animal life, fish, crops orchards or gardens which such water is used or which occasions, or which is likely to occasion, a nuisance.

Section 39 (1) of the Water Resources Act prohibits abstraction and use of water unless authorized to do so under this Act. Abstraction and use of water from a water resource would require a license granted by the Authority. When necessary, this license could be combined with a permit. Permits would be required for abstraction of water for the surface water resources and for discharging effluents.

Part VIII, Section 89 (1) of the Act prohibits any person who owns, controls, occupies or uses land on which an activity or process is or was performed to pollute water resources and which, unless authorized under this Part, causes, has caused or is likely to cause pollution of a water resource, shall take all such measures as may be necessary to prevent any such pollution from occurring, continuing or recurring.

The Developer will therefore ensure that construction of the undergraduate facility at the university does not pollute the environment. Measures to minimize pollution of the water will include proper disposal of both solid and liquid waste from during construction and operation phases.

4.3.4 Public Health Act, 1948

The Act provides legal framework on planning and management of a wide range of health-related issues including environmental health, occupational health and solid wastes management. Section 79 parts (a) and (b) provide legal powers for the local authority to enforce the provision of sewage works for large scale development projects. Section 80 stipulates the requirements for preparation of detailed plans for planned sewage works for implementation. Section 82 outlines some activities which can limit the free flow of wastes into sewage works and which must be avoided as much as possible. These activities include disposal of solid wastes in oxidation ponds, disposal of chemical refuse, waste stream, and petroleum spirit or carbon calcium. Section 87 of the Public Health Act stipulates the need for proper drainage works for new buildings. Section 88 stipulates the requirements for separate toilets for both female and male persons in public buildings which would be used by both male and female employees.

The implication of the Act on the proposed project is that the developer should ensure that there are appropriate and adequate waste disposal facilities, provision of sanitary toilets and proper storm water drains. The toilets will be demarcated according to sexual category. In addition, the contractors will have in place temporary toilets for both female and male workers during construction period.

4.3.5 Occupational Safety, Health and Welfare Act, 1997

The Act regulates work conditions with respect to safety, health, and welfare of workers. During construction phase, there will be a number of workers working on the site using different types of machinery and facilities. Construction activities in general pose a number of occupational health and safety risks and probable risk to workers and community members in the surrounding areas. Furthermore, increased movement of vehicles and equipment during construction can pose a risk of accidents to the surrounding communities as well as the construction workers.

The Act therefore places a duty of care on contractors throughout the project construction phase and similarly, the workers have a duty to take reasonable care for their own safety and health. The duty of ensuring safety, health, and welfare of workers is on the employer. However, every employee is required to take reasonable care for his/her own safety and that of other workers.

Considering that the construction phase of the project will require a labour force of about 100 people and use of heavy machinery, the Occupational Safety, Health and Welfare Act is important in safeguarding the health and welfare of all workers. The contractor will ensure that there is adequate protection for the workers who will be on site as required by the Act.

Section 66 of the Act defines the procedure to be followed in case of the occurrence of an accident which either can cause loss of life or disables a person from carrying out the normal duties at which he is employed. Furthermore, it stipulates measures that relate to work in confined spaces (section 55), matters relating to bulk storage of dangerous materials, matters dealing with noise (section 63) and general matters relating to health and safety. To this effect, the proponent will allow the Ministry of Labour to assess the construction activities and make determinations of the adequacy of the mitigation measures towards occupational safety of the workers.

4.3.6 Gender Equality Act, 2013

The Gender Equality Act of 2013 seeks to promote gender equality, equal integration, influence, empowerment, dignity and opportunities, for men and women in all functions of society, to prohibit and provide redress for sex discrimination, harmful practices, and sexual harassment to provide for public awareness on promotion of gender equality, and to provide for connected matters. Part II of the Act is on Sex Discrimination. Section 4 stipulates that a person shall not treat another person less favourably than he or she would treat a person of his or her own sex. In compliance to this section of the Act, the proponent of the project will ensure that there is no sex discrimination during all phases of the project including Implementation and Maintenance Phase.

The University of Malawi Act in Section 6 and subsection 1 part c on Principles of the University, advocates for gender responsiveness to ensure that equal opportunity and participation of women and men in programs, governance and other spheres. The Contractor will therefore be expected to ensure that wherever there are any employment

opportunities, women will be given equal chances as men for employment. Deliberate effort will be made to ensure that among the employees, 40% should be women.

The project shall support interventions aimed to expand education opportunities especially for the poor and disadvantaged students in line with Government and the University strategy of increasing access to and equity of tertiary education. The project will ensure that vulnerable groups are also considered in the project by providing bursaries to vulnerable students.
The project will further ensure that vulnerable groups also benefit from the different opportunities that the project will bring.

4.3.7 Local Government Act, 1998

The Act, as read with Section 146 of the Constitution, provides the mandate to the local councils in planning, administration, and implementation of various development programs in their areas. The district council where the project will be implemented was consulted with respect to its mandate and how the project will comply with the planning requirements.

As is required by the Act, the proponent of the project briefed and consulted the District Council on the project. The proponent of the project will incorporate all recommendations made by the Local Council during the Planning, Construction and the Operation phases of the proposed project.

4.3.8 Environment Management Act, 2017

The Environment Management Act of 2017 makes provision for the protection and management of the environment and the conservation and sustainable utilization of natural resources. Section 31 __ (1) of the EMA stipulates that the Minister may, on the recommendation of the Authority, specify, by notice published in the *Gazette*, the type and size of a project, which shall not be implemented unless an Environmental and Social Impact Assessment is carried out.

Subsection (2) stipulates that a person shall not undertake any project for which an Environmental and Social Impact Assessment is required without the written approval of the Authority, and except in accordance with any conditions imposed in that approval.

Subsection (3) provides that licensing authority shall not grant a permit or license for the execution of a project referred to in subsection (1) unless an approval for the project is granted by the Authority, or the grant of the permit or license is made conditional upon the approval of the Authority being granted.

In this way, the developer for the proposed project will have to demonstrate that he has taken sufficient efforts to identify all possible negative impacts and suggest reasonable measures in order to obtain an environmental and social clearance for the project first before construction activities of the proposed project are undertaken.

4.3.9 Education Act, 2013

The Education act of 2013 Part II, Section 5 talks about promotion of education and goals of education in Malawi. Among the goals is to promote equality of education opportunities for all Malawians by identifying and removing barriers to access education. Development of students' knowledge, understanding and skills needed for Malawians to compete successfully in the modern and ever changing world is also being emphasized. The project will assist in removing the barriers through the construction of the undergraduate teaching complex, which will provide for increased access to higher education, quality education and improved learned academic performance.

4.3.10 Child Care, Protection and Justice Act, 2010

In addition to the duties and responsibilities imposed by section 23 of the Constitution, a parent or guardian) shall not a) deprive a child of his or her welfare; and b) has responsibilities whether imposed by law or otherwise towards the child which include the responsibility to i) protect the child from neglect, discrimination, violence, abuse, exploitation, oppression and exposure to physical, mental, social and moral hazards; ii) provide proper guidance, care, assistance and maintenance for the child to ensure his or her survival and development, including in particular adequate diet, clothing, shelter and medical attention; iii) ensure that during the temporary absence of the parent or guardian, the child shall be cared for by a competent person; and iv) exercise joint primary responsibility for raising their children, except where the parent or guardian has forfeited or surrendered his or her rights and responsibilities in accordance with the law. In line with the provisions of this Act, the Sub-projects implementers will ensure that child protection will be greatly respected at all levels.

4.3.11 Employment Act, 2000

The Act prohibits forced labour and child labour as well as discrimination against any employee or prospective employee on the grounds of race, colour, sex, language, religion, political or other opinion, nationality, ethnic or social origin, disability, property, birth, marital or other status or family responsibilities in respect of recruitment, training, promotion, terms and conditions of employment, termination of employment or other matters arising out of the employment relationship. It also encourages equal pay to employees.

A worker is entitled to wages and remuneration due on the termination or completion of his employment contract within 7 days of such termination or completion. In line with the provisions of this Act, the Sub-project implementers will make sure that all the relevant provisions mentioned above will be adhered to.

4.3.12 National Construction Industry Act, 1996

The Act provides for the establishment of the National Construction Industry Council of Malawi (NCIC), for the promotion and development of the construction industry, registration of persons engaged in the construction industry in Malawi, co-ordination of training of persons engaged in the construction industry and general matters incidental thereto. The NCIC is responsible for regulating the construction industry in Malawi through among others: registering consultants and construction firms, standardizing quality

control, codes of practice, procurement process; and legal contractual procedures in liaison with other organization. In accordance with the Act, the NCIC will be involved in project to make sure that construction activities adhere to agreed quality standards and registered persons are the ones entrusted with the works, so as to ensure that quality structures are developed.

4.3.13 HIV and AIDS (Prevention and Management) Act, 2018

The HIV and AIDS (Prevention and Management) Act makes provision for the prevention and management of HIV and AIDS; provisions for the rights and obligations of persons living with HIV or affected by HIV and AIDS; provisions for the establishment of the National AIDS Commission; and provisions for matters incidental thereto or connected therewith. Part 4, Section 6 (1) states that discrimination on a basis related to HIV or AIDS is prohibited. Part 5, Section 9.

(1) states that a person living with HIV has the right to privacy and confidentiality with regard to information concerning their status. Part 8 of this Act gives provisions to employers by stipulating requirements in several sections quoted as follows:

a) Section 26 states that an employer shall not require any person to undergo HIV testing as a pre-condition for recruitment;
b) Section 27 (1) states that an employer shall not terminate the employment of an employee solely on the ground that the employee is living with HIV or is perceived to be living with HIV;
c) Section 28 (1) states that an employee shall not be discriminated against or be subjected to unfair treatment solely on the ground that he is perceived to be or is living with HIV; and
d) Section 32 (1) states that the State shall ensure that employers adopt and implement an HIV and AIDS policy at the workplace.

The implication to the project is that the project will implement interventions to manage HIV and AIDS that respond to the requirements of the Act. The project will need to have an HIV and AIDS workplace policy as a guide to implementing the interventions.

4.3.14 Physical Planning Act, 2016

This provides for orderly planning and development of land in both urban and rural settings with the aim of ensuring preservation and improvement of amenities and also for purposes of granting permission to develop. The act allows for establishment of a Physical Planning Council that receives any plans and has the duty to see to it that relevant organisations and people within the planned development are consulted. In this case since the development is within the institution, the main stakeholders are the school management committee. The Act further requires that local physical plans detailing buildings be deposited with the Commissioner and gazetted. Where necessary a review and or eventually a modification of the plans may be affected.

4.3.15 Environment Management (Waste Management & Sanitation) Regulations, 2008

The regulations apply to the management of general and municipal waste in Malawi. Part III of the regulations has provisions on management of general or municipal solid waste with Section 7(1) regulating that any person who generates solid waste shall sort out the waste by separating hazardous waste from the general or municipal solid waste. Section 8(1) regulates that 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 so as not to promote the propagation, attraction of vectors or the creation of nuisances. Section 10(1) has provisions for collection of municipal solid waste as being the responsibility of a local authority. Section 11 has provisions that general or municipal solid waste may be disposed of at any waste disposal site or plant identified and maintained by a competent local authority or owned or operated by any person licensed to do so under these regulations. Part V of the regulations has provisions on management of municipal liquid waste with a general requirement stipulated in Section 23 that no person shall discharge effluent into the environment unless it meets prescribed environment standards. These regulations have a major implication on the proposed project with regards to waste management regimes that are to be put in place. The proposed project will have to encourage waste separation at source, provide proper and adequate waste receptacles, suitable waste storage and treatment facilities. The project will work with Zomba City Council to ensure proper waste collection alternatives are put in place as well as waste disposal.

4.3.16 Mines and Minerals Act, 1981

Mining activities in Malawi are governed by the Mines and Minerals Act of 1981 (CAP61:01). The Act stipulates that all potential environmental and social impacts must be included in the application for exploration and mining licenses. Considering that the project will use quarry stone and sand as construction materials, the quarry and sand mining operations will require a mining license and that that mining of the quarry and sand should include plans for addressing environmental and social problems, prevention of pollution, treatment of waste and land rehabilitation. The Act further states that an environmental license must be submitted to the Minister responsible for Mines when applying for a license for mining. The Contractor will be required to get the necessary permits before he begins to mine quarry stone and sand for construction of the teaching complex facility.

4.4 INTERNATIONAL GUIDELINES

The international legal and policy framework within which projects operate, and implementation procedures and guidelines, have developed substantially since adoption of the Universal Declaration of Human Rights in 1948. Instruments supported by member states include those developed by the United Nations and the European Union/Commission. Others have been developed by bodies such as the World Bank Group. The project under discussion being a World Bank project, World Bank Group Environmental and Social Standards were reviewed.

4.4.1 World Bank Environmental, Health and Safety Guidelines

The project will be required to apply the relevant requirements of the World Bank Group Environmental, Health and Safety Guidelines (EHSGs). These are technical reference documents, with general and industry specific examples of Good International Industry

Practice (GIIP). These will include the General EHS Guidelines as well as any relevant Industry Sector EHS Guidelines.

4.4.1 World Bank Group Environmental and Social Standards

The World Bank Environmental and Social Framework aims to ensure that environmental and social risks and impacts that the proposed project may generate are incorporated and managed during project implementation. The ESF sets out environmental and social standards, which are key in identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank. Additionally, the Environmental and Social Standards (ESSs) are used during the implementation of World Bank funded projects or activities in order to protect the interest of beneficiaries, clients, shareholders and the Bank. The ESSs also provide a comprehensive framework for avoiding negative impacts on the environment and people and enhance social equity and promote sustainability. The SAVE project contains a series of subprojects whose implementation will generate a number of impacts, which will affect both the biophysical and socio-economic environment in the project area and beyond, this ESMP has therefore been prepared to outline the impacts and the measures which will be used to manage the impacts. The ESMP contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project risks and impacts, including on its capacity to manage environmental and social risks and impacts. During the implementation of the project, the following World Bank ESSs will be triggered:

i) Assessment and Management of Environmental & Social Risks and Impacts;
ii) Labour & Working Conditions;
iii) Resource Efficiency and Pollution Prevention & Management;
iv) Community Health & Safety;
v) Biodiversity Conservation & Sustainable Management of Living Natural Resources; and
vi) Stakeholder Engagement & Information Disclosure

4.4.1.1 Assessment and Management of Environmental & Social Risks and Impacts (ESS1) ESS1 sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through investment project financing, in order to achieve environmental and social outcomes consistent with the ESSs. ESS1 therefore requires that an ESMP should be prepared for the project. In line with this requirement, the ESMP has been prepared for the project before commencement of construction activities to ensure that the project is environmentally and socially sound and sustainable. The environmental and social assessment was proportionate to the risks and impacts of the project. It has informed the design of the project and was used to identify mitigation measures and actions and to improve decision-making.

4.4.1.2 Labour and Working Conditions (ESS2)

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker management relationships and enhance the development benefits of a project by

treating workers in the project fairly and providing safe and healthy working conditions. Considering that the project will attract a huge work force, then ESS2 applies. The project will apply skilled, semiskilled and non-skilled labour. Deliberate effort will be made to ensure that most of the non-skilled labour force will be employed from the surrounding communities. Furthermore, the project will ensure that 40% of the labour force will be women and that the national laws and conditions of employment will be followed.

4.4.1.3 Resource Efficiency and Pollution Prevention and Management (ESS3)

This ESS3 recognizes that economic activity and urbanization often generate pollution of air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. The project under discussion will generate pollution to the air, water bodies and land during both construction and operation levels. During construction, dust will be emitted into the atmosphere polluting the air. Exhaust gas from heavy construction equipment will be emitted into the atmosphere thereby increase the levels of greenhouse gases. Runoff from the construction site will carry along with it silt and other debris that will pollute the rivers in the project area. Solid and liquid waste that the project activities will generate will pollute the water bodies in the project area. Furthermore, leakage and spillages of oils from heavy construction equipment will also cause pollution of the water bodies in the project area. The University has therefore prepared this ESMP with measures to manage the above impacts.

4.4.1.4 Community Health and Safety (ESS4)

This ESS recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. The ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

A moderate influx of labor is expected during construction of the project. Therefore, the impacts associated with an influx of populations such as disease transmission and spread of HIV, potential for Gender Based Violence, Sexual Exploitation and Abuse, Child Labour and Violence Against Children have been outlined in the ESMP and their management have been provided.

4.4.1.6 Stakeholder Engagement and Information Disclosure (ESS10)

ESS10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

Preparation of the ESMP for this project involved engaging institutions within the project impact area, and selected public institutions who expressed their views on the proposed project. The stakeholder participation process ensured that due consideration was given to stakeholder values, concerns and preferences when decisions regarding the project are

made. The purpose of stakeholder involvement was to inform the stakeholders about the project and its likely effects; solicit their inputs, views and concerns about the project; and take into account the information and views of the public in the environmental and social assessment and decision-making. The study used two methods to ensure adequate input to the environmental and social impact assessment process, which included focus group discussions and key informant interviews.

4.5 Gaps Between World Bank Environmental and Social Standards and National Legislation

Table 4.1 provides details on the gaps that exist between national legal instruments and the World Bank ESS.

Table 4. 1 Gaps between national legal instruments and World Bank Environmental and Social Standards

World Bank ESS provisions	National Legal Instruments provisions	Gap(s) identified	How the gaps have been addressed (if applicable)
ESS 1: Assessment and Management of Environmental & Social Risks and Impacts	Environmental Management Act (2017 EIA Guidelines (1997)	Environmental Management Act (2017) and EIA Guidelines (1997) does not indicate the need to prepare ESMF for projects to guide the preparation of project or ESMP	Preparation of the ESMF the project
ESS 2: Labour and Working Conditions	The Labour Relations Act (1996) Occupational Safety, Health and Welfare Act, (1997) Employment Act (2000)	The national legislation does not mention the need to develop Labour Management Plan or Procedures	The project will follow ESS2 and developed labour management procedures with relevant provisions to bridge the gap
ESS 3: Pollution Prevention and Resource Efficiency	Environment Management Act (2017) Environmental Management (Waste Management and Sanitation) Regulations, (2008)	The national legislation mostly focuses on pollution prevention and less on aspects of resource efficiency	The project will follow provisions of ESS3 on resource efficiency including development of a waste management plan to mitigate the impacts of pollution from solid and liquid wastes.

ESS 4: Community Health and Safety	Occupational Safety, Health and Welfare Act, (1997)	The Occupational Safety, Health and Welfare Act, (1997) does not focus much on community health and safety	This gap has been addressed through the implementation of ESS4, which addresses potential risks and impacts on communities that may be affected by project activities.
ESS 10: Stakeholder Engagement & Information Disclosure	EIA guidelines (1997) Local Government Act (1998) National Decentralization Policy (2000)	No provision for development of the GRM	The project has developed a stakeholder engagement plan which includes a GRM

4.6 SUMMARY OF APPROVALS AND LICENSES REQUIRED FOR THE PROJECT

There are several statutory and regulatory approvals or licenses that the developer needs to get in the course of project implementation to ensure that the project is in line with sound environmental management practices and follows other relevant pieces of legislations. These have been summarised in Table 4.2.

Table 4. 2 List of statutory approvals and licenses required for the project

List of statutory approvals or licenses to be obtained	Legal and regulatory framework	Responsible institution for processing approval or license
ESMP approval	Environment Management Act (2017)	Malawi Environment Protection Authority
Planning Permission	The Physical Planning Act No 17 of 2016	Zomba District Council
Permission to Develop	Physical Planning Act No 17 of 2016	Zomba District Council
Approval to transport, store and dispose of waste	Local Government Act (1998) EMA,2017	Zomba District Council and MEPA
Work Place Registration Certificate.	Occupational Health, Safety and Welfare Act (Cap 55:01)	Ministry of Labour, Youth and Manpower Development
Approval for water abstraction from under the ground or stream	Water Resources Act, 2013	National Water Resources Authority,
Sand mining permit	Mines and Minerals Act, 1981	Zomba District Council
Quarry mining permit	Mines and Minerals Act, 1981	Department of Mines

CHAPTER 5 BIOPHYSICAL AND SOCIO-ECONOMIC ENVIRONMENT

A baseline study of the existing environment has been carried out on the physical, biological and socio-economic environment in the project area and beyond. The study provides a measure of the existing state of the environment against which future changes imposed by construction of the access roads and the proposed undergraduate facility will cause. The physical and biological baseline factors considered include climate, air quality, topography, drainage, vegetation, fauna, geology and soils, existing road traffic, and socio-economic factors. The sections, which follow provide the detailed explanations of these factors.

5.1 Physical environment

5.1.1 Water Resource

The nearest rivers to the proposed project site are Mponda and Mulunguzi rivers. Mulunguzi river flows in the northern part of the project area and it is about 1.5 km away from the proposed project site and will not be directly affected by the project construction activities. Mponda river flows in the southern part of the project site and it is about 1.0 km from the project site and will not be directly affected by the project construction activities. Both rivers flow from western direction going eastwards before flowing into Likangala River, a tributary of Lake Chilwa in Zomba.

5.1.2 Topography

The university campus is situated in the City of Zomba which is in a generally mountainous and hilly area whose ground elevations vary between 790m and 1265m above sea level. The city is located at the foot of Zomba Plateau. The particular project site is close to the mountain base with an estimated terrain elevation above sea level of 888 m. The city is flanked by Sadzi, Nkholonje, Chiperoni, Chinamwali, Naisi, Likungwati, Ndangopuma, Mtiya and Chidalanje hills. The terrain is varied and undulating due to dissections made by numerous streams that flow through the town. Zomba Plateau is 2085 m above sea level. It is the fourth highest plateau in the country after Mulanje, Nyika, and Viphya. The proposed site is flat and not prone to soil erosion. The site on which the teaching facility will be constructed is flat and will not require much levelling in order to constructing the structures.

5.1.3 Geology

Zomba City has a varied and complex geology. Most of the rocks are of Precambrian origin made of upper Jurassic materials. Its base complex has three major rock types namely; charnoclatic, gneiss and granulite found throughout Zomba, much of which is covered by talus on slopes of Zomba Plateau; Quartzofeldspattic, gneiss and granulite occurring as outcrops on outstretched ridges on Chinamwali and Naisi Hills; Quartz-syenite comprise of irregular central mass of Ntonya hill surrounded by a discontinuous ring of three actuate hills of Sadzi, Kholonje and Ulumba. Zomba Plateau, which dates back to about 190 million years ago, consists of a plutonic intrusion complex composed of saturated syenitic and granite rocks. These contain mineral sand and gemstones, which could be mined on commercial basis for glass manufacturing. With rocks protruding in most parts of the site

for the proposed teaching complex, the site makes it suitable for construction of structures of this nature as the geology of the site is generally stable.

5.1.4 Soils

Zomba has well-drained soils, yellowish-brown to reddish brown in colour, medium to fine textured, slightly acidic and moderately deep. These fall into two main soil types namely; lithols and ferruginous. Lithols are shallow, stony and occur on steep slopes of Zomba Plateau and Ntonya ring complex. The soil is suitable for the type of construction required by the project.

5.1.5 Temperatures

The average monthly temperature for Zomba is 21.1 ^{0}C with a mean minimum of 11.5 ^{0}C in June and mean maximum of 29.8 ^{0}C in October. Figure 5.1 and 5.2 provides details of minimum and maximum temperatures for the University of Malawi over the years.

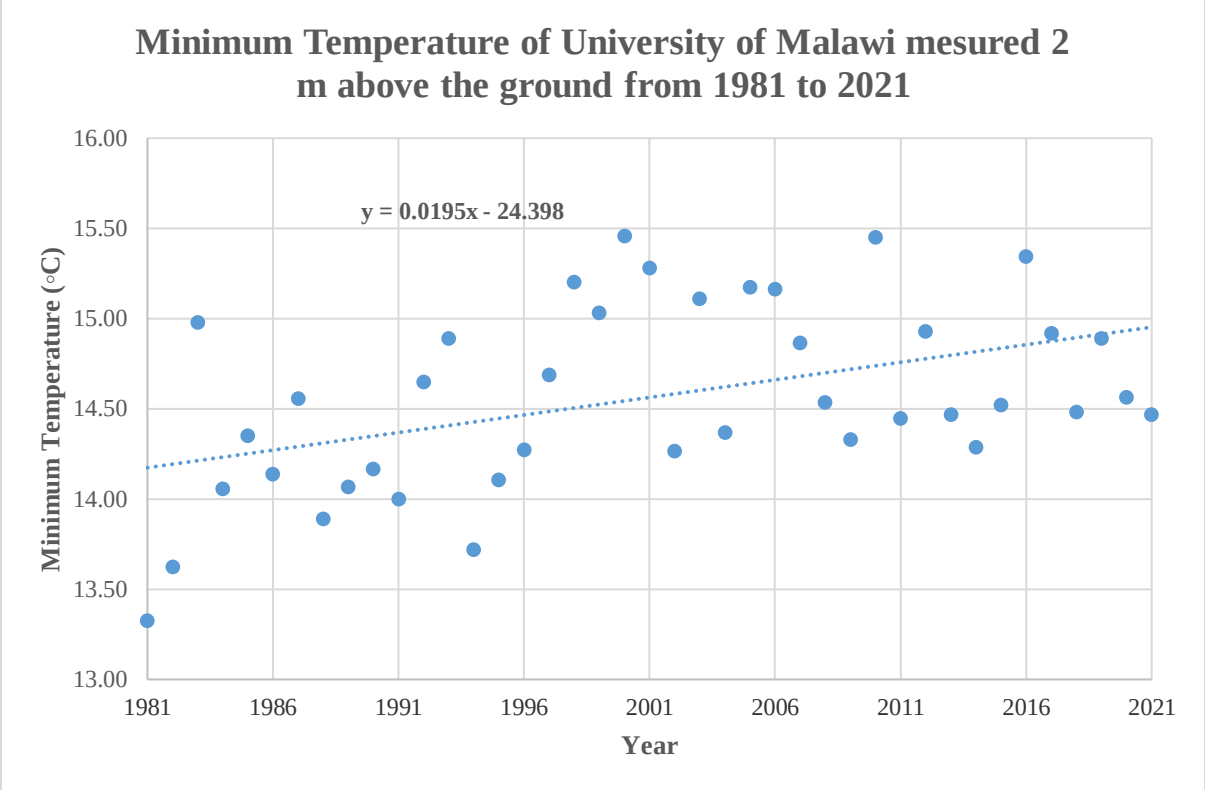


Figure 5. 1 Minimum Temperature of University of Malawi up to 2021

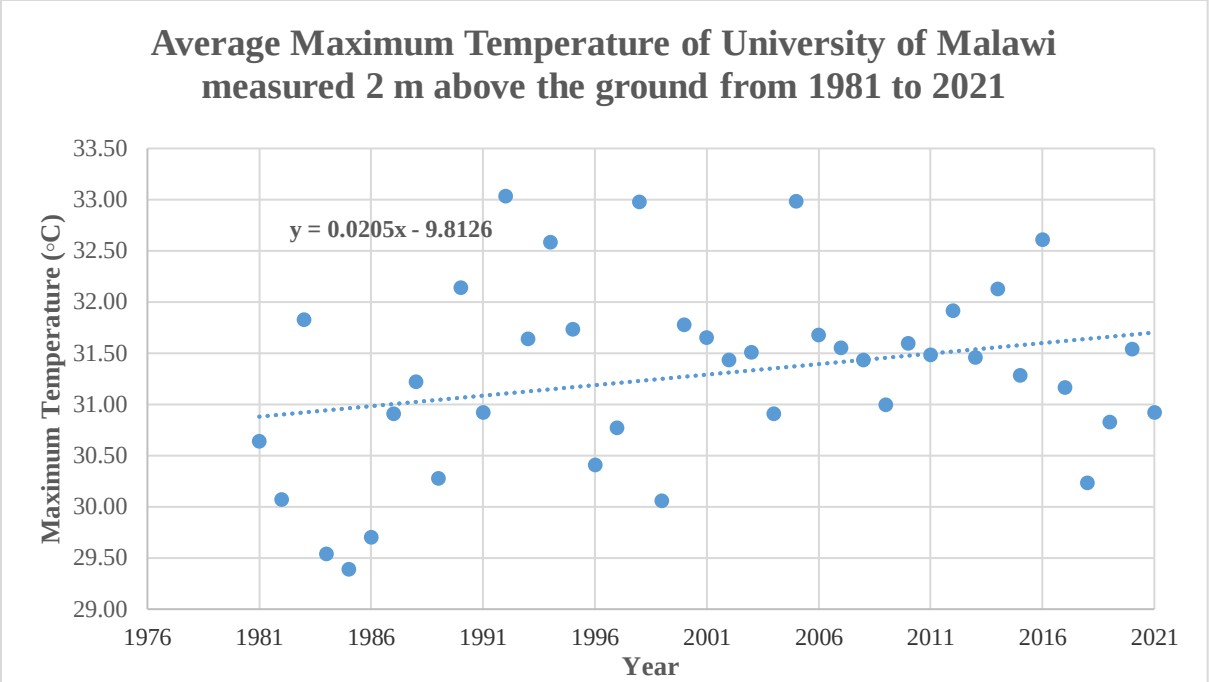


Figure 5. 2 Provides details of maximum temperature over the years up to 2021

Throughout Malawi, an increase in climate variations has been experienced in the form of prolonged dry spells, droughts, floods and temperature variability, which in turn have negatively affected the performance of sectors such as agriculture, natural resources, irrigation and water development, and energy. Natural resources, which form a principal source of social wellbeing and economic development in Malawi (Zomba inclusive) are under constant stress from climate change and unprecedented human, industrial and other developmental activities. For instance, flooding has increased incidences of diseases such as malaria and cholera and caused food shortages. Flooding and strong windstorms have damaged vital public and private infrastructure and services and precipitated landslides on Zomba's mountain slopes. Unpredictable rainfalls have resulted in poor harvests and hunger while drought has caused food and water shortages.

5.1.6 Rainfall

Rainfall in the project area ranges from 600 mm to 1500 mm. High rainfall occurs in January and February hence, the wettest months in the year. Zomba experiences tropical climate, which has three seasons namely hot rainy, cool dry and hot dry seasons. The hot rainy season starts from November and ends in April. Cool dry season occurs from May to July while hot dry season occurs from August to October. These seasons vary and overlap due to effects of global climatic changes and are often characterized by higher than normal temperatures and rainfall. Figure 5.3 provides details of the annual rainfall at the University of Malawi over the period.

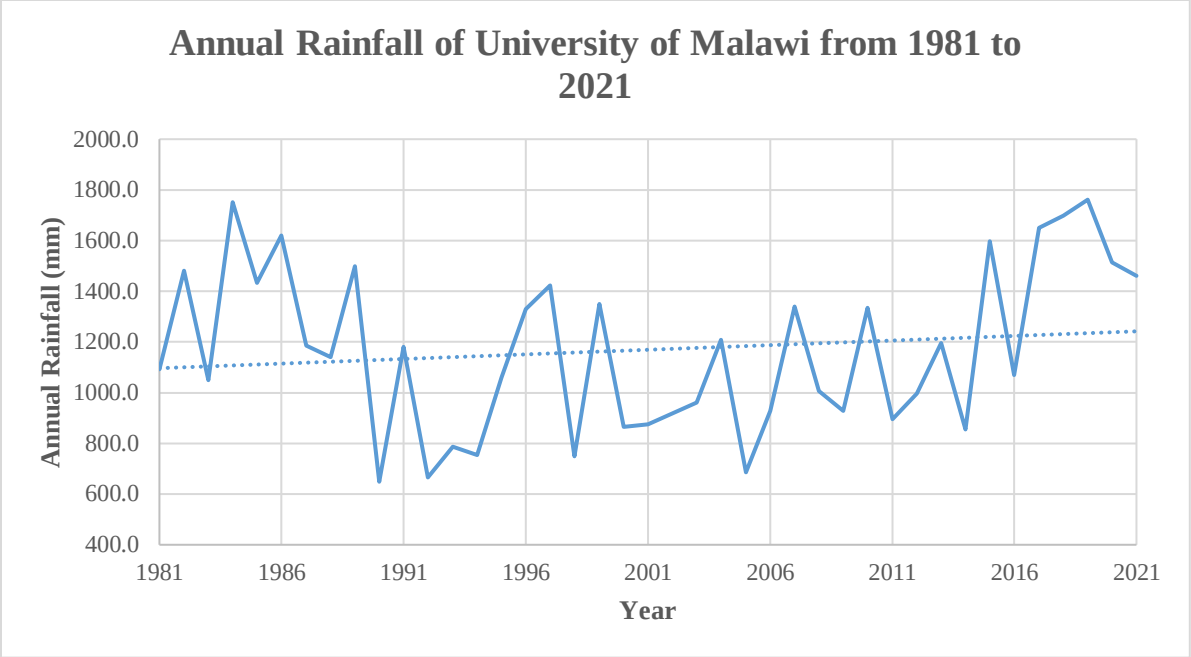


Figure 5.3 Annual rainfall at the University of Malawi over the period

5.2 Biological environment

Biological characteristics analyzed in this report include flora and fauna.

5.2.1 Flora

The earnarked site for the construction site of the undergraduate teaching complex facility lost its natural vegetation due to earlier institutional urban development. There are currently no trees on the site and is maintained as open lawn surrounded by ornamental shrubs. The site will be redesigned after construction works as soft landscape. Besides the University through the Project Coordinator is implementing various activities that facilitate the restoration, maintenance and enhancement of the ecosystems and ecological processes essential for the functioning of the biosphere and prudent use of renewable resources.

5.2.2 Fauna

With the absence of vegetative cover, there are no animals at the site apart from lizards and insects, which are seen in transit at times.

5.3 Socio-economic environment

5.3.1 Population

The population of Zomba City has continuously grown in the past and currently stands at 105,013. This is an 18.9% increase from 89,314 in 2008. The city is the second least growing city in Malawi with annual population growth rate of 2.5%. Its population makes up an average of 3.8% of the total urban population in Malawi. The growth trend signifies increased demand for land and need for provision of public infrastructure and basic urban services. The city has a population density of 2,511, which is a significant increase from 2,264 in 2008 and 1,690 in 1998 (NSO, 2018). The project site is surrounded by 10 wards namely Likangala,

Mtiya, Mbeza, Mpira, Chambo, Chinamwali, Masongola, Sadzi, Chilunga and Zomba central. Among the wards Likangala has the highest population density of 13227, followed by Chinamwali (8142) and Sadzi (5040). These densely populated areas are the unplanned squatter housing areas, which have developed due to the proximity to University of Malawi, City Centre and main M3 road.

5.3.2 Health facilities and common diseases

Zomba Health Sector is implementing activities to promote good health and Sanitation and well-being. Key Priority Area 5 of the MGDS III is the most relevant to health services delivery as it is specific on the promotion of health and well-being. Globally, it is in line with the objectives of sustainable development goal (SDG) 3 and SDG 6. The current goal of the health sector endorsed by the World Health Organization is to move towards universal health coverage of: quality, equitable and affordable health services. This implies none-discrimination, and everyone irrespective of social economic status, distance to health facilities, age, sex, tribe should have access to health services.

Zomba does not have a district hospital. It has a number of health facilities though, which include university clinic within the university campus, Matawale Health Centre, Zomba City Clinic, and Police College Hospital, which serve the surrounding areas and around major trading centers like Chinamwali, Zomba city main, Chikanda, and Matawale. All patients requiring special medical attention are referred to Zomba Central Hospital (ZCH) within Zomba City. ZCH is the referral hospital for Zomba, Mangochi, Balaka and Machinga Districts. It offers a range of curative, preventive and support services (both medical and non-medical) to peripheral health units. The leading cause of morbidity, in the district in the general population, for basic curative (outpatient) services is, by far, Malaria, which is endemic in Zomba District. Other diseases mentioned include respiratory related infections (RRI) and diarrhea. Apart from RRI whose causes are complex, malaria may largely be caused by presence of huge pools of water around and rivers where mosquitoes bleed uninhibited as they are untreated.

5.3.3 Water Supply

The project site is supplied by gravity-fed piped water from the Mulunguzi Dam that is situated at the top of the Zomba Plateau. Other sources of water for the City of Zomba are rivers and streams including underground water supply through boreholes and shallow wells. Some of these other sources of water are considered very unsafe for domestic use. The health risks associated with polluted water are enormous and dangerous to human life. Such health risks include water borne diseases such as diarrhea, cholera and dysentery. Piped water is supplied by Southern Region Water Board (SRWB), which pumps and treats water from the Mulunguzi Dam. The Dam has the capacity of 3.375 Million m3 with a catchment area of 18.9 Km^2 (SRWB 2018). Its water treatment works comprise flat-bottomed sedimentation tanks and rapid gravity sand filters. The treated water is transferred to storage tanks that work as buffers to supply a network of pipes feeding different locations and households.

It is however recommended that water for suppressing dust and for all construction activities should be untreated water which can be drawn from these rivers, since potable

water is expensive and sometimes not readily available from the water board. In order not to ensure uninterrupted water supply, the project proponent should install a stand by water tank of 200 m^3 capacity for use.

5.3.4 Power Supply

Zomba city where the project site is located is supplied by electricity from ESCOM national grid via two major substations of Mapanga and Mkanda (ESCOM, 2018). Electricity is mainly used for domestic, commercial and light industrial activities. The current electricity supply capacity for Zomba City is at 20MVA against the current demand of 15 MVA leaving a surplus of 5MVA. However, the demand goes up by 2MVA every year. From 2011, the percentage of household with electricity in dwelling houses has increased. In 2017, 62.0 percent of households in Zomba City had electricity compared to 38.4 percent in 2011. This is higher than the national average of 11 percent and slightly above the average for urban areas in Malawi (42%). In terms of the number of households, the 62% translates into 15,488 households (out of 24993) connected to ESCOM power in Zomba City (NSO, 2018). Some locations within the city do not have access to electricity due to inadequate transformers. Such areas include Ntiya ward, Malonje and part of Mpira ward.

5.3.5 Telecommunications

The area is within the coverage of Access, Airtel, MTL and TNM networks hence people are able to make and receive calls and send and receive messages from friends and relatives using cell phones and land lines and there are a number of service providers of internet including Skyband, Malawi Net, Globe Internet, MAREN, and Broadband Digital Solutions.

5.3.6 Sanitation

Sanitation in Zomba City is a shared responsibility between Zomba City Council and the private sector. Zomba City Council is responsible for maintaining the sewerage System, solid waste collection and disposal, and general maintenance of good sanitation in the city. The citizenry and private sector have the responsibility of managing waste at individual level (household, institution) where principles of segregating, reusing, reducing and recycling (RRR) are most effective. The Council is guided by Local Government Act (1998); Malawi Public Health Act (Cap 34:01); Environmental Management Act (2010); National Sanitation Policy (2008) and Zomba City Council (General Cleanliness) (Refuse and Rubble) By Laws (2006) and others. This legislation is threatened by non-compliance and leads to improper waste management. The wastewater disposal system for the proposed undergraduate facility will be done WSP. The current WSP, Figure 5.5, has undergone renovations and now it’s up and running, and only requires continuous operation attendance and preventive maintenance.

Figure 5. 3 Wastewater stabilization ponds at University of Malawi

5.3.7 Waste Disposal

5.3.7.1 Solid waste management

As of late, disposal of untreated water is also becoming an issue since there has been an establishment of car wash sites near rivers. These establishments use water from the rivers and its waste water is directed back into the rivers without any form of treatment. Over the years, the Zomba City Council refuse collection crew has been collecting refuse from residents and institutions in the city and disposing it crudely in the jurisdiction of Zomba District Council along the Zomba-Blantyre Road at a place locally known as "5 Miles", close to a Police Road block, Figure 5.5.

Figure 5. 4 Zomba City Council Solid Waste Dumpsite at 5 Miles on Zomba-Blantyre Road

5.3.7.2 Waste Water Management

Few houses in the district use septic tanks most of which are single chambered with potential of ground water pollution and the majority of households use pit latrines. These take the forms of ventilated/improved pit latrines and traditional pit latrines. Traditional pit latrines are the major form of liquid waste disposal in the communities. However, there are some households without pit latrines and effort has been made to ensure that every household has sanitary facilities. The low access to improved sanitation facilities in Zomba District remains a major public health concern.

The Water Works Act (1995) designates Water Boards as the responsible institutions for managing both water supply and sewerage systems in Malawi. However, there is no specific timeframe when Southern Region Water Board will take over the management of Chikanda Sewage Treatments Plant. Zomba City Council will remain responsible for providing sewerage services in the city until handovers are done. Liquid waste management systems in Zomba City include sewage works, oxidation ponds, septic tanks and pit latrines. At the University, wastewater will be managed through the University's wastewater Stabilizing Pond.

5.3.8 Economy

5.3.8.1 Commercial and SMEs

Commercial activities in Zomba City are dominated by large-scale businesses, and small and medium enterprise (SMEs) sized businesses. The majority of these businesses have limited access to lending institutions.

A good number of people around the university have invested in the construction of students' hostels and are benefiting due to high demand for accommodation facilities by students in the city. Other economic activities include agriculture.

5.3.8.2 Agriculture

Agriculture is a major economic activity for Zomba District. This is in line with the MGDS III page 40, which considers Agriculture a key in terms of driving economic growth and contributing to socio-economic development of Malawi. Over 80% of the population of Zomba district derive significant proportions of their income and livelihoods from agriculture. However, the district's productive capacity is being undermined by climate change impacts and risks.

5.3.8.3 Aquaculture and Fisheries

Small scale fisheries play a significant role in the livelihoods of rural and urban populations as sources of income, subsistence and employment. Fisheries resources in Zomba district are found in Lake Chilwa, rivers and fish ponds. Fisheries provide direct employment to about 633 fish farmers, 670 fishers and 2620 crew members and indirectly to over 10000 people who are engaged in boat building, fish processing and marketing. Aquaculture production in Zomba District is mainly done in small earthen ponds. The National Aquaculture Centre at Domasi has commercial ponds, which are used for research purposes. The main species currently being farmed are Chilunguni (*Tilapia rendalli)*,

Makumba (*Oreochromisshiranus)*, Chambo (*Oreochromiskarongae)* and Mlamba (*Clariasgariepinus*).

5.3.8.4 Forestry

Zomba has several forest plantations including Chirunga forest at the University of Malawi. Besides, the University campus accommodates a botanical garden, which is home for different flora and fauna species that are being used as a living laboratory and are used for different education programs. The plantations fall into two categories of ownership namely private and public. The most notable is Zomba Mountain Timber Plantation, which is wholly owned and managed by government/state and is located on a Plateau and Outer slope. The plantation covers approximately 5164.24 Ha. The production plantation area is approximately 5084.84Ha of which about 2978.37 Ha (58.6%) of the area is currently bare land and 2106.47 Ha (41.4%) is stocked.

5.3.8.5 Mining

Mining is undertaken in the form of crude stone quarrying and sand mining especially in the informal sector. There are however opportunities for small scale surface gemstone mining along the western part of Zomba Mountain in the area of Traditional Authority Mlumbe. Some of the mineral deposits found in Zomba include industrial and semi-precious minerals. The industrial minerals comprise of dimension stones, heavy mineral sands, construction sand, rock aggregate, phosphate and brick clay. While semi-precious minerals comprise of minerals like aegerine and smoky quartz. The minerals mentioned are mined by small scale artisan miners.

5.3.8.6 Tourism

Zomba is encircled by a lush mountainous landscape with stunning views and signature tree lined streets are in themselves a magnet for tourists. Key attractions include Zomba Plateau, which offers horse riding, hiking and magnificent views from several lookouts; the Malawi Defence Force Museum, which is situated behind the State Lodge, the vibrant market centre as well as the eclectic range of colonial buildings, the commonwealth graveyard which is along the M3 road, churches, Central mosque and architectural relics from Malawi's historical capital. Zomba City is also close to other significant attractions, such as Lake Chilwa, Liwonde National Park, Chikala Pillars, Shire River Valley and the unique Mulanje Mountains.

5.3.8.7 Roads

Zomba District has a better road network than other districts in Malawi. The project site is accessed through Zomba - Liwonde road branching at Zomba National Library junction or Puma filling station. Use of these access roads should enable the Contractor to manage bulk deliveries of construction materials to the project site during construction. The site has also a number of accessible footpaths from inside the campus going to various locations like Chikanda, Chinamwali and Mulunguzi residential areas. However, some of the access footpaths are dangerous as they are used as hotspots for criminal activities.

There are few facilities for pedestrians in form of purpose-built footpaths, footbridges or segregated access points to shops, banks, offices and other public buildings. The only

footways in fairly good condition are on either sides of the M3 road from McLeod road junction to Nkulichi road junction and 34th and 35th Avenue roads. Others on market roads are in poor state and are not fully developed. The rest of the roads have no pedestrian walkways, in which case pedestrians use road shoulders or the carriageway. This causes a lot of road accidents and inconveniences to all road users.

5.3.8.8 Employment

Zomba District Council realizes that labour as a factor of production, is a critical component of growth. The labour force that is productive contributes meaningfully to the economic growth and improved living standards. In fact, earnings from employment drive consumption of goods and services on the market which ultimately results in economic prosperity of a country.

According to 2011 Welfare and Monitoring Survey, Zomba District has an average employment rate of 68.8 %. Apparently, this employment rate is higher among men (68.2 %) as compared to women (49 %). Conversely, unemployment rate stands at an average of 31.3 %, which is far above the national unemployment rate (15.8 %).

Essentially, the district has four major types of labour namely, subsistence farming (Ulimi), Salaried workers, Casual labourers, and the Self-employed. Farming constitutes 50% of the total labour force whereas salaried workers, casual labourers, and the self-employed share 26%, 3%, and 12% respectively.

5.3.8.9 Industry and Commerce

The enterprise structure for Zomba District can be classified into three divisions namely: commerce, light manufacturing and services. The commerce sector is about trade and retail and it comprises markets, formal and informal trade, transport and telecommunications. The services sector consists of transport, utilities, hotel and tourism, financial and professional services and business support while the industry sector is mainly about light manufacturing in agro processing, forestry products, fisheries, and small-scale mining and quarrying.

5.3.10 Gender analysis and mainstreaming

Sections 20 and 41 of the Constitution of Malawi uphold the principle of equal rights for men and women and prohibit any discrimination based on gender or marital status.The Republic of Malawi ratified the Convention on *'The Elimination of All Forms of Discrimination against Women'* in 1987. Malawi signed the Optional Protocol in 2000, but has yet to proceed with ratification. It ratified the Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa in 2005. Malawi has achieved gender parity with respect to primary school enrolments, which indicates an improvement in attitudes towards girls' education.

The University of Malawi Act in Section 6 and subsection 1 part c on Principles of the University, advocates for gender responsiveness to ensure that equal opportunity and participation of women and men in programs, governance and other speres. The Contractor will therefore be expected to ensure that wherever there are any employment opportunities,

women will be given equal chances as men for employment. Deliberate effort will be made to ensure that among the employees, 40 % should be women.

The project shall support interventions aimed at expanding educational opportunities especially for the poor and disadvantaged students in line with Government and the University strategy of increasing access to and equity of tertiary education. The project will ensure that vulnerable groups are also considered in the project by providing bursaries to vulnerable students.

5.3.8.11 HIV and AIDS

The HIV and AIDS pandemic remains a health problem in Zomba District, and is believed to be one of the single most influential challenges in the development of the district because it cuts across various sectors and issues. The estimated HIV and AIDS prevalence rate among women and men age 15-49 that were tested in 2014 was 14.7%, considerably higher than the national average estimated at 10.6%. The prevalence rate for females according to MES (NSO, 2016) was 18% while for men at 11.2%.

5.3.8.13 Cholera

Malawi has experienced a widespread cholera outbreak, with 36 943 cases and 1210 associated deaths reported from all 29 districts since 3 March 2022. This is the deadliest outbreak of cholera in the country's history. Cholera is an infection of the small intestine by some strains of the bacterium Vibrio cholerae. Symptoms may range from none, to mild, to severe.

The disease has been endemic in Malawi since 1998 with seasonal outbreaks reported during the rainy season (November through May). However, the current outbreak has extended through the dry season, with cases being reported since March 2022. The university recorded one (1) case of cholera during the 2022 /2023 season.

The prevalence rate could increase during project implementation due to increased number of temporary workers at the project site who will put much pressure on the need for extra toilets. The Contractor and the University will therefore:

- Enforce washing hands with soap at all the times and no handshaking on the workers and the community members;
- Provide clean and safe water;
- Practice good hygiene;
- Enforce washing hands with soap at all times and no handshaking among workers and the general public;
- Provide enough toilets at the campus for use for both students, staff and construction workers;
- Sensitize workers, students and community members on the dangers of cholera;
- Train workers, students, staff and community members on preventive measures of cholera;
- Send workers, students and staff who show signs of cholera into isolation until they are confirmed to be negative.

5.3.8.14 Transport and Communication

Minibuses, private vehicles, and bicycle taxis are the common modes of transport in the city of Zomba. An average of about 40 percent of the population rely on minibuses to transport them from one location to another. Taxi services are available but they are too expensive for the poor majority. bicycle taxis are also increasing in popularity in the peri-urban and low-income areas. However, the current roads infrastructure is inadequate to support the growing number of vehicles leading to increased traffic congestion and a lot of time wasted in traffic jams.

Many people however still walk to their various places of work resulting in a high number of pedestrians. However, the absence of footpaths creates conflict between motorists and pedestrians and has resulted in a high increase in road accidents. The local authorities need to provide adequate transport infrastructure such as footpaths, bicycle paths, safe pedestrian crossings and flyovers, and well-protected bus lay-bys. The Road Traffic Directorate in the Ministry of Transport and Public Works provides the legal framework for the transport industry. It administers regulatory provisions governing motor vehicle administration, driver licensing, operator authorization, permit control and other related traffic management controls. The road network in the City comprises main, secondary and minor roads.

5.3.8.15 Cultural, Ancestral framework and Local customs and traditions

The district has a population composed of different ethnic groups, cultures and languages. The dominant ethnic groups are the Mang'anja/Nyanja, Yao and Lomwe. There are also the Chewa, Ngoni, Tumbuka and many other minor ethnic groups. Yaos are mainly found in the Traditional Authorities Mlumbe, Malemia and Kuntumanji and STA Nkagula. Mang'anja/Nyanja and Lomwes, on the other hand, are largely in TA Chikowi, TA Kuntumanji, TA Mwambo and TA Mkumbira.

5.3.8.16 Monuments and buildings

In terms of specific places of cultural and historical interest, Zomba has a few, including KuChawe Inn at the Zomba plateau, Old Parliament building as well as Zomba State house. However, the project will not interfere with any monuments or buildings. The project area is already secured as it is within the university land, and no cultural heritage is expected to be affected by the construction activities. However, should any physical cultural resources be found during excavations, the Contractor will link up with Department of Museums and Monuments according the Monuments and Relics Act of 1990.

5.3.8.17 Security

In an attempt to promote safety and security in the project area, the University has engaged traditional leaders and community members around Chikanda and the surrounding areas with the assistance of Zomba police station to put in place community policing service. Besides, the university has outsourced the services of a private security company to provide security services at the campus. The university has also enhanced its communication and working relationship with Zomba police station who conduct patrols within and around the campus in addition to responding to active elements of criminal acts.

CHAPTER 6 IMPACT IDENTIFICATION AND ANALYSIS

6.1 IMPACT IDENTIFICATION AND THEIR MANAGEMENT MEASURES

Construction and operation of the proposed infrastructure for the undergraduate facility at the University will generate different impacts in the project area and beyond. Some of the impacts will be positive while others will be negative. The negative impacts will mainly be on the biophysical environment of the project area with a few affecting the socio-economic environment of the project area. The majority of the positive impacts will be on the social-economic environment of the project area. The purpose of this chapter is to identify potential environmental and social impacts that will be generated by the project and to propose mitigation and enhancement measures to manage the impacts. Specifically, the chapter is aimed at the following:

a) Predicting the potential environmental and social impacts arising from implementation of the proposed project;
b) Assessing the possible extent /severity of the predicted impacts (both positive and negative);
c) Assessing the significance of the predicted impacts; and
d) Recommending hierarchical measures for mitigating the impacts.

6.1.1 Impact identification

Impact prediction considered the different environmental and social impacts that the project will generate at various phases. A step-by-step approach was taken to identify the potential impacts as follows:

a) Assessment of baseline conditions

The purpose of assessing baseline conditions was to understand the existing situation as this is the basis for determining changes that may occur as a result of the proposed project.

b) Assessment of project inputs associated with the proposed project

Project inputs were examined to determine the potential changes and impacts that would be created through the application of project inputs.

c) Assessment of project activities that will be undertaken

Project activities were examined to identify the impacts that the activities would bring on the environment.

d) Assessment of project outputs associated with the proposed project

Project outputs were examined to determine the potential changes and impacts that would happen as a result of the outputs.

e) Determination of environmental and social impacts

Based on the above steps, the environmental and social impacts of the project were identified. A Leopold matrix was used to identify the different environmental and social impacts that the project will generate. Table 6.1 outlines the identified impacts.

Table 6. 1 Impacts identified

Phase	Impact/ Component	Environmental Impact	Source of Impact
Planning phase	**Social positive impacts**		
		Creation of employment opportunities	Prefeasibility assessment, topographic surveys, preliminary designs, detailed designs, environmental and social assessments, economic analysis and cost estimates
		Source of Government revenue	Prefeasibility assessment, topographic surveys, preliminary designs, detailed designs, environmental and social assessments, economic analysis and cost estimates
	Social negative impacts		
		Anxiety about disruption of teaching and learning activities	News about the planned project at the University will cause anxiety among lecturers and students about disruption of teaching and learning activities at the university
Construction phase	**Social positive impacts**		
		Creation of employment opportunities	Construction of different project infrastructure and support facilities
		Increased economic activities in the project area	Influx of people in the project area which will stimulate small scale businesses
		Increased skills transfer to local communities	Construction of different project infrastructure and support facilities
		Creation of a market for local construction materials in the area	Construction of different project infrastructure and support facilities will stimulate demand for different construction materials
	Negative Environmental impacts		
		Increased generation of solid waste	Construction and domestic activities
		Loss of vegetation	Land clearing to pave way for construction of different project infrastructures
		Loss of animal habitats	Land clearing to pave way for construction of different project infrastructures
		Increased noise pollution due to construction works	Operation of different machinery, land clearing, excavation works and movement of construction vehicles and heavy trucks carrying construction materials

Phase	Impact/ Component	Environmental Impact	Source of Impact
		Increased air pollution due to increased dust emission	Land clearing, excavation works and movement of construction vehicles and heavy trucks carrying construction materials
		Increased pressure on local water resources due to increased water consumption during construction	Abstraction of water for construction
		Increased demand for electricity during construction phase	Electricity required for construction activities
		Increased soil erosion resulting into loss of top soil	Site preparation, vegetation clearance and excavations using heavy construction equipment
		Increased soil and water pollution due to Spillage of hazardous materials	Use of all sorts of motorized equipment, from generators to trucks, requiring fuel, lubrication and maintenance
		Increased demand for extra toilet facilities	Influx of vendors, job seekers, people at the construction site
		Negative Social impacts	
		Increased labor influx Impacts	Influx of different people at the construction site
		Increased risk of illicit behavior and crime	Influx of different people at the construction site
		Anxiety about safety of staff and students at the university from road accidents	Operation of different machinery, land clearing, excavation works and movement of construction vehicles and heavy trucks carrying construction materials
		Increased visual Intrusion	Construction activities at the university campus
		Increased disruption of teaching and learning activities at the university	Noise and vibration from heavy machinery and moving trucks especially during excavation of soils delivering construction materials and from workers.
		Increased construction works induced traffic – traffic congestion	Movement of construction vehicles and heavy trucks carrying construction materials
		Increased risk of Gender Based Violence (GBV)	Increased number of women seeking employment, increased number of people with increased disposable income and increased influx of people seeking employment

Phase	Impact/ Component	Environmental Impact	Source of Impact
		Increased risk of sexual harassment	Increased number of women seeking employment, increased number of people with increased disposable income and increased influx of people seeking employment
		Increased risk of Sexual Exploitation Abuse (SEA)	Increased number of women seeking employment, increased number of people with increased disposable income and increased influx of people seeking employment
		Increased risk of domestic violence and marriage breakdown	Increased number of women seeking employment, increased number of people with increased disposable income and increased influx of people seeking employment
		Increased risk of Defilement and early marriages	Increased dominance of the construction workers by men, high level of poverty, lack of awareness of women rights, drug abuse and lawlessness
		Increased risk of Child and forced labour	Some community members in pursuit of benefits sometimes allow sub-contractors to recruit children
		Increased cases of HIV and AIDS and other STI	Influx of different people at the construction site and increased income capacities due to wages during construction phase
		Increased cases of COVID -19	Increased number of student and workers at the university campus
		Increased risk of conflicts between migrant workers and the local community members	Influx of people in the project area in search of employment
		Increased occupational health risks of workers and community members to accidents and exposure to hazardous materials	Exposure of construction workers to different hazardous materials and moving construction and heavy trucks carrying construction materials
Demobilization phase	**Positive Social impact**		
		Reduced noise levels	Completion of construction activities
		Reduced dust emissions	Completion of construction activities
		Positive Environmental impact	
		Increased generation of solid waste	Various construction activities and demolished structures at the construction site

Phase	Impact/ Component	Environmental Impact	Source of Impact
	Negative Environmental impact		
		Increased generation of construction waste	Demolition of some temporary structures
		Negative Social impacts	
		Loss of employment	Completion of construction activities
		Loss of small-scale businesses	Completion of construction activities
Operation and maintenance phase	**Positive Social impacts**		
		Increased students' intake at the University	Availability of additional undergraduate facilities at the university
		Creation of employment opportunities	Availability of additional undergraduate facilities at the university
		Improved teaching and learning at the university due to availability of quality and adequate teaching and learning facilities	Availability of additional undergraduate facilities at the university
	Negative Environmental impacts		
		Increased generation of solid waste at the university	Increased number of students and staff at the university
		Increased generation of liquid waste at the university	Increased number of students and staff at the university
		Negative Social impacts	
		Increased pressure on use of other infrastructure such as roads etc	Increased number of students, workers and the general public going to and from the university
		Increased traffic flow – Increased accidents	Increased number of students, workers and the general public going to and from the university
		Increased cases of HIV and AIDS and other STI	Increased number of student and workers at the university campus
		Increased vandalism and theft of the newly constructed facilities and materials	Installation of modern facilities at the newly constructed undergraduate facility

Phase	Impact/ Component	Environmental Impact	Source of Impact
		Anxiety about safety of the infrastructure during operation phase of the project	Use of newly constructed undergraduate facility

6.2 Analysis of Predicted Impacts

After identifying the positive and negative environmental and social impacts of the proposed project, further analysis was conducted to determine the extent and significance of the impacts. The aspects that were considered were magnitude, significance, probability of occurrence and duration of impacts which are explained below.

6.2.1 Approach and Methodology of Impact Analysis

Impact analysis was undertaken by examining the impacts based on the following:

a) The impacts were examined in terms of probability of occurrence
b) The impacts were examined in terms of magnitude of impacts
c) The impacts were examined in terms of duration of impacts
d) The impacts were examined in terms of significance of impacts

6.2.1.1 Magnitude

The magnitude was scored at three levels i.e. household level, local level and regional level.

6.2.2.2 Probability of occurrence

The impacts were considered as:

a) Possible (impact may occur but it is not probable);
b) Probable (the impact is very likely to occur); and
c) Definite (impact is unavoidable).

6.2.2.3 Duration

Duration of impacts was considered in terms of the following criteria: Short term (less than 5 years); Medium term (between 5 and 10 years) and long term (over 10 years).

6.2.2.4 Significance

This is a measure of the importance of a particular action on the environmental factor in the specific instance under consideration. This was scored using values ranging from +3 to - 3 with a score of 1 representing a low/minimal impact, 2 moderate impact and 3 representing a high impact. Negative impacts were assigned a minus (-) sign and positive impacts are given a plus (+) sign. Based on the above analysis, an impact matrix was prepared and is provided in Table 6.2.

Table 6. 2 Impact scoring matrix

Impact		**Probability of Occurrence** a) Possible (impact may occur but it is not probable); b) Probable (the impact is very likely to occur); and Definite (impact is unavoidable)	**Duration of impact** Short term (less than 5 years); Medium term (between 5 and 10 years) and Long term (over 10 years)	**Magnitude of impact** a) household level b) local level regional level	**Significance of impact** a) 1 represents a low/minimal impact b) 2 moderate impact 3 representing a high impact.
IMPACTS DURING PLANNING AND DESIGN					
Positive social impacts					
1	Creation of employment of opportunities	Definite	Short term	National level	+3
2	Source of Government revenue	Definite	Short term	National level	+3
					+6
Negative Social impact					
1	Anxiety about disruption of teaching and learning activities	Possible	Short term	Local level	-1
					-1
IMPACTS DURING CONSTRUCTION					
Positive Social impact					
1	Creation of employment	Definite	Short term	National level	+3
2	Skills transfer to local communities	Definite	Short term	Local level	+3
3	Creation of a market for local construction materials in the area	Definite	Short term	Local level	+3

Impact		**Probability of Occurrence** a) Possible (impact may occur but it is not probable); b) Probable (the impact is very likely to occur); and Definite (impact is unavoidable)	**Duration of impact** Short term (less than 5 years); Medium term (between 5 and 10 years) and Long term (over 10 years)	**Magnitude of impact** a) household level b) local level regional level	**Significance of impact** a) 1 represents a low/minimal impact b) 2 moderate impact 3 representing a high impact.
4	Increase in economic activities within the project areas	Definite	Short term	Local level	+3
					+12
Negative Environmental impacts					
1	Air pollution due to increased dust emission	Definite	Short term	Local level	-1
2	Noise pollution due to construction works	Definite	Short term	Local level	-1
3	Loss of top soil due to clearance works that exposes soil to running water	Definite	Short term	Local level	-1
4	Soil pollution due to spillage of hazardous materials	Probable	Short term	Local level	-1
5	Water pollution due to spillage of hazardous materials	Probable	Short term	Local level	-1
6	Increased generation of solid and liquid waste	Definite	Short term	Local level	-2
7	Increased road accident incidences due to construction works	Possible	Short term	Local level	-1
8	Increased occupational health risks of workers and community members to	Possible	Short term	Local level	-1

Impact		Probability of Occurrence a) Possible (impact may occur but it is not probable); b) Probable (the impact is very likely to occur); and Definite (impact is unavoidable)	Duration of impact Short term (less than 5 years); Medium term (between 5 and 10 years) and Long term (over 10 years)	Magnitude of impact a) household level b) local level regional level	Significance of impact a) 1 represents a low/minimal impact b) 2 moderate impact 3 representing a high impact.
	accidents and exposure to hazardous materials				
9	Visual Intrusion	Definite	Short term	Local level	-1
10	Increased demand for sanitary facilities	Definite	Short term	Local level	-1
11	Construction works water demand – Increased pressure on existing Supply	Probable	Short term	Local level	-2
12	Construction works electricity demand – Increased pressure on existing Supply	Probable	Short term	Local level	-2
13	Land and soil degradation due to extraction and use of building materials	Probable	Short term	Local level	-1
14	Loss of vegetation at the site proposed for the new undergraduate facility	Probable	Short term	Local level	-1
16	Increased risk of illicit behavior and crime	Possible	Short term	Local level	-1
17	Increased risk of HIV and AIDS	Probable	Short term	Local level	-1

Impact		Probability of Occurrence a) Possible (impact may occur but it is not probable); b) Probable (the impact is very likely to occur); and Definite (impact is unavoidable)	Duration of impact Short term (less than 5 years); Medium term (between 5 and 10 years) and Long term (over 10 years)	Magnitude of impact a) household level b) local level regional level	Significance of impact a) 1 represents a low/minimal impact b) 2 moderate impact 3 representing a high impact.
18	Increased disruption of teaching and learning activities	Probable	Short term	Local level	-1
19	Increased risk of Gender Based Violence, sexual assaults and marriage interference	Probable	Short term	Local level	-1
20	Construction works induced traffic – traffic congestion	Possible	Short term	Local level	-1
19	Increased Risk of Child and forced labour	Possible	Short term	Local level	-1
					-25
IMPACTS DURING DEMOBILIZATION					
Positive environmental impacts					
1	Reduced noise levels	Definite	Short term	Local level	+3
2	Reduced dust emissions	Definite	Short term	Local level	+3
					+6
Negative Environmental impacts					
1	Poor waste management	Probable	Short term	Local level	-1
2	Increased generation of construction waste	Definite	Short term	Local level	-1
Negative Social impacts					
3	Loss of employment	Definite	Short term	Local level	-1
4	Loss of business opportunities	Definite	Short term	Local level	-1
					-4

Impact		Probability of Occurrence a) Possible (impact may occur but it is not probable); b) Probable (the impact is very likely to occur); and Definite (impact is unavoidable)	Duration of impact Short term (less than 5 years); Medium term (between 5 and 10 years) and Long term (over 10 years)	Magnitude of impact a) household level b) local level regional level	Significance of impact a) 1 represents a low/minimal impact b) 2 moderate impact 3 representing a high impact.
IMPACTS DURING OPERATION AND MAINTENANCE					
Positive Social impacts					
1	Increase students' intake at the University	Definite	Long term	National level	+3
2	Creation of employment opportunities	Definite	Long term	National level	+3
3	Improved teaching and learning at the university due to availability of quality and adequate teaching and learning facilities	Definite	Long term	National level	+3
					+9
Negative Environmental impacts					
1	Increased generation of solid waste	Definite	Long term	Local level	-1
2	Increased generation of liquid waste	Definite	Long term	Local level	-1
3	Increased demand and pressure on existing infrastructure and services in the project area	Definite	Long term	Local level	-1
Negative Social Impacts					
3	Increased traffic flow – Increased accidents	Definite	Long term	Local level	-1

Impact		**Probability of Occurrence** a) Possible (impact may occur but it is not probable); b) Probable (the impact is very likely to occur); and Definite (impact is unavoidable)	**Duration of impact** Short term (less than 5 years); Medium term (between 5 and 10 years) and Long term (over 10 years)	**Magnitude of impact** a) household level b) local level regional level	**Significance of impact** a) 1 represents a low/minimal impact b) 2 moderate impact 3 representing a high impact.
4	Anxiety about safety of the infrastructure during operation phase of the project	Probable	Long term	Local level	-1
					-5

From the impact scoring matrix, the negative impacts (-34) are outweighed by positive impacts (+31) for the proposed project. The project's positive impacts outweigh the negative impacts. The negative impacts identified are short term and can easily be mitigated thereby avoiding, minimizing or even eliminating some of the negative impacts.

6.3 Description of environmental and social impacts and their management measures

6.3.1 Impacts from design and planning phase

Positive social impacts from design and planning phase

a) Creation of employment of employment opportunities

Cause: The planning and design phase provided employment to consultants for the preparation of location plan, detailed layout plan site plan and building plans for the proposed infrastructure and ancillary buildings. Another team was engaged to carry out an environmental impact assessment.

Enhancement Measures: The University will offer the works contracts to Contractors and Consultants who will employ Malawians.

b) Source of government revenue

Cause: The planning and design phase will offer temporary employment to a number of experts and Consultants. Government will be deducting taxes from people employed at the planning stage especially consultants to do different studies.

Enhancement measures: The University will deduct taxes and remit to Government in good time.

Negative social impacts from design and planning phase

a) Anxiety about disruption of teaching and learning activities

Cause: News about the planned project at the University will cause anxiety among lecturers and students about disruption of teaching and learning activities at the university and will limit use of certain facilities such as the library.

Mitigation Measure: The University will sensitize the lecturers and students about the project and will assure the concerned parties that all construction sites will be screened to avoid disturbing teaching and learning activities.

6.3.2 Impacts from construction phase

Positive social impacts from construction phase

a) Creation of employment opportunities

Cause: The project will require over 100 people cumulatively to work in different sections of the project during construction phase. The Project will create job opportunities for skilled as well as unskilled labour force.

Enhancement Measures: The Contractor will:

- employ more people from the project area; and
- give women equal employment opportunities as men by ensuring that at least 40% of the employees should be women.

b) Skills transfer to local community

Cause: Both casual labourer and skilled labour force will be employed to carry out construction activities of the different infrastructure of the project. In the process, the different categories of people who will be employed on the project will acquire additional skills.

Enhancement measure: The Contractor will employ more local people with required skills from the project area. Most of unskilled labour will also be sourced from surrounding communities.

c) Creation of market for goods and services in the project area

Cause: The Project will create a market for both goods and services in the project area. These will include food items, construction materials such as cement. This will, in a way, stimulate informal and formal sectors of the economy in project areas.

Enhancement measure: The Contractor will give suppliers of goods and services from the project areas preference over suppliers of goods and services from elsewhere.

d) Increased business activities within the project area

Cause: The presence of construction workers at the project site will create an opportunity for small-scale businessmen and women to sell food stuffs, refreshments and to offer required services

Enhancement Measure: The University will designate an area as a market close to the project site.

Negative environmental impacts from construction phase

a) Increased air pollution due to increased dust emission

Cause: During construction phase, air quality is expected to decline as a result of an increase in levels of fugitive dust from excavation works, the stockpiled earth materials, dusty roads and concrete mixing. Particulate matters are a public health hazard and may otherwise create considerable nuisances to the public. This is expected to be a short-term, reversible impact lasting only for the duration of the construction activity.

Mitigation Measures: The Contractor will:

- Cover all haulage vehicles carrying sand, aggregate and cement;
- Wet and cover with tarpaulin during windy conditions all stockpiles of fine materials (e.g. sand and ballast);
- Wet all access roads and exposed ground in a manner and at a frequency that effectively keeps down the dust;
- issue all workers in dusty areas on the site with dust masks during dry and windy conditions;
- Provide appropriate enclosure for the concrete mixer; and
- Use of dust nets at high levels of the building

b) Increased noise pollution due to construction works

Cause: Although not expected to create a significant negative impact, the use of vehicular activities and heavy equipment during construction and building works will inevitably generate noise, which may create a nuisance for nearby residents, particularly the immediate neighbours. Albeit annoying, this negative impact will be short-term (limited to the construction phase). Noise beyond some level is itself a nuisance and need to be avoided. Such noise emissions should be minimized as much as possible from the source point through appropriate measures.

Mitigation Measures: The Contractor will:

- Restrict noisy construction activities to normal working hours (7:30 am – 4:30 pm);
- Inform local residents beforehand, via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works;
- Equip workers operating equipment that generate noise with noise protection gear including earmuffs and plugs. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 – 80 dBA should wear earplugs;
- Limit pickup trucks and other small equipment to an idling time of five minutes, observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible;
- Regularly inspect and service all construction equipment; and
- fit construction vehicles with silencers to reduce the noise.

c) Increased soil erosion resulting into loss of top soil

Cause: Site preparation, vegetation clearance and excavations using heavy construction equipment usually expose soils in the affected areas and leave them vulnerable to erosion by heavy rainfall and surface run-off. Improper location of stockpiles of sand, gravel, cement, etc., at the construction site could also cause fine materials to be washed into the drainage system during heavy rainfall events. This would not only represent a waste of materials but would also contribute blockage of drainage systems. The siltation will potentially also cause damage to aquatic habitats in the water streams around the project site.

Mitigation Measures: The Contractor will:

- Stage site clearance works so as to minimize the area of exposed soil at any given time;
- Re-cover exposed soils with grass and other ground cover as soon as possible;
- Monitor areas of exposed soil during periods of heavy rainfall throughout the construction phase of the project to ensure that any incidents of erosion are quickly controlled;
- Level the project site to reduce run-off velocity and increase infiltration of storm water into the soil;
- Build physical barriers to prevent mass movement where necessary;
- Properly control and manage stockpiling construction materials. Fine-grained materials (sand, marl, etc.) should be stockpiled away from any surface drainage channels and features;
- Place low bumps around the piles of sand;
- Use tarpaulin to cover open piles of fine-grained materials (sand, marl, etc.) to prevent them from being washed away when it rains heavily;
- Identify safe storage areas; and
- Deliver materials on site in instalments.

d) Increased soil pollution due to spillage of hazardous materials

Cause: All sorts of motorized equipment, from generators to trucks, requiring fuel, lubrication and maintenance will be used at the construction site. Many will also be fitted with lead batteries. Spillage of hazardous materials on the ground surface has a potential of contaminating the soil.

Mitigation Measures: The Contractor will:

- Not refuel and maintain large vehicles at the construction site;
- Store and place all hazardous materials in appropriately bunded containers and on concrete floor;
- Maintain spill response kits at the site office;
- Prepare and display on site spill response procedures; and
- Train workers on spill response and management.

e) Increased water pollution due to spillage of hazardous materials

Cause: All sorts of motorized equipment, from generators to trucks, requiring fuel, lubrication and maintenance will be used at the construction site. Many will also be fitted with lead batteries. Spillage of hazardous materials on the ground surface has a potential of contaminating both surface and underground water. In the case of surface water contamination, the end result will likely be pausing a threat to aquatic habitats in the water streams around the project site.

Mitigation Measures: The Contractor will:

- Not refuel and maintain large vehicles at the construction site;
- Store and place all hazardous materials in appropriately bunded containers and on concrete floor;
- Maintain spill response kits at the site office;
- Prepare and display on site spill response procedures; and
- Train workers on spill response and management.

f) Increased generation of solid waste

Cause: Considerable volumes of solid waste will be generated during site preparation and construction works, which would include some vegetation and typical construction waste such as wasted concrete, steel, wooden scaffolding and forms, pulp and polythene bags, waste earth materials, etc. This waste will negatively impact the aesthetic value of the site and surrounding environments if not properly managed and disposed of at an approved dumpsite. Solid waste, if allowed to accumulate on the ground, could cause localized pooling and flooding. Pooling of water, in turn, would create conditions conducive to the breeding of nuisance and health-threatening vectors such as mosquitoes. Improper management of construction waste constitutes a short-term negative impact.

Mitigation measures: The Contractor will:

- Use the 3 Rs (Reduce, Reuse, Recycle) of waste management as one way to keep as much material out of the landfill as possible —.
    - Reduce means to the Contractor should cut back on the amount of trash we generate;
    - Reuse means that the Contractor should find new ways to use things that otherwise would have been thrown out; and
    - Recycle means the Contractor should turn something old and useless (like plastic milk jugs) into something new and useful (like picnic benches, playground equipment and recycling bins).
- Provide mobile toilets;
- Provide waste disposal bins;
- Collect and dispose waste at 5 Miles location as designated by the City councils;
- Reuse removed rubble for other tasks such as paving and backfilling; and
- Develop a coherent waste management plan Sensitize workers in management of waste.

g) Visual Intrusion

Cause: A construction site is not a pleasant site to look at due to construction works such as excavation, stockpiling of materials and mixing of concrete. Large quantities of dust generated during this period contribute to reducing the aesthetic value of the land.

Mitigation measure: The contractor will screen off construction site.

h) Construction works water demand – Increased pressure on existing supply

Cause: A considerable amount of fresh water will be required during the construction works, especially for use by construction workers (washing), for cement mixing and for wetting of the site to control dust. This may place some amount of strain on water supply and may exacerbate shortages of water supply experienced within the vicinity.

Mitigation Measures: The Contractor will:

- Provide adequate water storage reservoirs at the construction site to meet Project needs during periods of high demand externally and refill the tanks during periods of low demand (e.g., late at night);
- Use for construction activities water from the surrounding rivers, Mulunguzi and Mponda;
- Engage water supply tankers in case of total supply failure; and
- Implement appropriate water conservation measures.

Negative social impacts from construction phase

a) Increased accident incidences due to construction works

Cause: During construction, it is expected that construction workers are likely to have accidental injuries and hazards because of handling hazardous waste. Because of intensive engineering and construction activities including erection and fastening of roofing materials, metal grinding and cutting, concrete work, steel erection and welding among others, construction workers will be exposed to risks of accidents and injuries.

Mitigation Measure: The Contractor will:

- Engage only those workers that are trained to operate specific machines and equipment;
- Install proper signage on site to warn workers of safety requirements as regards machines with moving parts and other equipment at site;
- Provide a First Aid box and have a trained person to handle site emergencies and incidences. Display site telephone numbers of ambulances or provide a site vehicle to specifically transport the injured to hospital;
- Provide fire-fighting mechanism at site. Display emergency call numbers that can be used in case of a site fire;
- Provide safe scaffoldings and railings at heights;

- Provide washing (enclosed bathroom) and toilet facilities at site with both drinking and washing water. The number of workers engaged determines the number of the toilets and bathrooms provided;
- Using well-maintained equipment by qualified personnel.
- different types of personal protective equipment (PPE) will be provided to all workers in accordance with the nature of work being performed.
- The contractor will be to provide workers' compensation in line with the provisions of the compensation Act 2000.

c) Increased risk of illicit behavior and crime

Cause: The influx of workers into the project areas may increase the risk of illicit behavior and rate of crimes and/or a perception of insecurity by the local community members. Such illicit behavior or crimes can include theft, gender-based violence, physical assaults, substance abuse, prostitution and human trafficking. Local law enforcement may not be sufficiently equipped to deal with the temporary increase in local population.

Mitigation measure**:** The Contractor will:

- Employ most of the unskilled workforce from the local communities who already have homes within the project area and therefore live with their families;
- Integrate migrant workers and local communities by engaging local chiefs to conduct awareness and sensitization meetings with their community members to ensure mutual and equal access to existing socio-economic opportunities;
- Deploy social security staff and regular engagement of the police in the project areas to ameliorate occurrence of mischiefs; and
- Sensitize the workers and the local community members on security matters.

d) Increased risk of communicable diseases such as HIV and AIDS

Cause: The influx of people may bring communicable diseases to the project area. The diseases may include STIs including HIV and AIDS.

Mitigation measures**:** The Contractor shall:

- Employ most of the unskilled workforce from the local communities who already have homes within the project area and therefore live with their families;
- Sensitize all employs and the community at large on the dangers of contracting HIV and AIDS and STI and their prevention measures such as abstinence; and
- Ensure availability of free condoms.

e) Increased risks of workers and community members to occupational, health and safety

Cause: Construction sites usually cause occupational, health and safety risks to workers and community members in the project area. Such risks come from movement of heavy trucks and equipment, use of heavy machinery and equipment, falling and flying objects, and use of different chemicals. Thus employers should always prevent work related

accidents and diseases and protect and promote the health and well-being of workers. Furthermore, work should take place in a safe and healthy working environment, conditions of work should be consistent with workers' well-being and human dignity, work should offer real possibilities for personal achievement, self-fulfillment, and service to society.

Mitigation measure: The Contractor shall:

- Provide first aid kits at workplaces and the site office;
- Train and supervise staff to work safely;
- Provide proper and visible road signs;
- Enclose or fence dangerous workplaces;
- Sensitize community members on road signs and their meanings;
- Develop an effective disaster and emergency response plan;
- Train workers in fire and general safety; and
- Implement the Workers Compensation Act provisions.

f) Disruption of teaching and learning activities at the university

Cause: Noise and vibration, which will disturb teaching and learning at the university, will be caused by use of machinery in the construction works especially excavation of soils. Some noise will also come from vehicles delivering construction materials and from workers. This has the potential to disturb surrounding communities and disturb teaching and learning activities at the university.

Mitigation measures: The Contractor will:

- Liaise with the University management from time to time on the critical times noise levels will need to be kept to a minimum;
- Minimize use of heavy machinery during construction phase of the project;
- Screen off the construction sites; and
- Limit speed of vehicles delivering construction materials as a way of minimizing noise.

g) Increased risk of Gender Based Violence (GBV)

Cause and Comments: Construction of the undergraduate facility at the University of Malawi may trigger a number of GBV issues in the project area due to different socioeconomic factors. Access to financial resources may come along with negative impacts if not beneficiaries are not mentally prepared: male workers who have extra disposable income that may indulge into harassment and sometimes molestation of women in general and specifically their wives; women working at the project site may harass their unemployed husbands as they may be perceived not contributing to the home. Female workers may also be harassed by the male workers at the project sites in form of abusive language and physical or psychological harassment and sexual advancement and demands. Some of the community members may also be harassed in the same manner by project employees. Rape cases involving employees and community members may also occur.

Mitigation measures: The Contractor will:

- Orient workers on the GBV issues;
- Ensure that all workers sign the code of conduct developed by the project; and
- Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry GBV awareness campaigns around the project area.

h) Increased risk of Sexual harassment

Cause and Comments: Construction of the undergraduate facility at the University of Malawi will trigger a number of sexual harassment issues in the project area due to different socioeconomic factors. Construction workers and other project staff will have extra disposable income that may lead to harassment and sometimes molestation of women in general and specifically their wives. Likewise, some women working at the project site may harass their unemployed husbands, due to increased disposable incomes. Female workers may also be harassed by the male workers at the project sites in form of abusive language and physical or psychological harassment and sexual advancement and demands. Some of the community members may also be harassed in the same manner by project employees. Rape cases involving employees and community members may also occur.

Mitigation measures: The Contractor will:

- Orient workers on the sexual harassment issues;
- Ensure that all workers sign the code of conduct developed by the project; and
- Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out sexual harassment awareness campaigns around the project area.

i) Increased risk of Sexual Exploitation Abuse

Cause and Comments: Construction of the undergraduate facility at the University of Malawi will trigger a number of sexual exploitation and abuse issues in the project area due to different socioeconomic factors. Construction workers and other project staff will have extra disposable income that may lead to harassment and sometimes molestation of women in general and specifically their wives. Likewise, some women working at the project site may harass their unemployed husbands, due to increased disposable incomes. Female workers may also be harassed by the male workers at the project sites in form of abusive language and physical or psychological harassment and sexual advancement and demands. Some of the community members may also be harassed in the same manner by project employees. Rape cases involving employees and community members may also occur. SEA is likely to occur between male project employees and female workers and other women and girls from the surrounding communities manly by taking advantage of high levels of poverty and low literacy.

Mitigation measures: The Contractor will:

- Orient workers on the Sexual Exploitation and Abuse issues;
- Ensure that all workers sign the code of conduct developed by the project; and

- Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out sexual exploitation and abuse awareness campaigns around the project area.

j) Increased risk of domestic violence and marriage breakdown

Cause and Comments: Construction of the undergraduate facility at the University of Malawi will trigger a number of domestic violence and marriage breakdown issues in the project area due to different socioeconomic factors. Construction workers and other project staff will have extra disposable income that may lead to harassment and sometimes molestation of women in general and specifically their wives. Likewise, some women working at the project site may harass their unemployed husbands, due to increased disposable incomes. Female workers may also be harassed by the male workers at the project sites in form of abusive language and physical or psychological harassment and sexual advancement and demands. Some of the community members may also be harassed in the same manner by project employees. Rape cases involving employees and community members may also occur.

Mitigation measures: The Contractor will:

- Orient workers on the Domestic Violence and Marriage Breakdown Management issues;
- Ensure that all workers sign the code of conduct developed by the project; and
- Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out domestic violence and marriage breakdown awareness campaigns around the project area.

k) Increased risk of defilement and early marriages.

Cause and Comments: Defilement cases and early child marriages involving contractors are attributed to dominance of the construction industry with male workers, high levels of poverty, lack of awareness, drug abuse, lawlessness and other factors. This situation has to be controlled and contained using appropriate interventions as below.

Mitigation measures: The Contractor will:

- Coordinate with the Ministry of Gender, Children, and Social Welfare and the Police Department to carry out child marriage and early marriage awareness campaigns to workers and communities around the project site; and
- Make certain the availability of an effective Grievance Redress Mechanism (GRM).

l) Increased risk of child and forced labour

Cause and Comments: Evidence has shown that child labour is mostly engaged by subcontractors sometimes with aid of community in pursuit of benefits. Contractors are also known to recruit underaged children to carry out certain work mostly short-term casual work in offsite work areas. Sometimes contractors and subcontractors can support suppliers

of materials who directly engage child labour in production of raw materials supplied to the project. In view of this, the probability is high that some contractors or subcontractors may be engage or involved in this illegal act.

Mitigation measures: The Contractor will:

- Orient the contractor and community members on child safety management;
- Prohibit employment of children at the project site; and
- Coordinate with the District Officer, Gender, Children, and Social Welfare and Ministry of Labour and the Police Department to conduct sensitization meetings with local chiefs, project administration, children and the community members on prohibition of any forms of child labour and need to promote children's rights.

6.3.3 Impacts during demobilization

Positive environmental impact during demobilization

a) Reduced dust emissions

Cause: Cessation of construction works can contribute to reduced dust emissions thereby contributing to reduced disturbance to surrounding communities.

Enhancement measure(s): The Contractor will carry out soft and hard landscaping after construction works to reduce risks of further dust emissions.

b) Reduced noise levels

Cause: The heavy machinery and the 100 construction workers will leave the site thereby reducing the amount of noise generated at each project site.

Enhancement measures: The Contractor will remove all working and damaged construction equipment from the sites.

Negative environmental impacts during demobilization

a) Increased generation of construction wastes

Cause: Various construction activities and demolished structures at the construction sites will generate waste that will include construction rabbles, broken planks, which will be removed from the sites during demobilization phase.

Mitigation measure: The contractor will:

- Use some of the construction waste like broken bricks and mortar to rehabilitate and fill some of the earth roads;
- Donate some of the construction wastes like timber and metallic materials to the community members in the project area; and
- In liaison with Zomba City Council dispose some of the construction waste at the waste management facility.

Negative social impacts during demobilization

a) Loss of Employment for workers

Cause: At the end of the construction works, the contractor will lay off workers involved in construction works. This will result in loss of employment and reduced income capacity for the people to be laid off. The impact is negative, will definitely occur and is of low significance.

Mitigation measure: The Contractor will:

- Give workers adequate notice of termination of employment;
- Provide appropriate terminal benefits to workers;
- By the time appropriate knowledge and skills would have been developed to empower workers and increase their employability.
- Will pay workers all their dues to minimize wages disputes after termination of employment; and
- Sensitize workers and students on prudent investment of their earnings whilst working.

b) Loss of business opportunities

Cause: Local traders selling construction materials will lose their source of income and livelihood. The small-scale business men and women selling foodstuffs, and fruits to construction workers will also lose their source of income.

Mitigation measures: The Contractor will:

- Inform local traders of the project duration in time; and
- Pay for all materials that were obtained on loan in time.

6.3.4 Impacts from operation phase

Positive social impacts from operation phase

a) Increase students' intake at the University

Cause: Currently the demand for education in the country by far outstrips the existing learning institutions and facilities. With the construction of new additional teaching complex, and a new office complex, there will be an increased number of classrooms and office spaces at the University, which will in turn assist to increase enrolment and employment of both academic and non-academic members of staff.

Enhancement measure: The University will:

- employ more academic and non-academic members of staff;
- continuously maintain the infrastructure to keep it in good shape to facilitate teaching and learning; and
- diversity the number of courses to be offered at the university.

b) Creation of employment opportunities

Cause: Employment opportunities are one of the long-term impacts of this expansion of the University. The University is expected to increase its teaching and non-teaching staff once the expansion activities are completed as it is expected to increase enrolment of students. With increased intake teaching and non-teaching staff is bound to increase as well.

Enhancement Measures: The University will:

- Employ more Malawians where skills and more qualified Malawians are available for both academic and non-academic members of staff and from the community members around the University for ground laborers and office assistants; and
- Give equal employment opportunities for both men and women by ensuring that at least 40% of the employees should be women.

c) Improved teaching and learning at the university

Cause: With the construction of an additional teaching complex with well-furnished laboratories and ICT equipment, lecturers will have an opportunity to improve teaching of different subjects in a more effective way thereby improving the performance of learners.

Enhancement measure: The University will:

- provide the necessary equipment to facilitate teaching and learning;
- recruit well qualified academic and non-academic members of staff; and
- maintain all the equipment and infrastructure to be used for the teaching and learning.

Negative environmental impacts from operation phase

a) Increased generation of solid waste

Cause: There will be an increased number of students and staff at the University with increased space due to additional teaching complex and office complex. The increased number of workers and learners will result in increased generation of waste at the university. The quantities of solid waste to be generated by the operation of the university are expected to be significant. Such waste will include, empty plastic containers, cartons, waste papers, plastic bags, e-waste etc. Improper management of solid waste will result to aesthetic degradation and breeding of disease vectors.

Mitigation Measures: The University will:

- Contract a private waste handler who is licensed by EAD for waste disposal;
- Use the 3Rs (Reduce, Re-use and Recycle) principle for the different types of wastes;
- Segregate wastes by providing different bins for each type of waste; and
- Maintain dumping sites that will be identified during construction.

b) Increased generation of liquid waste

Cause: Once the different infrastructure is operational, the project is expected to generate huge amounts of effluent to the environment. Proper management of the effluent will ensure a clean environment for the residents of this area. The University has its own sewage system and the new infrastructure will use the University's wastewater treatment plant.

Mitigation measures: The University will dispose effluent from the new infrastructure through the existing sewer line to the University's wastewater treatment plant.

Negative social impacts from operation phase

a) Increased traffic flow – Increased accidents

Cause: The number of vehicles within the area is likely to increase due to increased number of students and teaching and non-teaching staff and this may lead to congestion on the roads to the campus.

Mitigation measure: The University will:

- place at the vicinity of the entrance to the site appropriate traffic warning signs instructing occupants and visitors to reduce speed;
- instruct security guards to control traffic along the private road leading to the university and assist vehicles as they enter and exit the University;
- Maintain a record of incidents and accidents on the roads leading to the campus;
- Develop an emergency response procedure and develop and display at the entrance to the campus; and
- Display contacts of emergency service providers including, breakdown vehicle and traffic police at the main entrance to the University.

b) Increased incidences of Cholera cases

Cause: Cholera is an infection of the small intestine by some strains of the bacterium Vibrio cholerae. Symptoms may range from none, to mild, to severe. The disease has been endemic in Malawi since 1998 with seasonal outbreaks reported during the rainy season (November through May). Its prevalence rate in the project area could increase during project implementation due to increased number of temporary workers at the project site who will require clean and safe water, extra toilets and hygiene practices.

Mitigation measure: the University will therefore:

- Enforce washing hands with soap at all the times and no handshaking on the workers and the community members;
- Provide clean and safe water;
- Practice good hygiene;
- Provide enough toilets at the campus for use for both students, staff and construction workers;
- Sensitize workers, students and community members on the dangers of cholera;
- Train workers, students, staff and community members on preventive measures of cholera;
- Send workers, students and staff who show signs of cholera into isolation until they are confirmed to be negative.

CHAPTER 7 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

An Environmental and Social Management and Monitoring Plan is a plan of action that states how a project's environmental and social impacts are going to be managed mainly with the objective of minimizing, avoiding or eliminating adverse impacts while enhancing the positive impacts. The Environmental and Social Management and Monitoring Plan is also an environmental and social management and monitoring tool that is used to monitor implementation of different environmental and social management measures. It outlines environmental and social impacts that the proposed project will generate, recommended enhancement measures for the positive impacts and mitigation measures for the negative impacts, performance indicator, targets, means of verification, responsibility, timeframe, implementation costs (MWK) for the enhancement measures for the positive impacts and mitigation measures for the negative impacts and monitoring costs (MWK) for implementation of the enhancement measures for the positive impacts and implementation of the mitigation measures for the negative impacts.

The ESMP will therefore be approved and included in the bidding and contract documents before any construction begins for these works. Most of the environmental and social related work and physical activity for this project will be executed by the contractor. Therefore, the contractor will be required to prepare his own site-specific Construction ESMP (CESMP) and Health and Safety Plan based on this ESMP before commencing any civil works. The contractor will be obligated to take all reasonable steps to protect the environment (both on and off the site of works) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of its/their project-related activities. Further, the contractor/s is/are obligated to ensure that emissions, surface discharges and effluent from its/their project activities shall not exceed the values stated in the Specification or prescribed by applicable Laws or standards (including Malawian laws or World Bank ESSs and World Bank EHS or other agreed standards). Finally, the contractor will be required to have an Environment, Health and Safety Specialist to implement the CESMP and Health and Safety Plan.

Monitoring activities will be comprised of visual observation during site inspection and will be carried out by the University of Malawi. Site inspections will take place with emphasis on early identification of any environmental and social problems and the initiation of suitable remedial action. Where remedial actions have been required on the part of the Contractor, further checks will be made to ensure that these are actually being implemented to the agreed schedule and in the required form. The site where construction will be taking place will be formally inspected from an environmental and social viewpoint on a regular basis. However, in addition to visual observation there shall be informal questioning of members of the local communities and their leaders who live near the project since they may be aware of matters, which are unsatisfactory but may not be readily apparent or recognized during normal site inspection visits.

The monitoring activities will also be integrated with other construction supervision activities to be carried out by the University. The University will decide on the appropriate course of action to be taken in cases where unsatisfactory reports are received from the

field staff regarding environmental and social matters. In case of relatively minor matters, advice to the Contractor on the need for remedial action may suffice, but in all serious cases, the University will issue a formal instruction to the Contractor to take remedial action, depending on the extent of delegated powers. Table 7.1 presents the Environmental and Social Management and Monitoring plan for the project.

Table 7. 1 Proposed Environmental and Social Management and Monitoring Plan for the construction of undergraduate teaching complex

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
Impacts from planning and design phase										
Positive impacts										
Positive Social impact										
1	Creation of employment opportunities	Offer the works contracts to eligible Consultants at national level.	Number of local consultants employed	2 contracts given to local consultants	Records	University of Malawi	District Labour Office	Throughout the planning phase	1,800,000.00	-
Negative impacts										
Negative Social impact										
1	Anxiety about disruption of teaching and learning activities at the schools	Sensitize the lecturers and students about the project and assure the concerned parties that all construction sites will be screened to avoid disturbing teaching and learning activities through meetings and electronic communications.	Number of complaints recorded	0 number of complaints	Records of complaints	Grievance redress Committee	Zomba District Council	Throughout the planning phase	1,500,000.00	600,000.00
Impacts during construction phase of the project										
Positive impacts										
Positive Social impacts										
1	Creation of employment opportunities	• employ more people from the project area; and • give women equal employment opportunities as men by ensuring that at least 40% of the employees should be women.	• % of unskilled labourers from project area; and • % of women employed	90 % of unskilled labourers from project area; 40% of the labourer force is women	Site employment records	Contractor	Zomba Labour Office	Throughout the construction phase	1,800,000.00	-
2	Skills transfer to local community	Employ more local people with required skills from the project area	• of skilled labour force from project area; and • % of women employed	10 % of skilled personnel from project area; 40% of skilled personnel from project area to be women	Site employment records	Contractor	Zomba Labour Office	Throughout construction phase	1,500,000.00	600,000.00
3	Creation of market for goods and	Give preference to suppliers from the project areas to provide goods and services to the project	List of local materials from the project area	60 % of local materials from the project area	Purchase records of locally	Contractor	District Trade Office	Throughout construction phase	1,500,000.00	600,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
	services in the project area				available materials			approximately)		
4	Increase in business activities within the project area	• Procure materials and supplies from small scale businesses within the project area; and • Procure locally produced materials.	Number of local people supplying goods to the project	60 % of local materials from the project area s	Records of local goods that can be purchased from the project area	Contractor	District Trade Office	Throughout construction period	1,800,000.00	600,000.00
Negative impacts										
Negative Environmental impacts										
1	Increased dust emission	• Cover all haulage vehicles carrying sand, gravel, aggregate stone and cement; • Wet and cover with tarpaulin during windy conditions all stockpiles of fine materials (e.g., sand and ballast); •	% of haulage vehicles carrying sand, gravel, aggregate stone and cement covered; % of stockpiles of fine materials (e.g., sand, gravel, quarry dust and gravel covered and wetted	100 % of haulage vehicles carrying sand, gravel, aggregate stone and cement covered; 100 % of stockpiles of fine materials (e.g., sand, gravel, quarry dust and gravel covered and wetted	Spot checks on material carrying vehicles and stockpiles on site; and records	Contractor	District Environmental Office	Throughout construction period	2,250,000.00	750,000.00
2	Increased noise pollution due to construction works	• Restrict noisy construction activities to less critical periods in liaison with the University officials; • Inform local residents beforehand, via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works.	Number of periods when highest levels of noise are recorded any or anticipated excessive noise; Number of notices issue out to inform the community members about the periods when high noise levels will be generated	0 number of period when highest levels of noise are recorded. A notice should be issued out for every high noise level to be generated.	Records	Contractor	District Environmental Office	Throughout construction period	1,800,000.00	600,000.00
3	Increased soil erosion	• Stage site excavation works so as to minimize the area of exposed soil at any given time; • Re-cover exposed soils with grass and other	Area of exposed soil	Zero area exposed to soil erosion	Regular site inspections	Contractor	Supervising Consultants	During rainy season		

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		ground cover as soon as possible; • Monitor areas of exposed soil during periods of heavy rainfall throughout the construction phase of the project to ensure that any incidents of erosion are quickly controlled; • Level the project site to reduce run-off velocity and increase infiltration of storm water into the soil; • Build physical barriers to prevent mass movement of soil where necessary; • Properly control and manage stockpiling construction materials. Fine-grained materials (sand, marl, etc.) should be stockpiled away from any surface drainage channels and features; • Place low bumps around the piles of sand; • Use tarpaulin to cover open piles of fine-grained materials (sand, marl, etc.) to prevent them from being washed away when it rains heavily; • Identify safe storage areas; and • Deliver materials In proximity to time of need								
4	Increased soil pollution due to Spillage of hazardous materials	• Not refuel and maintain large vehicles at the construction site; • Store and place all hazardous materials in appropriately bunded containers and on concrete floor;	Number of incidents of hazardous material spillage	Zero incidents of hazardous material spillage	Incident reports; and spill response records	Contractor	District Environmental Office	Throughout construction period	2,100,000.00	500,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		• Maintain spill response kits at the site office; • Prepare and display on site spill response procedures; and • Train workers on spill response and management.								
5	Increased water pollution due to Spillage of hazardous materials	• Not refuel and maintain large vehicles at the construction site; • Store and place all hazardous materials in appropriately bunded containers and on concrete floor; • Maintain spill response kits at the site office; • Prepare and display on site spill response procedures; and • Train workers on spill response and management.	Number of incidents of hazardous material spillage	Zero spillages into catchment	Incident reports; and spill response records	Contractor	District Environment Office	Throughout construction period	1,650,000.00	750,000.00
6	Construction works water demand – Increased pressure on existing supply	• Provide adequate water storage reservoirs at the construction site to meet Project needs during periods of high demand externally and refill the tanks during periods of low demand (e.g., late at night); • Use for construction activities water from the surrounding rivers, Mulunguzi and Mponda; • Engage water supply tankers in case of total supply failure; and • Implement appropriate water conservation measures.	% of Construction water to be collected from rivers	100 % of construction water to be collected from Mulunguzi, Likangala and Mponda Rivers	Records on other sources of water	Contractor	District Water Office	Throughout construction period	1,800,000.00	600,000.00
7	Increased generation of solid waste	• Provide mobile toilets; • Provide waste disposal bins; • Collect and dispose waste in places designated by the districts and city councils;	• Presence of toilets; • Number of bins provided; • Volume of waste disposed in approved places;	100% solid waste managed and collected for disposal	Records of solid waste management and collected for disposal	Contractor	Environmental District Office	Throughout construction period	1,650,000.00	750,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		• Reuse removed rubble for other tasks such as paving and backfilling; • Develop a coherent waste management plan; • Sensitize workers in management of wastes	• Volume of removed rubble reused; • Presence of a waste management; • Number of sensitizations							
Negative Social impacts										
8	Increase in occupational health and safety accidents	• Engage only those workers that are trained to operate specific machines and equipment; • Install proper signage on site to warn workers of safety requirements as regards machines with moving parts and other equipment at site; • Provide fire-fighting mechanism at site. Display emergency call numbers that can be used in case of a site fire; • Provide safe scaffoldings and railings at heights; • Provide washing (enclosed bathroom) and toilet facilities at site with both drinking and washing water. The number of workers engaged determines the number of the toilets and bathrooms provided; • Provide safety helmets, safety masks (welders), safety shoes (loaders), uniforms and hand gloves to the workers; and • Using well-maintained equipment by qualified personnel.	Number of accident incidences	Zero accidents	Accident records and incident reports	Contractor	District Labour Office	Throughout construction phase	1,800,000.00	750,000.00
9	Increased risk of illicit behavior and crime	• Employ most of the unskilled workforce from the local communities who already have homes within the project area	Number of reported incidents of illicit behavior and crime	Zero incidents of illicit behavior and crime	Incident reports and feedback from local authorities and the police	Contractor	Zomba Police station	Throughout construction period	1,500,000.00	750,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		and therefore live with their families; • Integrate migrant workers and local communities to ensure mutual and equal access to existing socio-economic opportunities; • Deploy social security staff and regular engagement of the police in the project areas to ameliorate occurrence of mischiefs; and • Sensitize the workers and the local community members on security matters.								
10	Increased risk of HIV and AIDS	• Employ most of the unskilled workforce from the local communities who already have homes within the project area and therefore live with their families; • Sensitize all employees and the community at large on the prevention HIV and AIDS and STI and their prevention measures such as abstinence; and • Ensure availability of free condoms.	Number of HIV and AIDS cases reported	Zero new cases of HIV and AIDS	Monthly progress reports	Contractor	District Health Office	Throughout construction period	1,800,000.00	900,000.00
11	Anxiety about safety of staff and students at the university during construction phase	• Keep staff and students and any unauthorized persons away from construction sites and dangerous zones; • Put warning signs (written in English and local languages) at strategic sites; • Train all workers on proper use and handling of equipment; and • Put signposts indicating "Danger equipment" "Pedestrian walking", "No parking", "Stop" etc. shall be	Number of occupational safety and health cases reported	Zero cases of occupational safety and health	Records of occupational safety and health incidences	Contractor	District Labour Office	Throughout the construction phase period	2,250,000.00	750,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		placed in critical areas on the project site.								
12	Visual Intrusion	Screen off construction site	Area of the construction site screened off	100 % of the construction site screened off	Records of the area of the construction site screened off	Contractor	District Environmental Office	Throughout the construction phase	1,800,000.00	600,000.00
14	Disruption of teaching and learning activities at the university	• Minimize use of heavy machinery during construction phase of the project; • Screen off the construction sites; • Limit speed of vehicles delivering construction materials as a way of minimizing noise; • Advise workers not to make noise; and • Use of well serviced machinery fitted with silencers.	Number of complaints recorded	20 complaint recorded	Records of complaints	Grievance redress Committee	Zomba District Council	Throughout the planning phase	1,500,000.00	600,000.00
15	Increased risk of Gender Based Violence.,	• Orient workers and community on ills of gender-based violence; • Implement a zero-tolerance on Gender based violence in accordance with the University and contractor workplace policy; • Ensure that all workers sign and are aware of the Code of Conduct and sanction for breaches; • Terminate works contracts for all workers that will breach Gender based violence policies; and • Support victims of all Gender based violence (e.g., girl child and women).	Incidences of gender based violence involving workers recorded	Zero incidence of gender based violence involving workers	Reports of gender based violence	Contractor	Malawi Police (Victim Support Unit) and District Social Welfare office	Throughout construction period	2,100,000.00	900,000.00
16	Increased risk of Sexual harassment	• Orient workers on the sexual harassment issues; • Ensure that all workers sign the code of conduct developed by the project; and	Incidences of sexual harassment involving workers	Zero incidence of sexual harassment involving workers	Reports of sexual harassment	Contractor	Malawi Police (Victim Support Unit) and District	Throughout construction period	1,800,000.00	900,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		• Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out sexual harassment awareness campaigns around the project site.					Social Welfare office			
17	Increased risk of (SEA)	• Orient workers on the Sexual Exploitation and Abuse issues; • Ensure that all workers sign the code of conduct developed by the project; and • Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out sexual exploitation and abuse awareness campaigns around the project site. • Community awareness, especially women on right to work and GRM	Incidences of SEA involving workers	Zero incidence of SEA involving workers	Reports of SEA	Contractor	Malawi Police (Victim Support Unit) and District Social Welfare office	Throughout construction period	600,000.00	300,000.00
18	Increased risk of domestic violence and marriage breakdown	• Orient workers on the Domestic Violence and Marriage Breakdown Management issues; • Ensure that all workers sign the code of conduct developed by the project; and • Coordinate with the District Office of Gender, Children, and Social Welfare and the Police Department to carry out domestic violence and marriage breakdown awareness campaigns around the project site.	Incidences of domestic violence and marriage breakdown involving workers	Zero incidence of domestic violence and marriage breakdown involving workers	Reports of domestic violence and marriage breakdowns	Contractor and University of Malawi	Malawi Police (Victim Support Unit) and District Social Welfare office	Throughout construction period	1,500,000.00	900,000.00
19	Increased risk of defilement and child marriage	• Coordinate with the Ministry of Gender, Children, and Social Welfare and the Police Department to carry out child marriage and early marriage awareness campaigns to workers and communities around the project site; and	Incidences of defilement and child marriages	Zero incidence of defilement and child marriages	Reports on cases of defilement and early child marriages	Contractor	Malawi Police and District Social Welfare office	Throughout construction period	2,400,000.00	900,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		• Make certain the availability of an effective Grievance Redress Mechanism (GRM). • Children under 18 years of age should not be allowed to work on site and market								
20	Increased risk of child labour	• Orient the contractor and community members on child safety management; • Prohibit employment of children at the project site; and • Coordinate with the District Officer, Gender, Children, and Social Welfare and Ministry of Labour and the Police Department to conduct sensitization meetings with local chiefs, project administration, children and the community members on prohibition of any forms of child labour and need to promote children's rights. • Check prospective worker's ID's to ascertain their age • No under 18 will be employed on site or allowed to sell merchandise at the construction market	Number of child labour cases reported	Zero underage workers employed at the construction site	Records of employees at the construction site	Contractor	Zomba District Labour Officer	Throughout construction period	1,800,000.00	900,000.00
Impacts from demobilization phase										
Positive impacts										
Positive Environmental impacts										
1	Reduced dust emissions	carry out soft and hard landscaping after construction works to reduce risks of further dust emissions	% of area landscaped	100 % of the area having either soft or hard landscape	Record of the area landscaped	Contractor	District Environmental Office	Throughout demobilization phase	1,950,000.00	750,000.00
2	Reduced noise pollution	remove all working and damaged construction equipment from the construction site	Noise levels	Zero noise levels	Records of incidences of noise levels recorded	Contractor	Environmental District Office	Throughout demobilization phase	2,100,000.00	600,000.00
Negative impacts										
Negative Environmental impact										

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
1	Increased generation of solid construction waste	• Use the 3Rs (Reduce, Re-use and Recycle) principle for the different types of wastes; • Arrange with the community members in the project areas to find a suitable site to dispose construction waste; • Use the 3Rs (Reduce, Re-use and Recycle) principle for the different types of wastes; and • Revegetate and landscape all the areas cleared of solid wastes.	• Scenic surroundings	Pleasant surroundings and waste disposal	Physical inspections	Contractor	University of Malawi	To be completed on infrastructure handover	2,400,000.00	600,000.00
Negative Social impacts										
1	Loss of employment	• Give workers adequate notice of termination of employment; • Provide appropriate terminal benefits to workers; • Will pay workers all their dues to minimize wage disputes after termination of employment; and • Sensitize workers on prudent investment of their earnings whilst working.	• Number of workers laid off; • Notice of termination of employment; • Number of sensitizations conducted	Business community to get notice in good time about end of construction activities; At least one sensitization meeting to be carried out about end of construction activities	Record of sensitization meetings and notices issued to end contracts	Contractor	District Labour Office	Throughout Demobilization phase	1,500,000.00	900,000.00
2	Loss of business opportunities	• Inform local traders of the project duration in time; and • Present business exit talk to traders at least 3 months before closure of project.	• Number of businesses lost; • Notice of closure of construction activities; • Number of sensitizations conducted	Workers to get notice in good time about end of their contracts; At least one sensitization meeting to be carried out about worker end of contracts	Record of sensitization meetings and notices issued to end construction activities	Contractor	District Trade Office	Throughout Demobilization phase	1,950,000.00	900,000.00
Positive impacts										
Positive Social impact										

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
1	Increase students' intake at the University	• employ more academic and non-academic members of staff; • diversity the number of courses and programmes to be offered at the university.	Number of staff and programmes/courses introduced	20 new members of staff and 15 new programmes and courses and 2000 additiomal students enrolled	Records in Human Resource Information Management system and Students Assessment and Registrations Information System	University of Malawi	Ministry of Education and NCE	Yearly during operation and maintenance phase	1,500,000.00	600,000.00
2	Improved teaching and learning at the university	• provide the necessary equipment to facilitate teaching and learning; • recruit well qualified academic and non-academic members of staff; and • maintain all the equipment and infrastructure to be used for the teaching and learning.	% of the available infrastructure in equipment in use	100 % infrastructure and equipment usage	Records	University of Malawi	Ministry of Education and NCE	Throughout operation and maintenance phase	2,100,000.00	900,000.00
Negative impacts										
Negative Environmental impacts										
1	Increased generation of solid waste	• Provide mobile toilets; • Provide waste disposal bins; • Collect and dispose waste in places designated by the districts and city councils; • Reuse removed rubble for other tasks such as paving and backfilling; • Develop a coherent waste management plan; • Sensitize workers in management of wastes	• Presence of toilets; • Number of bins provided; • Volume of waste disposed in approved places; • Volume of removed rubble reused; • Presence of a waste management system; Number of sensitizations	100% solid waste managed and collected for disposal	Records of solid waste management and collected for disposal	Contractor	Environmental District Office	Throughout demobilization phase	1,950,000.00	750,000.00
2	Increased generation of liquid waste	• Dispose effluent from the new infrastructure through the existing sewer line at at the University's wastewater Stabilizing Pond; and	Volume of Effluent spillages Number of trainings conducted to handle the effluents	Zero effluent spillages and two training sessions for waste handlers	Records of effluent spillages and trainings conducted for	Contractor	Environmental District Office	Throughout demobilization phase	1,800,000.00	600,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		• Conduct training of sewer attendants for optimal management of facility in anticipation of increased volume of liquid waste			staff to handle effluent					
3	Increased traffic flow disruptions – Increased accidents	• place at the vicinity of the entrance to the site appropriate traffic warning signs instructing occupants and visitors to reduce speed; • instruct security guards to control traffic along the private road leading to the university and assist vehicles as they enter and exit the university; • Develop an emergency response procedure and develop and display at the entrance to the campus; and • Display contacts of emergency service providers including, breakdown vehicle and traffic police at the main entrance to the university.	Number of road accidents and traffic disruptions grievances	Zero incidents/accidents and only managed traffic disruptions	Incidents/accidents reports and complaints against traffic disruptions	University of Malawi	Traffic Police	Throughout operation and maintenance phase	1,500,000.00	900,000.00
4	Increased incidences of Cholera cases	• Enforce washing hands with soap at all the times and no handshaking on the workers and the community members; • Provide clean and safe water; • Practice good hygiene; • Provide enough toilets at the campus for use for both students, staff and construction workers; • Sensitize workers, students and community members on the dangers of cholera;	Incidences of Cholera cases recorded	Zero incidences of cholera cases	Records from the University clinic	University of Malawi	District Health Office	Throughout operation and maintenance phase	2,100,000.00	900,000.00

						Responsibility		Time Frame	Implementation Cost (MWK)	Monitoring Cost (MWK)
Item	**Potential impact**	**Recommended Enhancement/Mitigation Measure**	**Performance Indicator**	**Target**	**Means of Verification**	**Enhancement/ Mitigation**	**Monitoring**	**Timeframe**	**Implementation Cost (MWK)**	**Monitoring Cost (MWK)**
		• Train workers, students, staff and community members on preventive measures of cholera; • Send workers, students and staff who show signs of cholera into isolation until they are confirmed to be negative.								
Total									**71,000,000.00**	**27,215,000.00**

CHAPTER 8 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

The ESMP has established that construction and occupation/ operation of the proposed infrastructure at the University of Malawi will have positive impacts to the University. The impacts will include increasing enrollment of students at the University, increasing employment opportunities, skills transfer to local community, improved performance of students, and improved teaching and learning at the University. However, despite the outlined positive impacts, the proposed development will also have some negative impacts such as increased pressure on existing infrastructure, pollution (to Air, Water, soil) mostly during construction phase, increased waste (solid and liquid) generation, injuries due to construction works, increased risk of dust emission, increased risk of illicit behavior and crime, impacts on community dynamics, increased burden on and competition for public service provision, increased risk of communicable diseases, increased risk of road accident, possible disruption of public service utilities, disruption of flow of traffic and public mobility, increased demand for sanitary facilities, and increased risk of Gender Based Violence, sexual assaults, Increased risk of child and forced labour, and marriage interference among others.

The proposed project design has integrated mitigation measures with a view to ensuring compliance with all the applicable laws and procedures. The structures will be built to the required planning/architectural/structural standards of Zomba City Council and NCIC. During project implementation and occupation, sustainable environmental and social management will be ensured; avoiding excessive use of natural resources, conserving nature sensitively and guarantees a respectful and fair treatment of all people working on the project, general public at the vicinity and students and staff residing close to the project site. In relation to the proposed mitigation measures that will be incorporated during construction and operational/occupation phases; the development's input to the society; the project is considered beneficial and important. It is our opinion that the proposed development is a timely venture that will subscribe to the development of the country. It is thus our recommendation that the project be allowed to go ahead with the implementation provided the outlined mitigation and monitoring measures are adhered to. Major concerns should nevertheless be focused towards minimizing the occurrence of impacts that would have negative environmental and social impacts. This will however be overcome through close adherence and implementation of the Environmental and Social Management Plan (ESMP).

8.2 Overall recommendation

The project will bring significant socio-economic benefits in the project area and beyond. To enhance the positive impacts and mitigate the negative impacts, the Contractor will be obliged to develop the Contractor's Environmental and Social Management and Monitoring Plan (CESMMP) to guide implementation of the mitigation measures during construction phase. The University will monitor implementation of the CESMP and ensure that the contractor make environmental and social management an integral part of the construction and operation activities.

REFERENCES

1. Government of Malawi (1997), **Guidelines of Environmental Impact Assessment in Malawi,** Ministry of Natural Resources, Energy and Mining;
2. Government of Malawi (2017), **Environment Management Act,** Ministry of Natural Resources, Energy and Mining;
3. Government of Malawi (1997), **Occupational Safety, Health and Welfare Act,** Ministry of Labour, Youth, Sports and Manpower Development;
4. Government of Malawi (1998) **National Decentralization Policy,** Ministry of Local Government and Rural Development;
5. Government of Malawi (1998), **Local Government Act,** Ministry of Local Government, Lilongwe;
6. Government of Malawi (2000), **National Land Resources Management Policy and Strategy,** Ministry of Agriculture, Irrigation and Water Development;
7. Government of Malawi (2002), **Malawi National Land Policy**, Ministry of Lands, Housing and Urban Development;
8. Government of Malawi (2003), **Malawi National HIV and AIDS Policy,** Ministry of Health;
9. Government of Malawi (2004), **National Environment Policy**, Ministry of Natural Resources, Energy and Mining;
10. Government of Malawi (2005), **National Water Policy,** Ministry of Agriculture, Irrigation and Water Development;
11. Government of Malawi (2007), **Forestry Act,** Ministry of Natural Resources, Energy and Mining;
12. Government of Malawi (2013), **Gender Equality Act,** Ministry of Gender, Children, Disability and Social Welfare;
13. Government of Malawi (2013), **Water Resources Act,** Ministry of Agriculture, Irrigation and Water Development;
14. Government of Malawi (2016), **Customary Lands Act,** Ministry of Lands, Housing and Urban Development;
15. Government of Malawi (2016), **Land Act,** Ministry of Lands, Housing and Urban Development;
16. Government of Malawi (2016), **National Forestry Policy,** Ministry of Natural Resources, Energy and Mining;
17. Government of Malawi (2016), **The Constitution of the Republic of Malawi,** Office of President and Cabinet;
18. Government of Malawi (2017), **Forestry (Amendment) Act,** Ministry of Natural Resources, Energy and Mining;
19. Government of Malawi (2017), **Land Survey Act,** Ministry of Lands, Housing and Urban Development;
20. Government of Malawi (2017), **Lands Acquisition Act,** Ministry of Lands, Housing and Urban Development;
21. Government of Malawi (2017), **Local Government (Amendment) Act,** Ministry of Local Government, Lilongwe;
22. Government of Malawi (2017), **Registered Land (Amendment) Act,** Ministry of Lands, Housing and Urban Development;

23. Malawi Government (2015), National Construction and Industry Policy, Ministry of Transport and Public Works
24. Mwenelupembe J., Mylius HG. (2002) Geological Hazards and Anthropogenic Impacts on the Environment in Malawi: Lesson from a Case Study of Debris Flows in Zomba. In: Odada E.O., Olago D.O. (eds) The East African Great Lakes: Limnology, Palaeolimnology and Biodiversity. Advances in Global Change Research, vol 12. Springer, Dordrecht. https://doi.org/10.1007/0-306-48201-0_24
25. **National Statistical Office, 2018**. Preliminary Report: Population and Household Survey, National Statistical Office
26. **Malawi Government, Physical Planning Act 2016,** Ministry of Lands, Housing and Urban Development.
27. **Student Assessment and Registration Information System (2022), University of Malawi**
28. **Zomba Socio Economic Profile 2017 - 2022**

ANNEXES

ANNEX 1 Terms of reference for expansion of University of Malawi

Skills for A Vibrant Economy -SAVE

Ministry of Education

TERMS OF REFERENCE FOR DEVELOPMENT OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

COUNTRY-Malawi

NAME OF PROJECT-Skills for A Vibrant Economy (SAVE)

Assignment Title: Preparation of Environmental and Social Management Plan (ESMP) for the construction of Undergraduate Teaching Complex through the Skills for A Vibrant Economy (SAVE) project in the Ministry of Education.

1.0 INTRODUCTION

The Government of Malawi through Ministry of Education and Ministry of Labour and Vocational Training, with funding from World Bank is implementing the Skills for a Vibrant Economy Project (SAVE). The project aims to improve access to market-relevant skills programs in priority areas of the economy, ensuring equity in skills training with empowerment of women and girls and vulnerable youth through targeted skills in priority areas of the economy and creating a conducive policy environment & strengthening systems and institutional capacity for skills development, which will center on: Technical, Entrepreneurial, and Vocational Education and Training (TEVET) and Higher Education Reforms, Student loans, Industrial links, Digital technology and Safeguards, Capacity Building, and Technical Assistance among other systemic issues.

2.0 CONTEXT AND BACKGROUND

The expected duration for implementation of the Skills for A Vibrant Economy (SAVE) project is 5 years (from 2021 to 2026). The Project Development Objective (PDO) is to

increase access, particularly for females, to labor market relevant skills development programs, in participating institutions, targeting priority areas of the economy.

The program scope consists of the four components which contribute to the PDO, and these are: Component 1: Supporting Increased Access to Skills Development Programs in Higher Education. Component 2: Supporting Increase in Access to TEVET Skills Development. Component 3: Tertiary Education System Strengthening, Project Management, M&E and Communications. 4: Contingent Emergency Response.

SAVE project will finance 9 public universities, 7 national technical colleges and up to a maximum of 30 other TEVET institutions competitively selected from Community Technical Colleges (CTCs), Private Technical Colleges (PTCs), and Community Skills Development Centers (CSDCs). The project will specifically support and finance construction of Teaching Complex at the University of Malawi.

The Environmental and Social Management Framework (ESMF) for SAVE project was prepared and requires that after subprojects have been identified, environmental and social due diligence should be conducted to eliminate or reduce both environmental and social negative impacts. This is in line with the Environmental Management Act (EMA) 1996 which stipulates that an environmental assessment is required for certain types of activities before their implementation depending on the size and location of the project and the activities to be undertaken.

Against this background, the SAVE Project has conducted Environmental and Social Screening. The outcomes of the screening require the development of Environmental and Social Management Plans (ESMP) and Monitoring Plans for before commencement of civil works at the University of Malawi. In the above context, The University of Malawi is looking for a consultant to develop ESMP plan for the proposed sub-project. The individual beneficiary technical colleges and universities shall be the client for the consultancy that will recruit their respective consultants and manage the execution of the assignment under the general guidance of the SAVE Project PIU. XXXXXXX University/College intends to procure the services of a consultant for the development of (ESMP)

3.0 OBJECTIVE OF THE ASSIGNMENT

The primary objective of the consultancy is to develop Environmental and Social Management Plans (ESMP) for the construction commensurate with national and international standards before the commencement of civil works under the SAVE project. The consultant shall appraise and familiarize themselves on the requirements of the SAVE project, the Government of Malawi, the World Bank and the various relevant legislations and policies that will be associated with the implementation of the infrastructure construction activities under the Project. These shall form the backbone of the requirements for the ESMP to be developed under this assignment.

The detailed objectives of the assignment are to:

- identify and assess key potential environmental and social impacts including those on gender, which may be caused by the proposed construction works.

- propose measures that would enhance the positive effects of the proposed constructions and operation activities on both the environment and social components including gender issues in specific sites;
- propose measures that will mitigate the anticipated negative impacts of the proposed constructions and operation activities on both the environment and social components, including gender concerns in specific sites;
- conduct stakeholder consultative meetings which inform project key environment, social risks, and mitigation measures; and
- develop a costed ESMP monitoring plan with clear lines of responsibilities for key stakeholders.

4.0 SPECIFIC SCOPE OF SERVICES AND TASKS

The broad scope of the work is to carry out an Environmental and Social Management Plan (ESMP) of the proposed subproject based on the Government of Malawi regulations and the World Bank Environmental and Social Framework. ***The consultant will perform the scope of work while collaborating with Environmental District Officers from the Malawi Environmental Protection Authority (MEPA)*** and other relevant key stakeholders

The tasks to be undertaken by the Consultant under this assignment shall include the following:

Task 1. Scoping of Environmental and Social Issues
The scoping study will determine and deliver the proposed physical limits for the study area, appropriate to the issues; proposed time frame for the ESA study; list of key stakeholders, initial consultation and analysis of findings; key potential impacts and the types and levels of impacts to be assessed in the ESA; review of works' designs and its interaction with environment, social and cultural aspects, potential alternatives for consideration in the ESA; review of information on the existing environment, recommendations for appropriate methods of survey/data collection to establish environmental and social conditions; recommendations for appropriate methods for the prediction and assessment of impacts.

Task 2: Description of the Proposed Sub-projects
The consultant will concisely highlight the proposed subprojects' name, postal address, aims and objectives. The consultant shall also describe the geographical, ecological and general layout maps including map sketches and annotated photographs at appropriate scale as necessary based on project information acquired from the client. The description shall also include activities to be undertaken in and around the proposed subprojects site including input materials, final products, by-products, sources of raw materials, land acquisition and ownership, waste generation where applicable shall be detailed and cost of the proposed subproject is estimated at US $3.5 m. The consultant will be required to suggest the costs for implementing the environmental and social management measures.

Task 3: Description and Establishment of Environmental and Socioeconomic Baseline Conditions of the Subprojects
The consultant shall carry out a survey to collect, collate and present baseline information of the existing environmental and socioeconomic characteristics of, within and around the proposed subproject sites.

Task 4: Public Participation and Consultations
The consultant will carry out a stakeholder analysis and prepare a stakeholder consultation plan for the inclusion and consultation of all the stakeholders throughout the assessment process. This entails consulting project-affected groups, public agencies/institutions and civil society organizations about the subproject's environmental and social aspects and demonstrating how views were considered within the report. The consultations should commence shortly after the screening and continue throughout the process. Disclosure of the report shall be done in a manner, form and language that are understandable and accessible, which enable the public full participation.

Task 5. Site specific map Provide a site-specific visible map of the area (scale 1:50,000) showing the proposed site and (1: 10,000) showing existing establishments in the area and surrounding areas including natural endowments like rivers and streams. A site plan for the project should be provided. All maps should be in color to portray the themes clearly and must be printed on A3 paper.

Task 6: Analysis and Determination of Potential Environmental and Social Impacts of the Subprojects
The consultant shall identify, analyze, and describe significant/core community, environment, occupational, health impacts that may be brought about by the proposed civil works. Such are the impacts of the proposed subprojects on the baseline of both environmental and socio-economic conditions as described in Task 3 (above) or impacts of the surrounding environment on the subprojects (externalities). The consultant will make a prioritization of all immediate and future concerns and differentiate between short, medium, and long-term impacts paying special attention to the significant impacts (both positive and negative).

Task 7: Measures to Mitigate Adverse Environmental and Social Impacts of the Subprojects
The objective of this task is to identify, propose and describe pragmatic, community, occupational, health and safety mitigation measures to enhance the benefits of environmental and social protection. The cost effectiveness of such mitigation and enhancement measures shall be analyzed against viable alternatives. Where no such suitable mitigation measures can be identified this will be clearly explained. Based on environmental and social assessment, mitigation / enhancement measures will be specified in the form of an environmental and social management plan.

Task 8 -Review of the legal framework pertaining to the project
Briefly review the legal framework pertaining to the proposed project and indicate their impacts on the project. Reference should at least be made to Environment Management

Act, Education policy, Water Resources Act, National Water Policy, Public Health Act, Occupational Safety, Health and Welfare Act, Employment Act, New Land Act, Malawi National Land Policy, NCIC Act and other policies and pieces of legislations.

Task 9: Development of an Environmental and Social Management Plan

Based on the outcome of tasks above, the consultant shall prepare an environmental and social management plan comprising of a programme of assessing and managing the impacts during implementation, operation and post operation phase including decommissioning. This will provide time frames and implementation mechanisms, reporting responsibilities, description and technical details of monitoring measures, assessment of the institutional needs, staffing requirements and cost outlay for implementation. The plan should show how management and mitigation methods are phased with project implementation. The plan shall also include measures to prevent health hazards and to ensure safety in the working environment for the employees and the communities adjacent to the project site and project affected people.

Task 10: Preparation of an Environmental and Social Management Monitoring Plan (ESMMP)

The consultant shall prepare an environmental and social management monitoring plan for performance monitoring of how well project construction, operation and implementation of auxiliary and learner mentor interventions including the implementation of key mitigation measures are carried out (including Environmental, Social, Gender, Health and Safety). He shall also propose outcome monitoring of key selected environmental and social indicators, such as gender based violence (GBV), workers' safety and site office. The Environmental and Social Management Monitoring Plan (ESMMP) will focus on key impacts, specify the planned monitoring activities, key indicators, monitoring frequency and duration, budget and skilled personnel needs, institutional responsibility for each monitoring activity, and means of verification.

Task 11: ESMP Implementation Budget

Provide a clear statement of financial responsibilities, identify estimated summary of costs for the implementation of the proposed mitigation measures; provide detailed estimated budgets for all phases of the project including planning, implementation, monitoring and evaluation, with contingencies.

5.0 DELIVERABLES AND OUTPUTS OF THE ASSIGNMENT

By the end of the assignment, the consultant shall achieve the following deliverables and outputs:

Table 2: Deliverables and Outputs

S/N	Deliverable	Outputs	Timeline (days)
1	**Deliverable 1: Inception Report,** acceptable to the Client; that clearly illustrates how the assignment shall be executed by	• 2 printed copies of the Inception Report • 1 Flash Disk with	10 days from date of contract commencement

	detailing the methodology for undertaking the assignment and a work plan, and proposals for presenting the assessment results in a concise manner. The inception report will be presented to the Ministry of Education before being signed off	soft copy of the Inception Report	
2	**Deliverable 2: (a) Draft ESMP Reports**, acceptable to the Client	• 5 printed copies of Draft Final Report • 1 Flash Disk with soft copy of Draft Final Report for each site	30 days after date of Client's acceptance of Inception Report
3	**Deliverable 3: Final ESMP Report**s comprised of two versions of each report; Fuller report with all World Bank Requirements and shorter version as required by MEPA. The reports must be acceptable to the Client, covering Final ESMPs and Monitoring Plans that incorporate comments and feedback from the Client. Each construction site shall have its own Final ESMP Report.	• 10 printed copies of each site's Final Report • 1 Flash Disk with soft copy of each site's Final Report	20 Days after Client's acceptance of Draft ESMP Reports

Assessment of consultant's achievement of the deliverables shall include the Client's determination of extent to which performance parameters of completeness, accuracy, effectiveness, timeliness and communication have been satisfied as specified in the table below.

Table 3 below shows the performance objectives:

Performance Indicators	**Quality Assurance Criteria**
a) Completeness	Deliverables will be 100% complete
b) Accuracy	Deliverables will be 100% accurate.
c) Effectiveness	All deliverables must contribute to the overall success of the assignment
d) Timeliness	All deliverables will be on time and within schedule
e) Communication	Communication is professional, courteous and accurate

6.0 QUALIFICATIONS AND EXPERINCE OF THE CONSULTANT

The Consultant should have the following educational qualifications, experience and expertise:

- A minimum of a Master's Degree in Environmental Sciences, Environmental Management, Natural Resources Management or any related field;
- A minimum of five (5) years of relevant working experience in conducting Environmental and Social Assessments and development of ESMPs in Malawi;
- Practical knowledge, understanding and experience in World Bank Safeguards Operational Policies/Environmental and Social Framework (ESF);
- Practical knowledge, understanding and experience of national environmental laws and policies of Malawi;
- Excellent oral and written communication skills with ability to dialogue and interface with grass roots, district and other sector players.

7.0 REPORTING REQUIREMENTS

The overall assignment shall be overseen by the Ministry of Education (MoE) through the SAVE Project PIU. For day-to-day execution of the assignment, the Consultant shall report to the beneficiary institution's environmental and social safeguards focal person(s) who work closely with the PIU's Environmental Safeguards Specialist, Social Specialist and Gender Specialist. The Social expert will identify social impacts (direct and indirect, short and long term and cumulative) associated with the project at and around the sites focusing on both positive and negative impacts; lead public consultation process to ensure that all interested and affected stakeholders are involved in the ESIA processes; propose an adequate program of public consultation and the affected stakeholders; propose an effective and comprehensive public consultation strategy; incorporate views of stakeholders in the ESIA report and the associated Environmental and Social Management Plan and Environmental and Social Monitoring Plan; examine the present baseline data on social and cultural characteristics of the study areas; determine the Social Environment of the areas.

The Gender expert will carry out gender analysis and determine the different activities that shall cause different impacts and shall monitor implementation of different activities to manage different gender related impacts, which will include increased risk of Gender Based Violence (GBV), increased risk of Sexual harassment, increased risk of Sexual Exploitation Abuse, increased risk of domestic violence and marriage breakdown, and increased risk of defilement and early marriages.

The consultant shall submit all requests for information, assignment reports (stipulated deliverables) to the client institution. The client shall submit copies of the reports to the SAVE PIU.

8.0 CLIENT INPUT AND COUNTERPART PERSONNEL

The Client, through the PIU shall provide the following inputs and counterpart personnel to the consultant:

a. Documents to be shared with the Consultants include: - Project Appraisal Document (PAD), Project Implementation Manual (PIM), World Banks Environmental and Social Framework (ESF), SAVE Project Environmental and Social Management Framework (ESMF), Labor Management Plan (LMP), the Stakeholder Engagement Plan (SEP), ESS checklist and the screening reports.
b. List of stakeholders and institutions to be visited and consulted for the development of the ESMPs.

9.0. ASSIGNMENT TIME FRAME

The consultancy will be delivered within a period of **60 work days**. This includes preparation time, field work, report writing, presentation/validation and submission of final documents.

10.0 PAYMENT SCHEDULES

The payment schedule for the assignment has been prescribed in the Table 4 below.

Table 4: Schedule of Payment

Payment No.	Activity	% of Total Fees
1	Submission and acceptance of inception report	40
2	Submission by the consultant and acceptance by Client of Draft Environmental and Social Management Plan and Monitoring Plans (ESMPs)	30
3	Submission by consultant and acceptance by Client of final ESMPs and Monitoring Reports	30
TOTAL		**100**

10.0. OBLIGATIONS UNDER THE ASSIGNMENT

10.1 The Client shall assist the consultant in providing available materials, study reports (including the Environment and Social Screening Reports for information) and other documents that may be relevant to the assignment. Where necessary, the Client may assist the consultant in deciding and arrangements to meet relevant agencies, districts and other key stakeholders.

10.2 The consultant is expected to be fully self- sufficient in terms of accommodation, office space, office supplies, office equipment and transport. The data, documentation and assets from the consultancy will remain in the custody of the Client at the end of the consultancy. Except for purposes of this assignment, the information shall not be disclosed to the public nor used in whatever way or form without written permission of the MoE in line with Copyright Laws applicable.

ANNEX 2 Screening Results from Stakeholders

Annex 23: Environmental and Social Screening Form for Screening of Potential Environmental and Social Impacts of SAVE activities

Government of the Republic of Malawi

Ministry of Education, Science and Technology

Skills for a Vibrant Economy (SAVE) Project

Environmental & Social Screening Form

Guidelines: Site inspection of project site. The evaluation results to be a consensus of at least three officials.

Project Name: Skills for a Vibrant Economy (SAVE)	District.: Zomba
Project Location: University of Malawi Campus	Nature/Size
Name & Signature of Evaluator: Mbeliva Nazanga	Date of Field Evaluation 13/07/2022

		Appraisal	Stage of EHS potential impact/risk/issue		Significance	Potential Mitigation Measures
		Yes / No	Construction	Operation	Low, medium, high	
1.0	Environmental Screening					
	Will the project generate the following impacts					

		Appraisal	Stage of EHS potential impact/risk/issue		Significance	Potential Mitigation Measures
		Yes / No	Construction	Operation	Low, medium, high	
1.1	Loss of trees/ vegetation/ biodiversity	Yes	✓		Low	- Plant trees for all the trees cut - Protect environ conservation
1.2	Soil erosion/siltation in the area	Yes	✓		low	Consider water traps to minimise run off.
1.3	Pollution to land- diesel ,oils	Yes	✓		medium	- ensure the machinery is well serviced.
1.4	Dust emissions and increased particulate matter	Yes	✓		High	- Dust suppression
1.5	Solid waste generation	Yes	✓	✓	high	engage the council for special collection
1.6	Liquid wastes and waste water generation	Yes	✓	✓	medium	- Proper drainage - Connect to the Sewer system
1.7	Introduction of hazardous chemicals and wastes	Yes	✓		high	- awareness - Restriction to access the chemicals and waste.
1.8	Borrow pits and pools of stagnant water	Yes	✓		medium	Avoid pit borrowing unless it's necessary
1.9	Rubble/heaps of excavated soils	Yes	✓		high	- backfilling - selling

		Appraisal	Stage of EHS potential impact/risk/issue		Significance	Potential Mitigation Measures
		Yes / No	Construction	Operation	Low, medium, high	
1.10	Invasive tree species	~~Yes~~ Yes	✓		Medium	Consider the species to be planted to prevent introduction during construction
1.11	Long term depletion of water	NO				
1.12	Reduced flow of water sources	No				
1.13	Nuisance from noise and vibrations	Yes	✓		high	
1.14	Loss of soil fertility	Yes	✓		low	
1.15	Incidence of flooding	NO				
1.16	Increased Energy use	NO				
1.17	Increased demand and/or portable water use	Yes	✓	✓	Medium	SRWB to be engaged for Provision of water
1.18	Increase emergence of man-made and natural disasters e.g. fires etc.	Yes	✓	✓	low	
2.0	Cultural, Social and Economic Screening					
	Will the project generate the					

		Appraisal	Stage of EHS potential impact/risk/issue		Significance	Potential Mitigation Measures
		Yes / No	Construction	Operation	Low, medium, high	
	following negative social and economic impacts?					
2.1	Loss of land to households	NO				
2.2	Loss of properties – houses, structures	NO				
2.3	Loss trees, fruit trees by households	NO				
2.4	Loss of crops by people	NO				
2.5	Loss of access to river/forests/grazing area	NO				
2.6	Impact cultural site, graveyard land	NO				
2.7	Conflicts over use of local water resources	NO				
2.8	Disruption of important pathways, roads	NO				
2.9	Loss communal facilities –churches	NO				

		Appraisal	Stage of EHS potential impact/risk/issue		Significance	Potential Mitigation Measures
		Yes / No	Construction	Operation	Low, medium, high	
2.10	Loss of livelihood system	NO				
2.11	Blockages to footpath/roads	NO				
2.12	Bring resettlement issues	NO				
2.13	Spread of HIV/AIDS and other STIs	Yes	✓	✓	medium	- Intensified HIC - Awareness - Condom distribu - Provision of PEP & PREP
2.14	Spread of Covid-19	Yes	✓	✓	Medium	- Awareness - Promoting Vaccinat
2.15	Occupational safety and health issues	Yes	✓		high	- Awareness - OHS Trainy - Provision PPE
2.16	Increase exposure of Hazardous chemicals and wastes	Yes	✓		high	- Make shifts to limit exposure time
2.17	Safety issues with respect to poor building designs	Yes	✓		medium	- compliance to building regulation - Promote inspecti
2.18	Exclude other users especially disabled and vulnerable with respect to poor building designs	Yes	✓	✓	low	- Provision of disability friendly facilities
2.19	Increased GBV and SEA	Yes	✓		medium	- Awareness - case manageme - restrict interact with Stud

		Appraisal	Stage of EHS potential impact/risk/issue		Significance	Potential Mitigation Measures
		Yes / No	Construction	Operation	Low, medium, high	
2.20	Increased violence against children	Yes	✓		low	-Age limit

Overall evaluation of Screening Exercises.

The results of the screening process would be either the proposed sub - projects would be exempted or subjected to further environmental and resettlement assessments. The basis of these options is listed in the table below:

Review of Environmental Screening	Tick	Review of Social and Economic Screening	Tick
1. The project is cleared. No serious impacts. (When all scores are "No" in form)), though the bids/contracts still would have standard EHS clauses		1. The project is cleared. No serious social and economic impacts, (Where scores are all "No", "few" in form)though the bids/contracts still would have standard clauses on addressing emerging social and economic issues	✓
2. There is need for further assessment - ESMP or ESIA (when some score are "Yes, High" in form), as determined by MEPA	✓	2. There is need for resettlement/compensation. (When some score are "Yes, High" in form) including need for ESMP or ESIA as determined by MEPA	
Approval by Environmental officer/		Approval by Director of Planning and Development	
Name: Comergani Nyasulu		Name: Lullimon Maselo	
Signature [signature] Date 21/07/2022		Signature [signature] Date 21/07/2022	

CHIEF EXECUTIVE OFFICER ZOMBA CITY COUNCIL 21 JUL 2022 P.O. BOX 43 ZOMBA

NOTES:

1. The DPD shall ensure that a completed form is filed within project file immediately after endorsement. Environmental Officer may keep a duplicate.
2. Project Management Committee will maintain a copy of completed form

3. It is the duty of Director of Planning and Development and Environmental Officer to ensure mitigation measures outlined in form are implemented.
4. An Environmental Officer shall prepare a monthly monitoring report on implementation of mitigation measures.
5. The mitigation measures shall be sourced from expert knowledge, stakeholder consultations, EHS guidelines etc.
6. The bids/contracts still would have standard EHS clauses
7. The screening form will be updated prior to use, to reflect a more final set of EHS potential impacts/risks/issues

ANNEX 3 Details of stakeholders consulted

PEOPLE PRESENT AT STAKEHOLDER CONSULTATION MEETINGS FOR EXPANSION OF INFRASTRUCTURE AT CHANCELLOR COLLEGE, UNIVERSITY OF MALAWI

DATE 16/02/2021 TIME 9:00 am

VENUE Chancellor College Prof. Brown Chimphamba Complex

STAKEHOLDER GROUP BEING CONSULTED Community members around Chancellor College & their Leaders

Name	Designation/udindo	Village /place of residence	Traditional Authority	Phone number	Signature	Date
Christina Mchenga	Member	Chikanda	Chikowi	0991064	enyo	16/02/21
Mphatso Sangya	Member	Chikanda	Chikowi	0991221508	[illegible]	16/02/21
Steven Chilupsya	V.H Chilupsya	Chilupsya	Chikowi	088755 [illegible]	Schilupsya	16/02/2021
Ireen Chirwa	Member	Chikanda	Chikowi	0885898026	[illegible]	16/2/2021
Monica Juwa	Member	Chikanda	Chikowi	0880524859	[illegible]	16/02/2021
Atisunga Mchenga	Member	Chikanda	Chikowi	0994885521	[illegible]	16/02/2021
Erenga Nthenge	Member	Chikanda	Chikowi	0996698703	[illegible]	16/02/2021
Justin Manjomo	Member	Chikanda	Chikowi	0999128[illegible]	[illegible]	16/2/2021
CHRISTOPHER KABWAZI	MEMBER	CHIKANDA	CHIKOWI	0888[illegible]	[illegible]	16/02/2021

PEOPLE PRESENT AT STAKEHOLDER CONSULTATION MEETINGS FOR EXPANSION OF INFRASTRUCTURE AT CHANCELLOR COLLEGE, UNIVERSITY OF MALAWI

DATE 16/2/21 TIME 9:00 am

VENUE Chancellor college Prof. Brown Chanphamba complex

STAKEHOLDER GROUP BEING CONSULTED community members around chancellor college and their leaders.

Name	Designation/udindo	Village /place of residence	Traditional Authority	Phone number	Signature	Date
Shupe Banaii Chilunga	Member	Chikanda	Chikowi	0884140896		16/02/21
Margaret Santos	member	Chikanda	chikowi	0999095408		16/02/21
Frezer Mathyola	Member	Chikanda	Chikowi	0883516827		16/02/2021
Emmanuel Mgudeyi	Member	Kazembe	Chikowi	0883989107		16/02/21
Lawrence Tikyaka	Member	Limkanda	Chikowi	0999359068		16/02/21
DENSON CHAKWA	MEMBER	CHIKANDA	CHIKOWI	0999680[illegible]		16/02/21
ANDREW CHIBALA	MEMBER	CHIKANDA	CHIKOWI	0881366636		16/02/21
CHARLES BVENATU	MEMBER	CHIKANDA	CHIKOWI	0888289329		16/02/21
HARRISON CHIUNDA	MEMBER	CHIKANDA	CHIKOWI	0884[illegible]		16/02/21
DENNIS NDALAMA	MEMBER	CHIKANDA	CHIKOWI	0888574662		16/02/21
JOHN NJIKHO	V.H CHIKANDA	CHIKANDA	CHIKOWI	0884096252		16/02/21
MCPHEVRY UMA	V.H GOMEZA	GOMEZA VGE	CHIKOWI	0995281946		16/02/21
RODGRY SAMEZA	G.V.H CHIKANDA	CHIKANDA	CHIKOWI	0992579699		16/02/2021
Richard Kasenda	Member	Chikanda	Chikowi	0888521547		16/02/2021
KUMWENJI HAMBA	AR-ADMINISTRATION	CHANCELLOR COLLEGE	Chikowi	0888312688		16/2/2021

CC

PEOPLE PRESENT AT STAKEHOLDER CONSULTATION MEETINGS FOR EXPANSION OF INFRASTRUCTURE AT CHANCELLOR COLLEGE, UNIVERSITY OF MALAWI

DATE 17/2/2021 TIME 9:00 am

VENUE Brown Chimphamba complex

STAKEHOLDER GROUP BEING CONSULTED Students representatives

Name	Designation/udindo	Village /place of residence	Traditional Authority	Phone number	Signature	Date
Caroline Zondiwe	Student			0994225928	C. Zondiwe	17/02/2021
Cynthia Mangulenje	Student			0995483775	[signature]	"
Shadreck Mthenda	student			0883777310	[signature]	"
Ibrahim Asmal	student			0882708845	[signature]	"
Nicholas Phiri	Student			0888741475	[signature]	"
Praise A Dzenza	Student			0880054193	[signature]	17/02/21
Ramsey Njera	Student			0994574080	[signature]	17/02/21
Grace Mhango	Student			0997777180	[signature]	17/02/21
Isaidi Clement	Student (SUCC)			0881764989	I Clement	17/02/21
Chisomo Mgawida	Student			0886212788	[signature]	17/02/21
Maureen Kachala	Student (SVCC)			0881820546	[signature]	17/02/21
Aaron Chintherga	Student			0881663321	[signature]	17/02/21

PEOPLE PRESENT AT STAKEHOLDER CONSULTATION MEETINGS FOR EXPANSION OF INFRASTRUCTURE AT CHANCELLOR COLLEGE, UNIVERSITY OF MALAWI

DATE 17 FEB 2021 **TIME** 9:00 am

VENUE BROWN CHIMPHAMBA

STAKEHOLDER GROUP BEING CONSULTED STUDENTS REARGESENTATIVES

Name	Designation/udindo	Village /place of residence	Traditional Authority	Phone number	Signature	Date
all - MPP-> Emmanuel Chinyenge	Student	Chikanda	Chikowi	0991714548		17/02/21
Head Secretary-> Abigail Lauta	Student	Chikanda	Chikowi	0995323212		17/02/21
Magan. 20 Boston	Student	Chikanda	Chikowi	0999111385		17/02/21
Richard Zacharian	Student	Chikanda	Chikowi	0996414847		17/02/21
Ben Lombe	Student	Matawale	Chikowi	0997775860		17/02/21
WISdom Kafola	Student	Chikanda	Chikowi	0885660588		17/02/21
SHERIF JUMA	STUDENT	Chikanda	Chikowi	0881693818		17/02/21
Darlie Kapanga	Student	Chikanda	Chikowi	0883451609		17/02/21
DAWA IBRAHIM	Student	Chikanda	Chikowi	0882650314		17/02/21

PEOPLE PRESENT AT STAKEHOLDER CONSULTATION MEETINGS FOR EXPANSION OF INFRASTRUCTURE AT CHANCELLOR COLLEGE, UNIVERSITY OF MALAWI

DATE 26th February 2021 TIME 9:20 A.M

VENUE Chancellor College, Brown Chimphamba Lab

STAKEHOLDER GROUP BEING CONSULTED DESC Members ZOMBA

Name	Designation/udindo	Village /place of residence	Traditional Authority	Phone number	Signature	Date
Sanujwani Gondwe	Environmental Officer	Thondwe, Zomba	Mlumbe	0884937661		26/02/21
Harold Aliko	Police	Police College		0888351116		26/02/21
Nancy Winiko	Desk Office for Sec School	SEEN, ZA		0999533555		26/02/21
Memory Mthanda	SHN/HAH Coordinator	SEED, ZA		0999107876		26/02/21
Redson Mkolombwe	DOA	Zomba DC		0888590077		26/02/21
Veronica Nyaya	DEM ZAR	Zomba		0888534348		26/02/21
Felistus Kumfunda	DGO	ZDC	Chikowi	0999410744		26/02/21
Kettie Mwandira	DYO	ZDC	Mlumbo	0999191553		26/02/21
Joyce Mwale	TPD	ZCC	Chikowi	0884461227		26/02/2021
Paul Phiri	PEMO	ZCC		0999555651		"
Phillimon Mazhia	CPO Zomba	ZCC		0999274966		26/02/2021

Environmental Screening Skills for a Vibrant Economy (SAVE)

18 July, 2022

REGISTRATION FORM

SN	Name of Participant	Designation	Address	Phone Number	Signature
1	Hamsi Chipelo	Parks & Forestry Supervisor	P.O. Box 43,	0995091852	
2	Gomezgani Nyasulu	EHO	P.O. Box 43	0884101716	
3.	M'bobira Nakanga	Parks & Recreation Officer	P.O. Box 43	0999490261	
4	Eunice Kaphuka	AIDS Coordinator	PO Box 43	0884122025	
5	Linda Matayataya	SWO	P.O. Box 43	0995636776	
6	Comfort Smart Nkhata	Student	P.O Box 280	0881752445	C.Nkhata
7	Alinafe Tsirizeni	Student	P. O Box 280	0886961680	A.Tsirizo
8	Gabriel Nyondo	Student	P.O Box 280	0881317274	
9	Alexander Geneva Tembo	Student	P.O. Box 280	0992955246	
10	Elira Phiri	EHO	P.O Box 43	0990885217	
11	Hilda Potani	EHO	P.O Box 43	0994398012	

SN	Name of Participant	Designation	Address	Phone Number	Signature
	Simon Winiko	Project Team Member	Box 280, Zomba	0993897894	
	Joyce Mwale	Town Planning Officer	P.O. Box 43, ZA	0884461227	
	Lucius Kalonga	Umma Health (Head)	Box 280 ZA	0888307711	
	Jonas Mwatseteza	Project Team Leader & Dean	Box 280 ZA	0999707152	

ANNEX 4 Designations and qualifications of the experts

The following personnel list was responsible for the conducting of ESMP study for the project:

4.1 Lyson Kampira: (MSc. Environmental Science, Bachelor of Education Science (Hons)) Mr. Kampira is an experienced Environmental and Social Impact Assessment expert and was the Team Leader for the Assignment. He is a seasoned Environmental and Social Impact Assessment expert with More than 15 years of practical experience in conducting ESIAs and environmental management in General. He has successfully conducted a number of ESIAs. He has successfully conducted and led ESIA studies in various areas and has prepared a number of ESIA reports and Environmental and Social Management Plans for different developmental projects ranging from infrastructure developments, irrigation, road infrastructure, hydropower generation, mining, industrial development, and water and sanitation which have been approved by the Malawi Environmental Protection Agency and different donor agencies such as the World Bank, European Investment Bank and the African Development Bank.

4.2 George MB Kaggiah: (BSc, Civil Engineer and MSc Strategic Management)

Mr. Kaggiah is Registered Civil Engineer and Fellow of Institution of Engineers in Kenya, UK and Malawi. He has extensive experience in structural design and providing consultancy services in Kenya, Swaziland, Mozambique and Malawi and has been in charge of various development projects such as: Buildings & Infrastructure (Industrial, Commercial, & Residential Buildings and Estates); Irrigation and Drainage Schemes; Civil Works (Dams, Micro Hydro Power Stations, Intakes, Retaining Walls, Dykes, etc); Water Supply (Urban and Rural Supplies); Transportation (Roads, Railways, Airfield, Bridges, jetties); Sewerage and Sanitation (onsite and offsite disposal); and Waste management and pollution control (Industrial Waste, Municipal Solid Waste, Pollution Control etc).

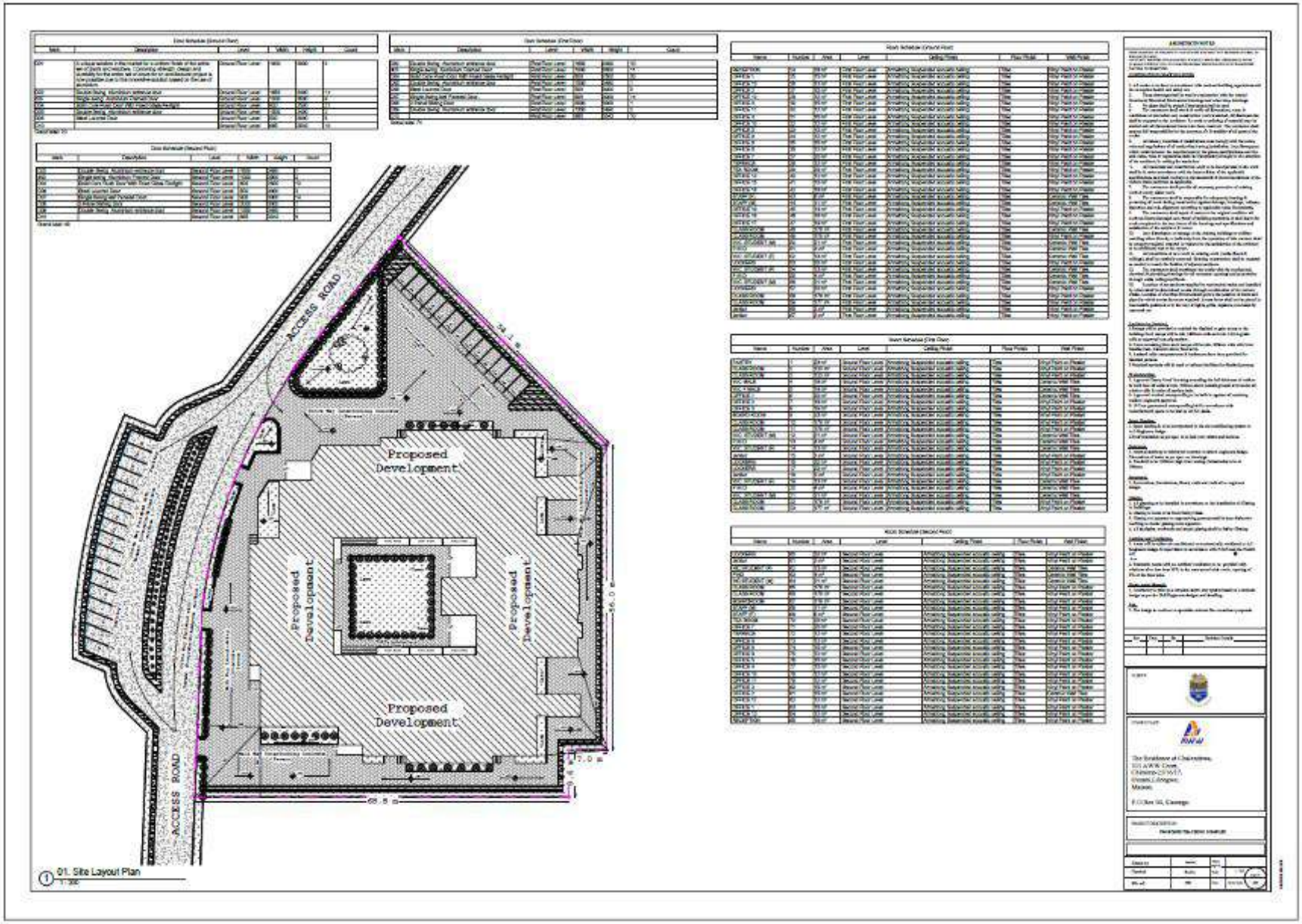
Mr. Kaggiah has over 26 years' postgraduate experience with leading consulting firms as a professional Civil Engineer in civil engineering projects specialized in infrastructure, water supply and sanitation engineering. He also has extensive experience as senior resident engineer, projects engineer, team leader involved in project planning, preliminary and detailed design, tender documentation, contract supervision, administration, and management.

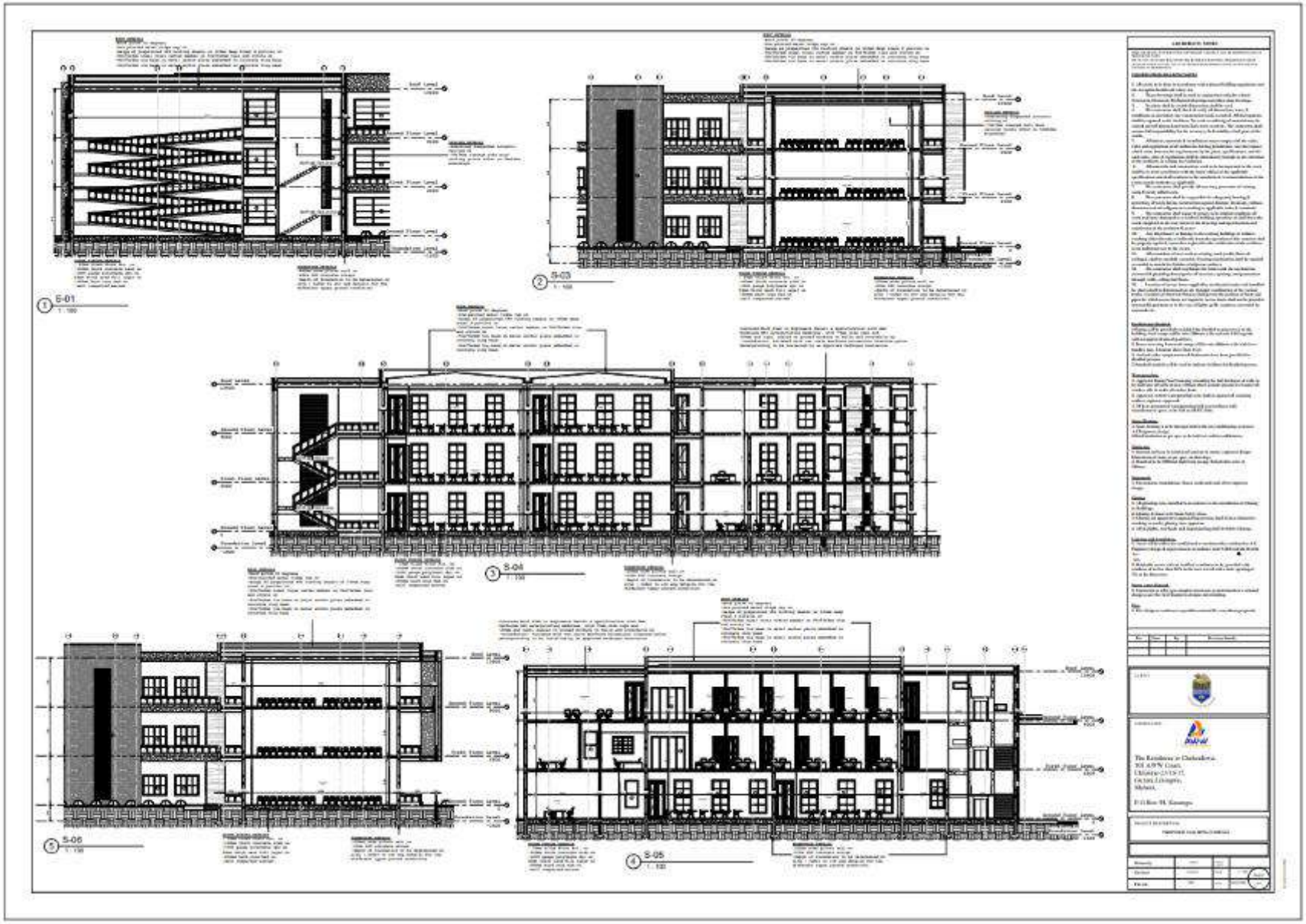
4.3 Martna Chimzimu: (Bachelor of Arts in Social Science) - Majoring in Sociology with minors in Political Science & Administrative Studies Ms. Chimzimu is a seasoned Socio-scientist who led the socio-economic studies of the ESIA and assisted in carrying out public consultations and preparation of the report. She has participated in a number of ESIAs where she has been leading public consultation process to ensure that all interested and affected stakeholders are involved in the ESMP processes; proposing an adequate program of consulting the general public and the affected stakeholders; proposing an effective and comprehensive public consultation strategy which included objectives of the consultation, list of stakeholders to be consulted, methods for reaching the stakeholders, schedule for consultation activities; and how the consultation efforts will be analyzed;

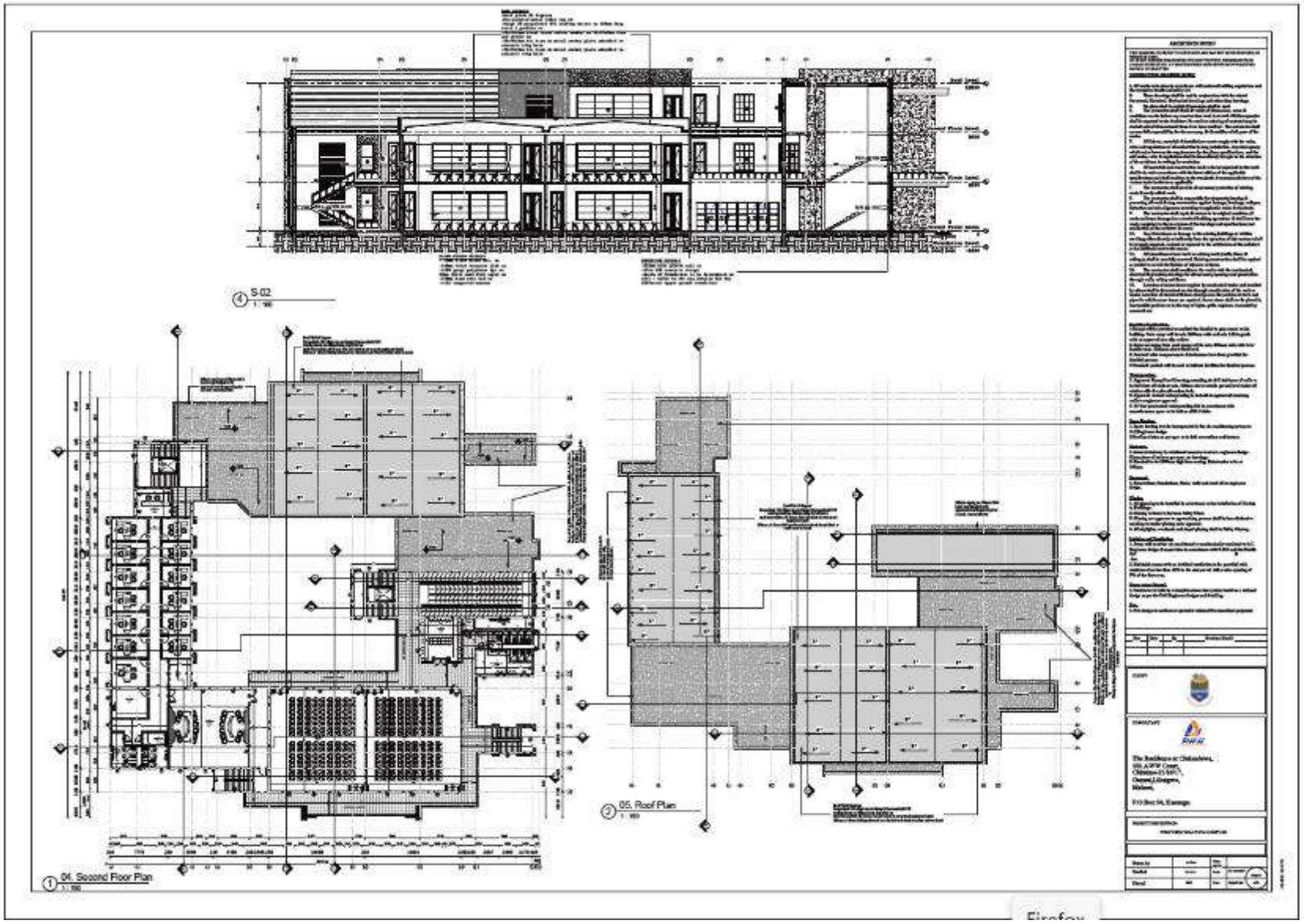
incorporating views of stakeholders in the ESMP report and the associated Environmental and Social Management Plan; Providing details on the Gender analysis, HIV and AIDs prevalence rates in the project impact area; and Examining the present baseline data on social and cultural characteristics of the study area.

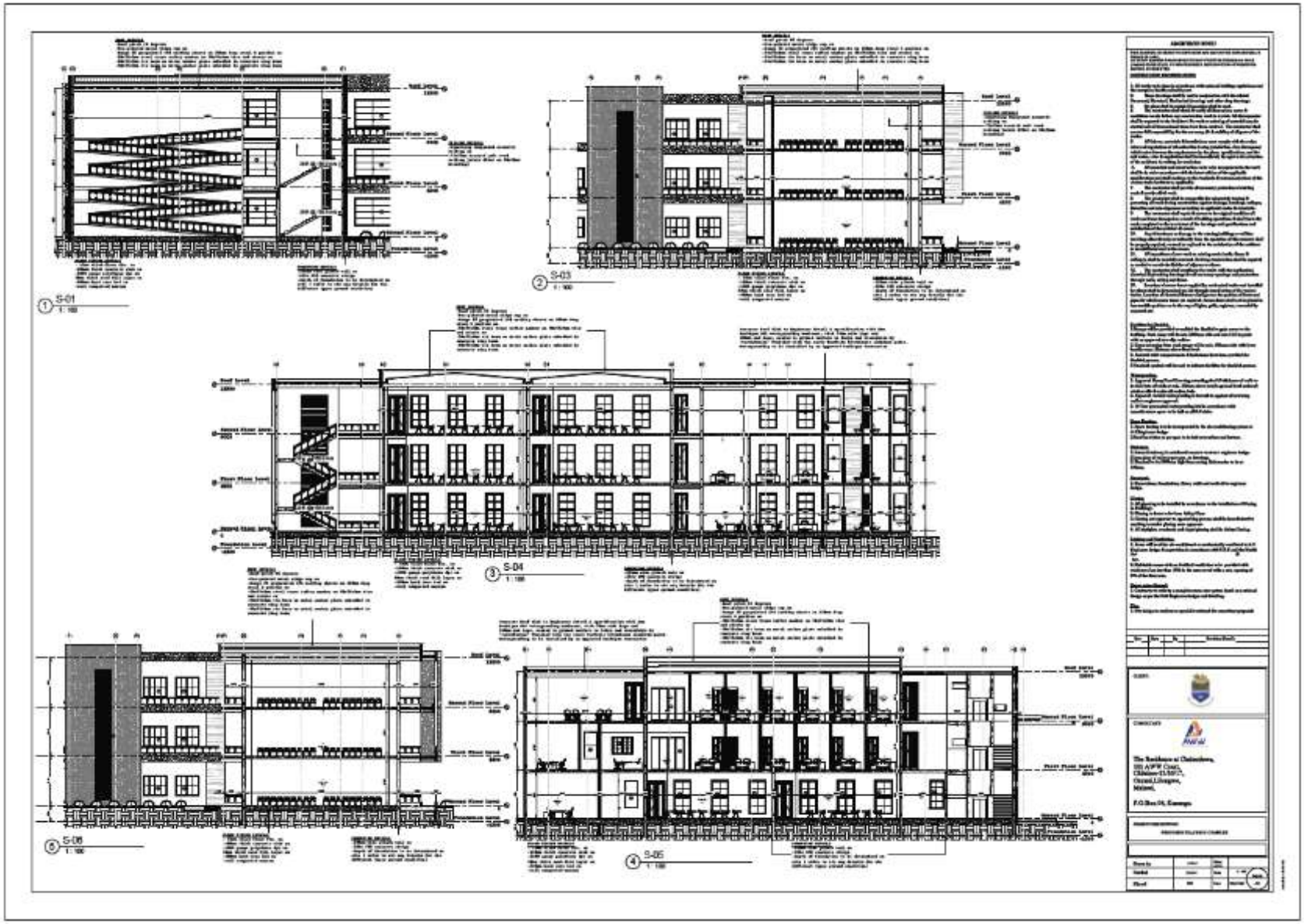
4.4 Emmanuel Kaonga (Master of Science Degree in Conservation Biology and bachelor of Science Degree in Biology). Mr. Kaonga is a seasoned ecologist. He has participated in a number of ESIAs where he has been responsible for providing a concise description of the existing biological resources in the project area and how the project will affect the resources. He provided details of the scope of vegetative resources of the project area including riparian vegetation, fauna, birds, mammals, reptiles, and insects. He further participated in the drafting of the ESIA report for the project.

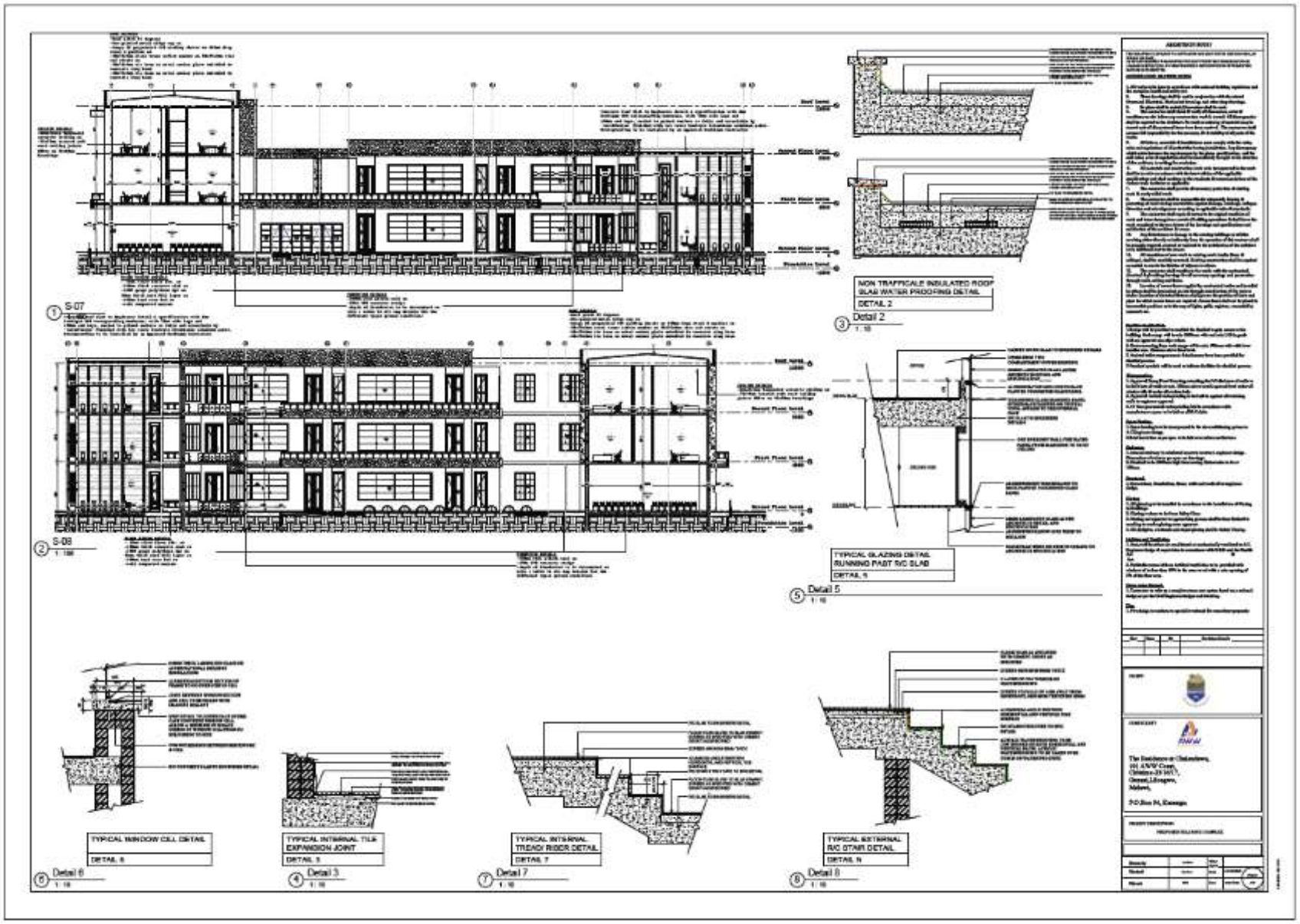
ANNEX 5 **Architectural images for teaching complex facility**

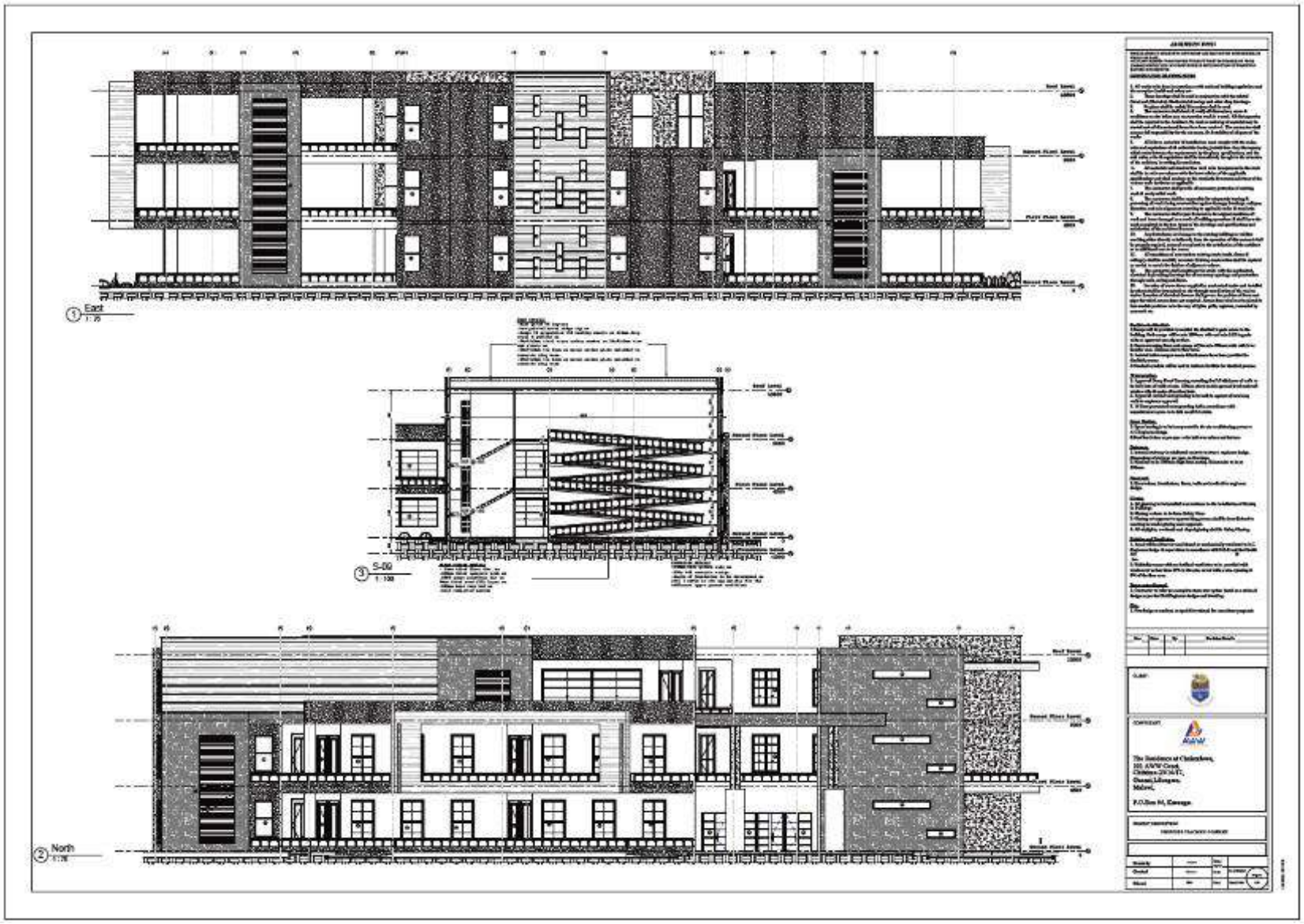


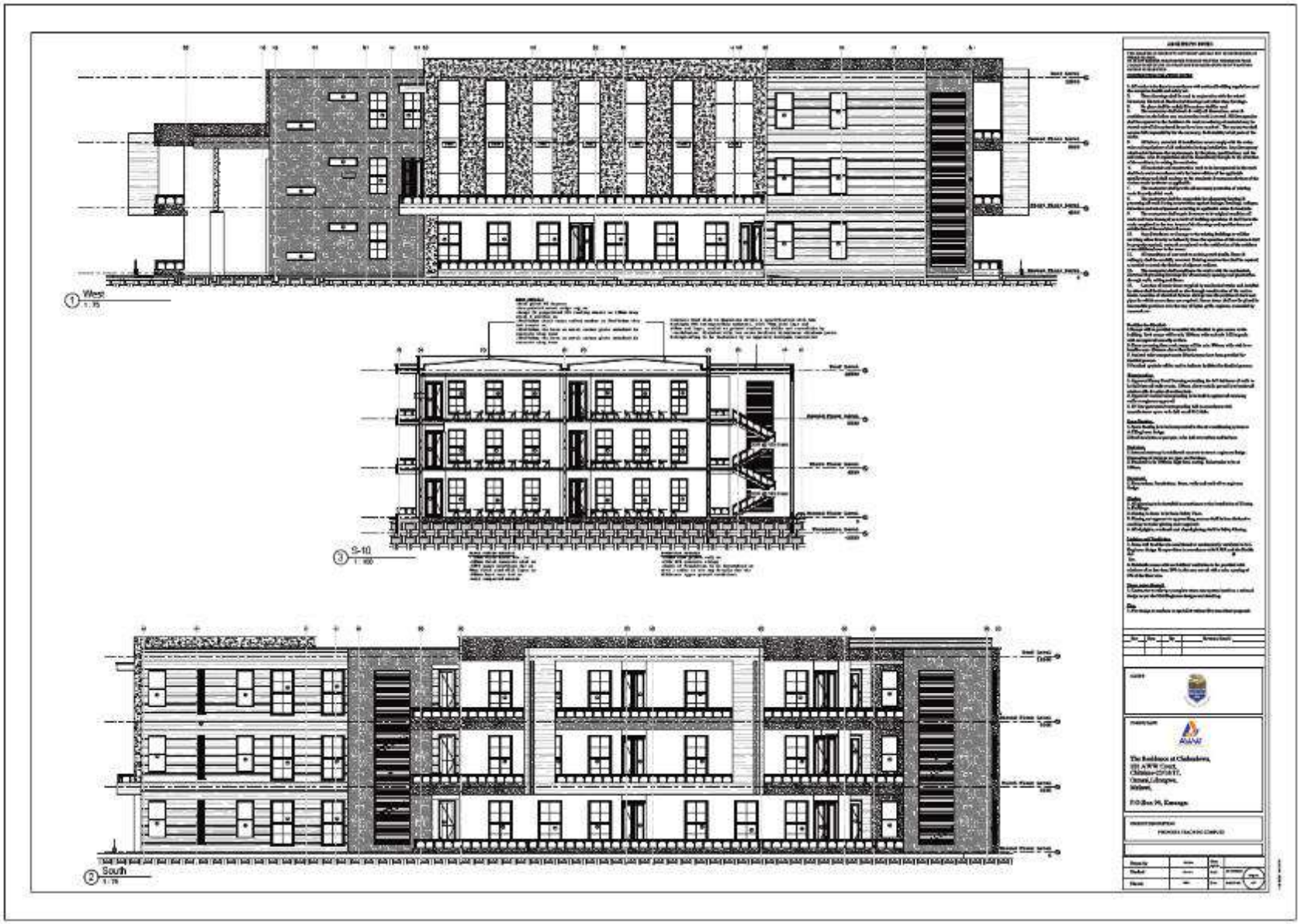


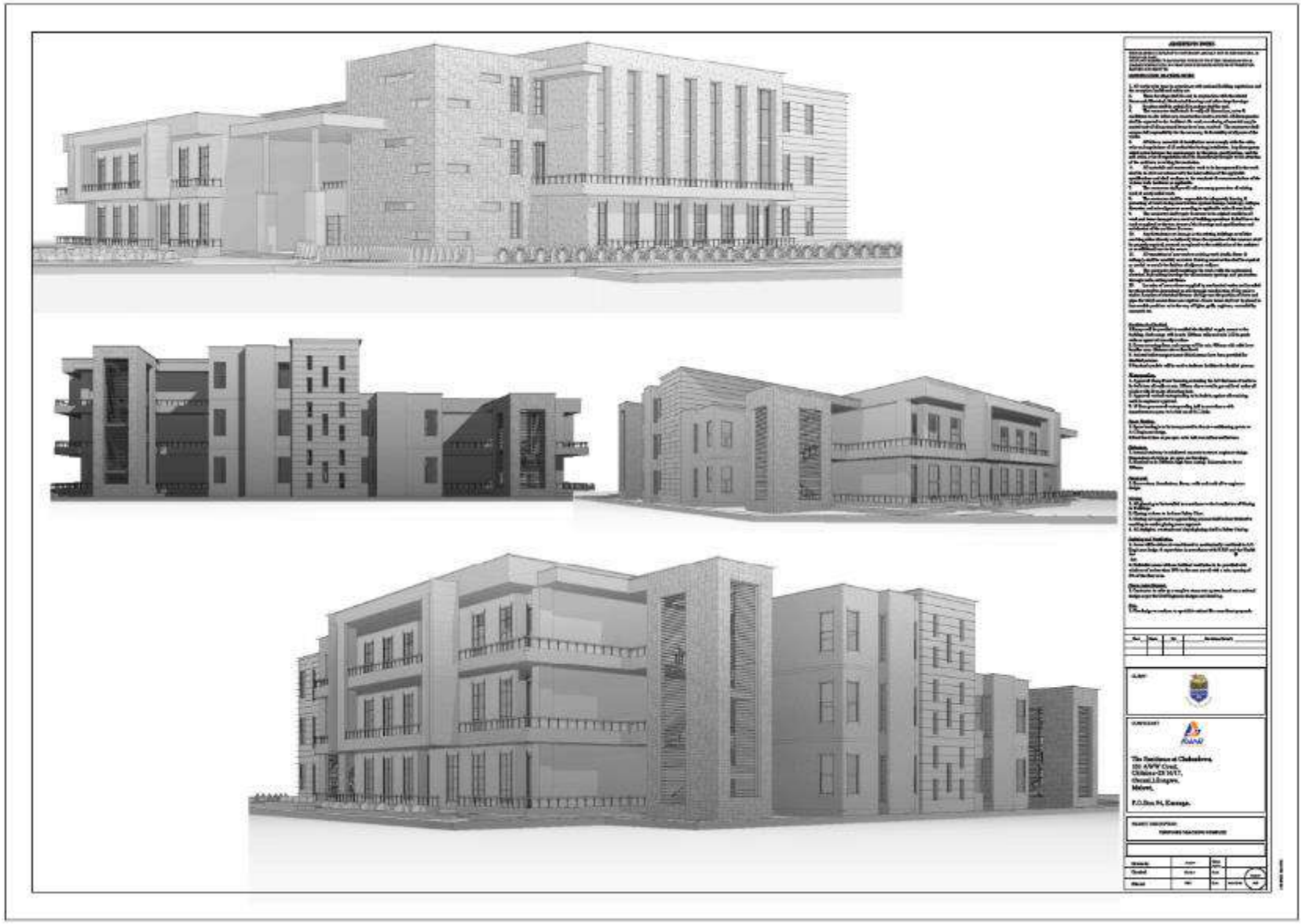

S-02
04. Second Floor Plan
05. Roof Plan




S-07
S-08
NON TRAFFICABLE INSULATED ROOF SLAB WATER PROOFING DETAIL
DETAIL 2
Detail 2
TYPICAL GLAZING DETAIL RUNNING PAST R/C SLAB
DETAIL 5
Detail 5
TYPICAL WINDOW CILL DETAIL
DETAIL 6
Detail 6
TYPICAL INTERNAL TILE EXPANSION JOINT
DETAIL 3
Detail 3
TYPICAL INTERNAL TREADY RISER DETAIL
DETAIL 7
Detail 7
TYPICAL EXTERNAL R/C STAIR DETAIL
DETAIL 8
Detail 8


East
S-SS
North


1 West
1 : 75
3 S-10
1 : 100
2 South
1 : 75



ANNEX 6 Emergency Management Plan

A6.1 Introduction

In accordance to the impacts identified in this Environmental and Social Management Plan, a draft Emergency Plan has been developed which will be amended in the pre- construction phase in the CESMP. Routine procedures for managing hazardous waste are included in the mitigation measures presented in the ESMP.

A6.2 Procedures for PMU interaction

In the emergency event/incident or accident (vehicle collision, physical harm to humans, landslide, or spillage of harmful chemicals etc.) information will be received through the phone in the Project Implementation and Supervision Consultant's (PISC) office located in Engineers facilities. (telephone numbers to be included in the CESMP).

Information about the incident can also be reported by the Contractor, PMU staff, PISC staff, university staff, students or any of the community members. After receiving the information, PMU will directly request the PISC to instruct the Contractor to mobilize the necessary equipment and staff to deal with the emergency situation.

The appointed Contractor will be responsible for the preparation of an Emergency Response Plan, which will cover landslides, containment of hazardous materials, oil and fuel spills, and work-site accidents. The plan will detail the process for immediate notification to PMU, handling, and subsequently, emergencies reporting, and specify the organizational structure (including responsibilities of nominated personnel).

The plan will be submitted to PMU for approval. Implementation of the Emergency Response Plan will be monitored by PMU. Any emergencies, and how they will be handled, will be reported in the Contractor's Monthly Progress Report. The typical approach to some potential emergencies is presented below.

A6.3 Landslide

The landslide may happen during the excavation or when there is constant heavy rain. The appointed Contractor will be responsible for the emergency response in the event of the occurrence. A regular patrol such as Safety and Environmental Walkabout shall be carried out by the Environmental and Safety Manager at the site to inspect the indication of landslide and simultaneously plan for an immediate action. Project Coordinator will be arranging frequent inspections on the landslide-prone areas performed by arranged staff, no less than two people, especially in the constant rainy period. Once a landslide occurs, the following items shall comply as part of the Emergency Response Plan:

- Emergency Response Team should be at the site quickly and put the safety of people as the first priority. Retreat all the people near the landslide area to a safety region, in case there would be future damage. If there are any injuries, medical assistance would be called right away; and set up warning lines and signs to alarm the passing vehicles and passengers;
- All materials needed at the site, including rescue facilities, medical aids and etc. shall be arranged. Keep the means of contact efficient and relevant records specified through the whole rescue procedure;
- Health, Safety, and Environment (HSE) Manager and Project Manager would be on the (emergency) landslide site to lead all the rescue work throughout;

- A report should be submitted to the relevant departments and PMU, while an inspection of the landslide area is conducted to prevent further loss or damage.

A6.4 Hazardous Materials

Containment of hazardous material shall comply with the following principles:

- Hazardous materials shall be classified and labeled in English and Tetum; and stored in different zones and conditions with cautiousness by specified staff;
- Requisition of hazardous materials should be carried out by staff under the safety department, and records shall be kept properly. Unused hazardous materials should be returned to the storage on the same day;
- Hazardous spillage, if any, should be immediately cleared utmost caution by using absorptive cleanup materials to leave no traces. Spillage waste shall be disposed at disposal sites approved by city council, and accompanied by waste manifest. Furthermore, make sure the fire extinguisher is in good condition, function well and regularly inspected; and
- Training and testing of necessary knowledge of safety awareness and potential dangers of the hazardous materials shall be carried out regularly.

A6.5 Oil and Fuel Spillage

Oil and fuel spills may happen in the equipment, the construction site, and the storage areas. The appointed Contractor shall undertake the following tasks:

- Regular inspections for oil and fuel leakage of all equipment and in the storage should be carried out daily and records of the inspections shall be kept;
- Examine the leakage sections and the causes, replacements of lubrication components, sealing or other elements should be implemented in all equipment if necessary;
- In the storage, if there is oil/fuel leakage, the staff shall carry out relevant measures to stop the leaking. Spillage, if any, will be immediately cleared with utmost caution by using absorptive cleanup materials to leave no traces;
- Spillage waste will be disposed at disposal sites approved by the City Council and accompanied by waste manifest. All the waste due to handling the oil or fuel spill problems should be treated and delivered to the appointed waste disposal area.

A6.6 Accidents (Major and Minor)

Foreman or Person in charge (PIC) will normally be the first person to be informed of an accident whether of a serious or minor nature. The Foreman or PIC will record:

- The time the accident is reported;
- Who reported the accident;
- How many persons involved;
- Cause of the accident;
- Type of injury - initial diagnoses; and
- First aid equipment required.

The foreman or PIC must remain calm under all circumstances and re-assure the Person reporting the accident that he (Foreman or PIC) has all the information and will re-act accordingly.

- Phone the Chief Safety officer or subordinate and inform him of the accident and give details as given to him;
- Phone for an ambulance and request for more first aid equipment if necessary;

- Constantly record who he phoned, time, the instructions, received and information given;
- When the stretcher case arrives on surface, the injured person's name or number must be recorded as well as the name or names of person or persons who accompanied the injured;
- In the case of a serious or fatal accident the person who accompanies the stretcher must be instructed to accompany the injured/body to the hospital (continuity witness);
- The continuity witness must also be informed that he is a witness to the accident and if the person has died as a result of the injury, he will have to identity the deceased at the mortuary; and
- It is important that a proper list of names of all responsible persons are posted in the report indicating their addresses and telephone numbers.

A6.7 Medical Health Cases

Medical Health cases will be referred to the company's Doctor or to the closest health facility. Communication procedures will be pre-established and made known to workers. The family of any worker involved in a medical health emergency will be communicated to by the EHS Officer or the Community Relations Officer.

A6.8 Civil Unrest and Disturbance

Civil unrest or social disturbances may be local, national or international. Procedures for responding to these situations need to be developed into specific actions plans which will be communicated to workers. Early warning may be received via various methods of intelligence.

- All intelligence received by any party must be forwarded to the Head of Security or his designate for verification;
- The HOD Security or his designate will issue an early warning order to the General Manager, Heads of Departments, Doctor/Paramedic and the Security Department Personnel. The aim of the early warning order is to inform management of the possibility of a situation developing and to place the security department on an alert status;
- Management will analyze the current status, with regard to personnel and assets, within their respective areas of responsibility;
- The HOD Security or his designate is responsible for an in-depth analysis and evaluation of the information gathered (risk analysis);
- The HOD Security or his designate will utilize the evaluated information to make a realistic prediction regarding developments. Should it be determined that a situation is developing, the basic emergency plan will be activated.

A6.9 Activation of Emergency Response

a) Radio warning – the Head of Security or his designate will issue a general warning order via VHF radio; and

b) Telephonic warning – the Head of Security or his designates will issue a warning order via cellular phone (alternative means VHF radio) to the relevant parties as follows:

i) The Project Manager or equivalent personnel who will warn all heads of departments and confirm that each has received the warning;

ii) The Doctor/Paramedic who will be on immediate standby with the ambulance;

iii) The Security Manager, who will ensure and confirm that his team is informed as well as other local and national security response groups/forces (police, military, etc).

ANNEX 7 Disaster risk management plan

Disaster risk management plans set out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives. Important points of a disaster management plan include prevention, mitigation, preparedness, response, and recovery. Key stakeholders in a disaster management plan include government, communities, suppliers, project owners, media, NGOs, development partners, etc. Activities that are designed for disaster risk management include those activities that are implemented during preparation for disasters/emergencies, during disasters/emergencies themselves and post disasters/emergencies.

1.0 Preparing for disasters/emergency

Activities designed to develop strong emergency response capability through:

a) Plan for threats and the impact of disasters;
b) Identify health staff and stakeholders for different emergencies/disasters;
c) Check resources available for operations, logistics and support;
d) Confirm criteria in order to request international assistance;
e) Secure arrangements or partnerships with key stakeholders;
f) Develop standard operating procedures for emergency response;
g) Prepare scenarios and conducting training exercises for emergency teams; and
h) Ensure health staff and key stakeholders understand roles and responsibilities

2.0 During disasters/emergency

a) Ensure the SOH authorizes any health response to emergencies and disasters;
b) Ensure the Health Emergency Operating Centre is activated at either location;
c) Report to respective emergency team leaders;
d) Deliver acute emergency care and support to affected communities;
e) Protect the life and welfare of affected communities and ensure staff safety;
f) Provide community based health protection services where required;
g) Ensure all clinical protocols, standards and practices are maintained at all times; and
h) Ensure all logistical and operation information is recorded and reported on.

3.0 Post disasters/emergency

a) Provide continuous support for patients recovering from disasters;
b) Record injured, ill and deceased (missing) patients from affected communities;
c) Retrieve patients requiring referral to receive secondary or tertiary health care;
d) Ensure clean water, food and sanitation measures are taken to prevent disease;
e) Conduct health needs assessments for affected communities;
f) Conduct health team debriefing and demobilization, and provide counselling; and
g) Evaluate the emergency response and provide recommendations for the future.

4.0 Disaster management and coordination

The Department of Disaster Preparedness is responsible for leading a coordinated national response to major disasters in the country. The disasters range from floods, fires, earthquakes, slides, public health threats such as disease outbreaks or global pandemics. The Department works with national and international stakeholders including project management teams to ensure the different disasters are managed.