ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR CONSTRUCTION AND OPERATION OF INTEGRATED TEACHING FACILITY UNDER SKILLS FOR A VIBRANT ECONOMY PROJECT

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Executive Summary

The Government of Malawi, through the Ministry of Education and the College of Medicine (CoM) is implementing a Skills for A Vibrant Economy (SAVE) Project with financing from the International Development Association (IDA) of the World Bank Group to the Government of the Republic of Malawi. 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 project has four components namely; supporting increased access to skills development programs in higher education, supporting increase in access to TEVET skills development, tertiary education system strengthening, project management, M&E, communications, and contingent emergency response component. Under component one, the project will construct and enhance infrastructure that provide additional physical and virtual space for student enrolment through face to face, blended, and ODeL instruction Communications. KUHeS will therefore develop the Integrated Teaching Facility Incorporating School of Dentistry and Innovation at Kamuzu University of Health Sciences (KUHeS). The SAVE project is being implemented from 03rd June 2021 to 30th June 2026. The project is expected to have several environmental and social impacts at different stages of implementation which, necessitated the development of an Environmental and Social Management Plan (ESMP) to enhance the positive environmental and social impacts while mitigating the negative ones. An initial environmental and social risk assessment determined that the project has a moderate environmental and social risks categorisation (with environmental and social risk classification as moderate). Therefore, the ESMP has been developed for the construction and operation of Integrated Teaching Facility Incorporating the School of Dentistry and Innovation at Kamuzu University of Health Sciences (KUHeS), Blantyre campus, in Blantyre City under the Skills for a Vibrant Economy (SAVE) Project.

The project involves the construction of an Integrated Teaching Facility Incorporating School of Dentistry and Innovation. This facility will include a teaching facility, dental clinic, learning resource, dental administration, and supporting offices, pantries, washrooms, and other ancillary infrastructure. The infrastructure will be a three-story building (with ground floor, first floor and second floor). Construction activities are planned to be carried out in a period of one year and six months (November 2024 – June 2026) at an estimated cost of K5,000,000,000.00. approximately, 100 people will be employed at the project site when construction activities begin. The contractor will ensure equal opportunities for women and men, aiming for at least 40% of the workforce to be women. The construction works will ensure a conducive teaching and learning environment for undergraduate students at KUHeS.

The ESMP preparation involved desk studies, site inspections, stakeholder consultations, and documentation. Desk studies reviewed project documents and various national legislations. A site visit from 07th to 20th June 2023 assessed environmental, social, health, economic, and legal factors, identifying potential impacts and ensuring compliance with national and international standards. Stakeholder consultations included interviews with key stakeholders including KUHeS Staff, the Grievance Redress Mechanism committee, the student union body and the city council as per stakeholder engagement plan for the SAVE project. This ESMP should be read together with other plans prepared for the project, including the Environmental and Social Management

Framework, Stakeholder Engagement Plan (SEP), Labour Management Plan (LMP) and the Environmental and Social Commitment Plan (ESCP).

In terms of implementation arrangement, the project is being coordinated by SAVE PIU based in the Ministry of Education, Science and Technology. KUHeS Blantyre will be directly coordinating the implementation of construction works. There will be consulting engineer who will supervise the construction works. The contractor will directly implement the measures proposed in the ESMP, during the construction phase. During the operation phase, KUHeS Blantyre campus will be directly responsible for implementation of the ESMP and train all parties responsible for implementation of the ESMP. KUHeS will be directly responsible for implementation of the ESMP while different parties will be responsible for monitoring of the implementation of the ESMP as specified in Table 5-3.

The implementation of mitigation measures for this plan is expected to cost MWK56,750,000.00 during the construction phase and MWK3,500,000.00 annually during the operational phase. The monitoring costs are estimated at MWK7,950,000.00 for the construction phase. The total required sum is MK 104,720,000.00, which includes the implementation of GRM activities, training programs, and a 10% contingency. Stakeholder engagement interventions will need to be implemented and the ESMP will need to be disclosed to the relevant stakeholders as specified in the Stakeholder Engagement Plan for the SAVE project.

The key impacts identified are presented as follows:

Positive Impacts:

- ***Increased student intake at the University:*** Ensure that more sensitisation is made towards the program of Dentistry more sensitization efforts will be made to promote the Dentistry Program.
- ***Improved teaching and learning at the university****:* Ensure that the structure is properly maintained, *and the infrastructure will enhance the educational environment.*
- ***Improved treatments of dental patients:*** Provide adequate equipment and staffing to the facility
- ***Creation of Job Opportunities***: Create local jobs and attract top healthcare professionals.
- ***Increased enrollment***: with the new facility, there will be more room to accommodate more students, particularly in the Dentistry program. As such, there will be an increase in student intake and expanded access to education.
- ***Advancement in Healthcare services***; with a dedicated school of dentistry, the quality of dental care services provided to the nation can improve significantly as students will gain practical experience under the supervision of qualified professionals.
- ***Job creation:*** From the construction of the facility till the operation of the facility, there will be creation of jobs for construction workers, administrative staff and healthcare professionals.
- ***Local economic growth:*** the project will boost the local economy by creating business opportunities for local business owners i.e. material suppliers, vendors and service providers.

- ***Boost innovation and research:*** The dentistry facility will serve as a hub for research and innovation in Dentistry and healthcare, potentially leading to breakthroughs that benefit the wider community.
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Negative Impacts during Construction:

i. ***Traffic Congestion and Accidents:*** construction activities are expected to lead to additional vehicular traffic around the college, raising the risk of road accidents. Hazardous materials are also most likely to pose health and safety risks to staff and students

ii. ***Occupational Health and Safety (OHS) Risks:*** Construction works might be associated with physical, chemical, ergonomic, biological, psychological and noise and vibration hazards.

iii. ***Soil Erosion and Sedimentation:*** Excavation and earthmoving activities could lead to soil erosion, particularly during rainy seasons, affecting nearby water bodies through sedimentation.

iv. ***Community disruptions:*** the influx of workers and increased activity may disrupt the local community, leading to social tensions, especially if the project fails to engage with and address community concerns effectively.

v. ***Air Pollution:*** Though unlikely to exceed ambient air quality standards, dust and particulate matter emissions are anticipated during construction.

vi. ***Elevated Noise Levels from Machinery and Construction Activities:*** Construction machinery and equipment generate noise that may disturb the University community and surrounding communities

vii. ***Disruption of teaching and learning activities at the university:*** *Noise and other activities from the construction site might disrupt the teaching and learning activities.*

viii. ***Gender-based violence (GBV) and Sexual Exploitation and Abuse (SEA) Impact:*** The construction site may create environments where GBV and SEA can occur, affecting workers, students, patients and guardians particularly in a male-dominated workforce setting

ix. ***Generation of Solid Wastes, Spills, and Effluents:*** Various construction activities are most likely to generate hazardous waste, general waste and spills that can negatively impact the environment If not managed properly.

x. ***Increased incidences of child labour due to the presence of street children:*** The presence of street children around the community raises concerns about the potential risk of these children being used as child labourers during the construction works.

xi. ***Increase in Energy Consumption***: Energy consumption will rise due to material transport, machinery use, and temporary power requirements, contributing to greenhouse gas emissions.

xii. ***Increase in Water Consumption***: Water usage will surge for activities such as concrete mixing, dust suppression, equipment cleaning, and worker needs, potentially straining water supply to the college.

xiii. ***Discriminatory Working Conditions:*** Risks of discriminatory hiring practices, unequal pay, and harassment may exist leading to labor disputes and legal issues

<u>Negative Impacts during Operational phase:</u>

i. ***Increased Generation of Hazardous Waste:*** The unit will produce significant hazardous waste, including infectious materials and pharmaceuticals.

ii. ***Risks of Fire outbreak during the operation of the facility:*** *There is a risk of fire accidents when the building is operated.*

iii. ***Traffic management issues:*** *Construction of the new facility will likely increase the traffic flow to the college, hence leading to traffic management issues.*

iv. ***Chemical storage and handling:*** *The operation of the dental school will likely use chemicals which will require special handling procedures as specified in the material safety data sheets (MSDS)*

v. ***Wastewater Discharges***: *Wastewater from the unit, containing biological agents and chemicals, can contaminate water sources, and spreading diseases.*

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List of Acronyms and abbreviation

AIDS	Acquired immunodeficiency syndrome.
AoI	Area of impact
CoF	Certificate of fitness
CoC	Code of conduct
COVID-19	Coronavirus Disease 2019
dB	Decibel
DCPC	District Civil Protection Committees
DESC	District Environment Sub-Committee
DSWO	District Social Welfare Office
EIA	Environmental Impact Assessment
EMA	Environment Management Act.
ESCP	Environmental and Social Commitment Plan
ESCOM	Electricity Supply Corporation of Malawi
ESF	Environmental and Social Framework.
ESMF	Environmental and Social Management Framework.
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FGD	Focus group discussion
GBV	Gender-based violence
GRM	Grievance Redress Mechanism
GVH	Group village Headman
HAIs	Hospital Acquired Infections
HIV	Human immunodeficiency virus
HVAC	Heating, Ventilation and Air Conditioning
ICT	Information and Communication Technology
IEC	Information, Education, And Communication
IFC	International Finance Corporation
IPC	Infection Prevention Committee
IPO	Infection Prevention Officer
KII	Key informant interviews
KPI	Key Performance Index
LMP	Labour Management Plan
MEPA	Malawi Environment Protection Authority
MoE	Ministry of Education
MWK	Malawi Kwacha
NCHE	National Council for Higher Education
KUHeS	Kamuzu University of Health Sciences
OSC	One-stop centres
OSH	Occupational safety and health
PAP	Project affected persons
PDO	Project development objective
PEA	Primary education administrator
PIU	Project Implementation Unit
PPE	Personal protective equipment

SAVE	Skills for a Vibrant Economy Project
SEA	Sexual exploitation and abuse
SEP	Stakeholder Engagement Plan
SGBV	Sexual and gender-based violence
SH	Sexual harassment
SRGBV	Sexual Reproduction Gender Based Violence
SRC	Student Representative Committee
STDs	Sexual Transmitted Diseases
STI	Sexually transmitted infection
TIA	Traffic Impact Assessment
TA	Traditional authority
TEVETA	Technical, Entrepreneurial and Vocational Education and Training Authority
TNM	Telekom Networks Malawi
USAID	United States Agency for International Development.
VAWG	Violence against women and girls
VEC	Valued Environmental Components
VSU	Victim Support Units
WHO	World health organization.

Chapter One: Introduction

The Government of Malawi, through the Ministry of Education and the College of Medicine (CoM) is implementing a Skills for A Vibrant Economy (SAVE) Project with financing from the International Development Association (IDA) of the World Bank Group to the Government of the Republic of Malawi. 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 project has four components namely, Supporting Increased Access to Skills Development Programs in Higher Education, Supporting Increase in Access to TEVET Skills Development, Tertiary Education System Strengthening, Project Management, M&E, communications, and Contingent Emergency Response Component. Under component one, the project will construct and enhance infrastructure that provide additional physical and virtual space for student enrolment through face to face (F2F), blended, and ODeL instruction Communications. KUHeS will therefore develop the Integrated Teaching Facility Incorporating School of Dentistry and Innovation at Kamuzu University of Health Sciences (KUHeS). The SAVE project is being implemented from 03rd June 2021 to 30th June 2026. The Ministry of Education is the direct entity implementing the project. However, the construction works will be done at KUHeS Blantyre campus in Blantyre City.

This ESMP is developed to ensure SAVE project's interventions are implemented in a way that minimizes harm and maximizes positive outcomes for both the environment and society.

This ESMP adheres to the World Bank's Environmental and Social Framework (ESF) and complies with Malawi's Environment Management Act (2017) and its related regulations. The objective of the ESMP is to assess and mitigate potential negative environmental and social risks and impacts of the Project consistent with the Environmental and Social Standards (ESSs) of the World Bank ESF and national requirements. More specifically, the ESMP aims to (a) assess the potential environmental and social risks and impacts of the proposed Project and propose mitigation measures; (b) establish procedures for the environmental and social screening, review, approval, and implementation of activities; (c) specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social issues related to the activities; (d) identify the staffing requirements, as well as the training and capacity building needed to successfully implement the provisions of the ESMP; (e) address mechanisms for public consultation and disclosure of project documents as well as redress of possible grievances; and (f) establish the budget requirements for implementation of the ESMP.

The construction of an integrated teaching facility incorporating a school of dentistry and innovation will be vital for the development of Malawi. The project will contribute to development of the first Dental School in Malawi, thereby providing students with specialist teaching facilities and clinics for the public to access dental treatment. By implementing this project, it is aligned with the Malawi Vision 2063 and Health Sector Strategic Plan III (HSSP III), the project underscores Malawi's commitment to equitable healthcare access and quality improvement.

The ESMP preparation involved desk studies, site inspections, stakeholder consultations, and documentation. Desk studies reviewed project documents and various national legislations. A site visit from 07th to 20th June 2023 assessed environmental, social, health, economic, and legal

factors, identifying potential impacts and ensuring compliance with national and international standards. Stakeholder consultations included interviews with KUHeS staff, the SAVE project team for the college, the Grievance Redress Mechanism committee, the Students Union and other selected community members.

This ESMP should be read together with other plans prepared for the project, including the Environment and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Labour Management Plan (LMP) and the Environmental and Social Commitment Plan (ESCP).

Chapter Two: Project Description

2.1 Project Location

KUHeS Blantyre compass is an existing University in Blantyre City (see map in Annex 1 – A1.1). The campus is in the city centre, near the junction of Chipembere Highway and the Mahatma Gandhi Road (see map in Annex 1 – A1.2). It is adjacent to the Queen Elizabeth Central Hospital to the east. The University is in a busy urban area, surrounded by commercial establishments and educational institutions. The University is located near several notable landmarks. To the east lies the Queen Elizabeth Central Hospital, while residential areas are situated to the north and west. The proposed site for the School of Dentistry is located within the university boundary. The access roads and secondary roads ensure good connectivity to the University.

2.2 Nature of the Project

The proposed project involves constructing and operating a three-storey building, including a basement level, a ground floor, and a first floor. The project will comprise the construction of dental school facilities, providing students with specialist teaching facilities, clinics for the public to access dental treatment, a new car park, a water storage plant, a fire water plant, a transformer room, a high voltage room, low voltage switch room, and offices for the supporting administration, a student and public hub and a generic teaching facilities for the whole campus. The size (floor area) of the current proposed design is approximately 3,500m^2. Table 2-1 provides a summary of structures to be built.

Figure 2- 1: Summary of infrastructure to be built

Component	Detailed infrastructure	Maximum Capacity	Area in Square meters
Dental School	Reception, patient waiting children's play, Dental Clinic, Dental suite, Future flexible clinic, x-ray - radiology, X-ray - panoral periapical, x-ray cephalometric, X-ray CBCT, central sterilization facility, clean utility room, Dirty utility room, minor operating theatre, Recovery area, Phantom headroom, Dental laboratory lab/equipment storage, seminar room	75	1,212
Dental Administration	Academic individual offices, Academic open plan office administration staff office kitchen staff room medical records dental nurse office, Future expansion offices	20	377
Teaching complex	lecture theatre (open), Lecture theatre, E-learning classroom 84 modern teaching, Meeting room, Resuscitation training, Computer lab, Sanctuary room	75	730
Ancillary circulation	Visitor toilets, Staff/student toilets, Accessible WC, Changing rooms, cleaners' cupboards. Maintenance workshop, Plantroom, Boiler room, Switch rooms/transformer room, Power generators, Water supply tanks, Fire riser room, Compressor, Central,	50	1,460

Component	Detailed infrastructure	Maximum Capacity	Area in Square meters
	suction, PV room, Chiller pumps and server room / IT hubs		
Public (Hub and resource centre)	Hub, Social space, Servery/prep, refuse store, learning resource - meeting space, Learning resource - exhibition display	40	420

2.4 Project Cost, and Duration and Estimated Number of Employees

The project costs are estimated to be USD USD5,000,000,000 and is expected to be completed in 18 months. The construction works will require at least 100 workers and recruitment will adhere to the 40/60 proportion as provided for in the Gender Equality Act whereby there should not be less than 40% and not more than 60% of either sex. their roles are depicted in Table 2-2.

Figure 2- 2: Estimated construction workforce

Role	Number of People	Responsibility
Management and Supervision	5 – 8	Oversees the entire project management, and day-to-day operations, and ensures timelines, budgets, and safety protocols are met. The management team includes Project Manager, Construction Supervisors, and Site Engineers.
Engineering and Technical	20-30	Ensures structural integrity, installs systems (electrical, plumbing, HVAC), and oversees civil works. Includes Architects, Civil Engineers, Electricians, Plumbers, and HVAC Technicians.
Skilled Trades	50-70	Constructs frameworks, handles brickwork, stonework, and concrete tasks, and installs flooring, roofing, and steel structures. Includes Carpenters, Masons, Roofers, Flooring Installers, Steel Workers, Plasterers, Tile Setters, Insulation Workers, and Welders.
General Labor	20-30	Provides general labor support including site preparation, material handling, and cleanup.
Safety and Logistics	4-6	Ensures safety regulations are followed, conducts inspections, and manages delivery, and storage of materials and equipment. Includes Safety Officers and Logistics Coordinators.
Surveying and Finishing	7 – 10	Conducts site surveys, oversees final stages of construction and ensures all details and finishes meet specifications. Includes Surveyors and Finishing Foremen.
Specialized Installers	8 – 12	Installs drywall panels, glass windows, doors, and partitions, and operates heavy machinery. Includes Drywall Installers, Glass Installers, and Heavy Equipment Operators.
Support Services	10 – 15	Handles waste management, maintains exterior landscaping and assists in miscellaneous tasks. Includes Waste Management Staff and Landscape Workers.

2.5 Main Activities of the Project

The project implementation cycle for the proposed integrated teaching facility will include mobilisation, construction, finishing, and demobilisation phases. During mobilisation, detailed project planning and scheduling will be developed, roles will be assigned, permits will be obtained, and materials will be procured. The construction phase will include foundation work, erecting the main structural framework, building walls and partitions, installing roofing, and setting up plumbing and electrical systems. The finishing phase will include painting, and installing tiles, fixtures, furniture, and specialized equipment. During demobilisation, temporary facilities and

construction debris will be removed, and a formal handover to the KUHeS will be performed. The following sections provide details description of project activities according to phases.

2.5.1 Planning and design phase

The activities in this phase include planning and designing of the project works and activities. This includes land surveying, technical feasibility studies, environmental and social assessment studies, preparation of technical drawings, resource mobilisation and tendering of the works. This also includes preparation of construction designs, processing of applicable authorisation and approvals from relevant authorities, preliminary consultations and land use planning. The preparation works for construction phase will involve:

- ***Soils and material investigation*** - This aims at obtaining information on the physical properties of subsurface soil and rock around a site for engineering purposes such as bearing capacity for the design of foundations for proposed structures, determination of the suitability of the soils for back fill purposes and for construction purposes and for repair of distress to earthworks and structures caused by subsurface conditions.
- ***Architectural and engineering designs*** – This task involve preparation of detailed architectural drawings; preparation of the detailed structural engineering drawings; preparation of details services drawings inclusive of water, power, lighting, and wastewater; preparation of detailed civil engineering drawings for the storm water, access roads and carparks, and other ancillary facilities. Preparation of architectural drawings shave been done by architects to provide drawings which fits the proposed college concepts. Engineering drawings have been done by civil, structural, and electro-mechanical services engineers. Currently, the designs are being modified to fit the new project's budget which is below the proposed initial costs estimates.
- ***Development of the ESMP***- The project has developed this ESMP to mitigate negative impacts and enhance the positive impacts of the project.

2.5.2 Construction phase

The main activities to be undertaken during this phase of the project are clearing and construction of the proposed building structures within the project sites. During this period, there is a need for continued consultation with the stakeholders around the Project. Standard precautions for environmental health and safety procedures shall be taken into consideration. The contractor will have to ensure that standard precautions for safety procedures are taken into consideration to prevent accidents, and spillages of oils other toxic substances. The contractors will have to prepare contingency plans for containing and treating accidental spillages which are going to be adhered to and monitored.

The contractor(s) to be engaged will be required to submit a contractors' Environmental and Social Management Plan for approval before start of works that will include the following sub-management plans:

- Health and safety plans that will also include an emergency preparedness and response plan
- Traffic management plan
- Labour influx management plan

- Storm water management plan
- Code of conduct for the contractor's workers together with a training and awareness plan
- Sexual harassment prevention and response plan
- Grievance redress mechanism

During this period, there are many potential environmental and social impact asicted with the project and mitigation measures have also been specifiedunder Chapter Five of this report.

2.5.3 Demobilisation phase

Demobilisation of temporary structures will be done for proper restoration of the site. Other activities include rehabilitation of the workshop and stockpile yard, at least to the original condition, clearance of all sorts of wastes including used oil, solid wastes (plastics, wood, metal, papers, etc.). Deposit all wastes to the authorised dumpsite and termination of temporary employment. The demobilisation of the temporary structures will result mainly into solid wastes such as timber, iron sheets, and rubbles from demolitions. Timber and metal sheets will be sold to people in the nearby communities for reuse while rubbles will be used in backfilling gullies or borrow pits that require rehabilitation and this will be guided by the Blantyre City Council.

2.5.4 Operation phase

After the finalisation of the construction works, it is expected that learners, lectuerers, visiting students and lecturers and the public will be using the facilities. The learners will benefit from modern equipment and materials which shall be installed and used at the college for learning purposes. The operation activities will mainly involve the use of the facility for dental school and other programs, dental clinic, and other related support services to be provided by the facility.

2.5.5 Decommissioning phase It is not anticipated that the facility will be decommissioned soon. However, the design period for the facility is over 30 years. During the decommissioning, the project will require to develop a project specific decommissioning plan in order to mitigate negative impacts and enhance the positive impacts of the anticipated activity.

2.6 Construction Process Inputs and Outputs

2.6.1 Construction Material

Table 2-1**Error! Reference source not found.** provides estimates based on standard practices and the assumed size and scope of the project. The estimated materials and quantities are provisional and may vary based on local material availability and specific project requirements.

Table 2- 1: Estimated construction material and its usage

Material	Estimated Qty	Usage
Concrete	500 m^3	Foundation, structural framework, floors, and columns.
Reinforcing Steel	50 tons	Reinforcement for concrete structures, beams, and columns.
Bricks/Blocks	100,000 units	Construction of walls, partitions, and structural components.
Cement	1,000 bags	Concrete, mortar for brickwork, plastering, and rendering.
Sand	600 m^3	Concrete mix, mortar, plastering, and rendering.

Material	Estimated Qty	Usage
Gravel/Aggregate	400 m^3	Concrete mix for foundation, floors, and structural components.
Plasterboard/ Drywall	5,000 m^2	Internal walls and ceilings.
Insulation Material	1,000 m^2	Thermal and acoustic insulation for walls, ceilings, and floors.
Roofing Sheets	2,500 m^2	Roofing for the building.
Tiles	3,000 m^2	Flooring in different areas such as wards, corridors, bathrooms, and laboratories.
Paint	2,000 liters	Painting walls, ceilings, and external surfaces.
Glass Panels	500 m^2	Windows, doors, and partitions.
Doors	0 units	Internal and external doors for various rooms and entrances.
Windows	200 units	Installation in various rooms for natural light and ventilation.
Plumbing Pipes	1,000 m	Water supply and drainage systems.
Electrical Wiring	10,000 m	Electrical installations including lighting, power outlets, and equipment connections.
HVAC Ducting	2,000 m	Ventilation, heating, and cooling systems.
Sanitary Fixtures	200 units	Installation of sinks, toilets, faucets, and other plumbing fixtures.
Furniture and Fixtures	Various	Furnishing patient rooms, offices, laboratories, and common areas with necessary furniture and fixtures.
Water	500,000 litres	Mixing concrete, plastering, brickwork, cleaning, and general construction activities.
Energy	200,000 kWh	Powering construction equipment, lighting, HVAC installation, and other electrical needs during construction.

2.6.2 Construction Waste Generation and Management

The project is expected to produce different types of waste. Table 2-2 shows the expected type of waste and proposed management measures and the estimated waste was calculated based on assumption that for the materials used, 5% will be generated as waste. The non-hazardous waste will be disposed of at the Blantyre city dumpsite at Mzedi. This dumpsite is located 10 kilometres north-east of the University.

Table 2- 2: Estimated waste types and quantities

Type of Waste	Description	Estimated Qty
Concrete Waste	Excess concrete and slurry from mixing	25 cubic meters[1]
Steel Waste	Scrap reinforcing steel and metal offcuts	2.5 tons
Brick/Block Waste	Broken bricks and blocks from construction	10,000 units
Cement Bags	Empty cement bags	1,000 bags
Sand and Gravel Waste	Excess sand and gravel	3 cubic meters
Plasterboard/Drywall Waste	Offcuts and damaged boards	500 square meters
Insulation Material Waste	Offcuts and unused insulation materials	5 square meters
Roofing Waste	Scrap roofing sheets and offcuts	125 square meters
Tile Waste	Broken or unused tiles	150 square meters
Paint Waste	Excess paint and empty cans	100 liters, 200 cans
Glass Waste	Broken glass panels	100 square meters
Wood Waste	Timber offcuts and damaged wood	4 cubic meters

[1] It is estimated that 5% of the used materials will be waste, for each of the expected materials to be used.

Type of Waste	Description	Estimated Qty
Plastic Waste	Packaging materials and plastic offcuts	600 kg
Electrical Wiring Waste	Scrap wiring and cables	700 meters
Plumbing Waste	Excess piping and fixtures	300 meters
General Construction Debris	Mixed waste including packaging, small materials	15 cubic meters

Chapter Three: Legal Framework

This chapter reviews the legal framework relevant to the proposed project and outlines its potential impacts. It also references key legislation. Additionally, the chapter offers an account of all the regulatory licenses and approvals necessary for the proposed project to align with environmentally sound management practices and comply with pertinent existing legislation.

3.1 Relevant Malawi Policies and Legislation

Malawi committed to the 1992 Rio Declaration's Principle 17, which mandates environmental impact assessments (EIA) for activities with significant environmental impacts. The project aligns with the 2017 EMA and various sectoral policies, ensuring sustainable environmental management and responsible resource use. The following table 3-1 summarised applicable national legislative laws and regulations to be project.

Table 3- 1: Applicable national legislative pieces

Piece of Legislation	**Description**	**Relevance to Project Activities**
Applicable Policies		
National Environmental Policy (2004)	The policy provides strategies for environmental and social planning, environmental and social impact assessment, environmental and social audits, and environmental and social monitoring, among others. On ESIAs, the objective is to regularly review and administer the guidelines for ESIAs, audits, monitoring, and evaluation so that adverse environmental and social impacts can be eliminated or mitigated and environmental and social benefits enhanced.	Project activities will integrate environmental and social management and protection during project planning and implementation.
Environmental Management Act (2017)	The Act is the main law for environmental protection and sustainable resource use. Section 7 establishes MEPA and its authority over environmental assessments. Section 31 provides requirements for MEPA approval for projects needing an ESIA. Sections 99-104 prescribe penalties for ESIA non-compliance, hazardous substance mismanagement, and pollution, including fines of up to fifty million Kwacha and imprisonment of up to fifteen years.	The proposed works will comply with Malawi's 2017 Environmental Management Act, ensuring MEPA approval for ESMP, adherence to environmental standards, and avoidance of non-compliance penalties.
National Gender Policy (2015)	The National Gender Policy provides guidelines to reduce gender inequalities, promote participation, and achieve equitable development. Section 1.3 offers guidelines for integrating gender considerations, while Section 3.6 focuses on fostering economic development and the empowerment of women. Section 3.7 recognizes that GBV, especially violence against women, girls, and vulnerable groups, severely impedes social well-being and poverty reduction.	This act can be highly relevant to project activities in establishing relevant plans for mitigating gender-specific risks. Project impacts can affect men and women differently i.e. influx of labour might increase risks related to GBV, SEA or SH which may affect a more vulnerable group.

Piece of Legislation	Description	Relevance to Project Activities
National Water Policy (2005)	Section 1.3 of the National Water Policy explains that the policy provides an enabling framework for integrated water resources management in Malawi. Section 3.4.9 stresses that Pollution control of water resources shall adopt the 'Polluter–Pays' principle to ensure water user's responsibility. Section 5 points out that environmental degradation has negatively affected surface and groundwater quality, among other factors. Section 5.2.2 - Ensuring and promoting proper management and disposal of wastes.	The project activities have the potential to negatively affect the water resources of the rivers in the project area. It is therefore recommended that the project's activities be implemented in a way that minimizes public water pollution, thereby enhancing public health, hygiene, and environmental sustainability.
National Sanitation Policy (2008)	The National Sanitation Policy provides a vehicle to transform Malawi's hygiene and sanitation situation. Section 3.1.1 promotes the improvement of hygiene, sanitation, and waste recycling in the country.	The proposed project will ensure that liquid and solid waste management encourages waste reduction, recycling, and reuse before final disposal, complying with the policy's provisions.
National HIV and AIDS Policy (2005)	The policy aims to prevent HIV infections, reduce vulnerability, improve treatment and support for those living with HIV/AIDS, and mitigate its socio-economic impact. Chapter 7 addresses HIV/AIDS in the workplace, highlighting issues like absenteeism, low productivity, and discrimination.	The proposed project will implement an HIV/AIDS policy and support program, ensuring no pre-employment HIV testing or discrimination based on HIV status. Employees will not be forced to disclose their HIV status, and any voluntary disclosures will remain confidential.
National Equalization of Opportunities for Persons with Disabilities Policy (2006)	The Policy promotes the rights of people with disabilities and integrates them to enable them to play a full and participatory role in society. Section 2, subsections 2.3 and 2.4.8 of the policy state that people with disabilities are most affected by poor infrastructure, such as buildings not designed to accommodate or meet their special needs. Similarly, Subsection 2.45 of the policy states that people with disabilities have restricted employment opportunities, mainly due to discrimination, inadequate education, job experience, and confidence.	The policy on the proposed project implies that the contractor will be required to provide job opportunities to people with disabilities to ensure that they are also economically empowered.
National Energy policy (2018)	The National Energy Policy Section 2.1 provides the goal of the policy: "To increase access to affordable, reliable, sustainable, efficient and modern energy for every person in the country." Section 1.3 provides guiding principles of the policy, including energy efficiency and conservation and promotion of private sector investments. Energy efficiency is a priority area as it recognises the importance of security of energy supply systems. Mitigating environmental, social, safety and health impacts of energy production and utilization is a key part of the policy. The policy's relevance to the road construction project in Malawi will be indirect but	Guided by this policy, the project can be more energy-efficient, cost-effective and environmentally sustainable

Piece of Legislation	Description	Relevance to Project Activities
	still significant, focusing on the project integrating energy-efficient technologies and practices that can align with national energy goals.	
Applicable Acts		
Constitution of Malawi	The Constitution includes provisions emphasizing environmental protection and sustainable management of natural resources. Specifically, in Chapter III, Section 13(d), it outlines a responsibility for the state to manage the environment for the benefit of present and future generations. This includes preventing environmental degradation, promoting conservation, and ensuring the sustainable use of natural resources.	The project will ensure that it upholds Malawi's commitment to sustainable development, public health, and educational growth
Disability Act (2013)	This act is a significant step towards ensuring equal opportunities and rights for persons with disabilities. Promoting policies and legislation that aim to equalise opportunities, protect rights, and fully integrate persons with disabilities into all aspects of life recognises their inherent dignity and well-being. Sections 9 and 13 of the acts are particularly commendable, as they prohibit discrimination in accessing premises, provision of services, and employment opportunities based on disability.	The project will ensure that buildings, facilities, and infrastructure are accessible to all persons with disabilities. and promote equal employment opportunities for persons with disabilities.
Public Health Act (1948)	The Public Health Act of 1948 governs health-related issues, including environmental and occupational health and solid waste management. Section 59 prohibits nuisances in workplaces, such as unclean conditions, offensive odours, poor ventilation, and inadequate lighting, which endanger employee health. It also addresses the need for sanitary latrines and proper wastewater discharge. Section 88 mandates separate toilets for males and females in public buildings.	The proposed projects must ensure suitable toilet facilities for all genders, manage stormwater effectively and prevent nuisances to maintain public health and safety. Compliance with these provisions is essential for the project's success.
Occupation Safety, Health, and Welfare Act (1997)	The Act regulates employment conditions for safety, health, and welfare in workplaces in Malawi. It mandates workplace registration, inspection of plant and machinery, and accident prevention. Part II requires workplaces to be registered with the director maintaining a register. Part III outlines employer duties, including providing safe work systems, risk-free handling of substances, and adequate employee training and supervision.	Safety measures, particularly shielding and limiting radiation exposure, will be prioritised. Personal protective equipment will be used supplementally or in emergencies. The university must implement all ESMP safety measures.
Gender Equality Act (2015)	The Act in Chapter 25:06 promotes gender equality and equal integration of the gender issues thereby promoting empowerment, dignity, and opportunities for men and women in all functions of society, prohibits and provides redress for sex discrimination, harmful practices, and sexual harassment, provides for public awareness on the	The implication of the Act on the proposed project is that sexual harassment must be addressed by contractors holistically, including by instituting the measures prescribed by law.

Piece of Legislation	Description	Relevance to Project Activities
	promotion of gender equality and connected matters. Section 6(1) of the Act states that a person who commits an act of harassment if he or she engages in any form of unwanted verbal, non-verbal, or physical conduct of a sexual nature in the circumstances would have anticipated that the other person would be offended, humiliated or intimidated, and (2) a person who sexually harasses another in terms of the preceding subsection is liable to a fine and imprisonment specified under subsection (2).	
Environment Management (Waste Management and Sanitation) Regulations (2008)	The regulations, under the Environment Management Act, expand on the 1948 Public Health Act. Hazardous waste is identified by categories in the Seventh Schedule and characteristics in the Eighth Schedule, such as corrosiveness and flammability. Section 8 mandates waste generators to safely store general waste to prevent health hazards.	KUHeS must manage all waste during rehabilitation, ensuring compliance with these regulations for safe storage, handling, and disposal to protect public health and the environment.
Public Health Corona Virus Disease of 2019 (COVID-19) (Prevention, Containment and Management) Rules (2020)	Public Health rules mandate both employers and employees to implement general preventive measures, such as self-quarantine for at-risk individuals, covering mouth and nose when coughing or sneezing, avoiding touching the face, eating thoroughly cooked food, and avoiding handshakes and close contact. Employers must form a team to implement these guidelines and disseminate them to all employees. Employees must cooperate and report non-compliance.	The Ministry of Labour will inspect workplaces for adherence. The developer of the two proposed projects must ensure COVID-19 guidelines are implemented and followed by both employers and employees.
Child Care, Protection and Justice (Amendment) Act (2010)	The Act in Part II, division 6 emphasizes the protection of children from undesirable practices. The undesirable practices are outlined in sections 79 and 80. Section 79 of the Act protects any child from child trafficking. Section 80 protects a child from harmful cultural practices.	The implication of the Act on the proposed project is that plans and strategies must be in place to guard against child trafficking, including through recruitment (child labor).
Penal Code, Chapter 7:01	Section 138 (1) of the Penal Code punishes the defilement of girls under sixteen years of age (punishable with life imprisonment). Sexual abuse and exploitation of children is a common practice in construction in sites.	The ESMP has articulated how project will guard against the perpetuation of the crime by project workers.
National Construction Industry Act (1996)	The National Construction Industry Act of 1996 establishes the National Construction Industry Council (NCIC) of Malawi as the agency responsible for promoting and developing the construction industry in Malawi. The Act regulates the construction industry by ensuring that all individuals and entities involved are registered and meet specific standards, promoting Malawian firms, facilitating access to resources, and maintaining safety and quality standards within the industry.	In this project, compliance with the registration and requirements of the NCIC will be ensured. This implies adhering to the councils' standards, including environmental and social safeguards and quality control. Non-compliance to these standards may result in penalties.

Piece of Legislation	Description	Relevance to Project Activities
	The Council is responsible for promoting safety standards in the construction industry, ensuring that construction activities do not adversely affect the environment and social settings. It regulates industry activities through relevant boards and associations, enforcing environmental and social standards as part of its mandate. Additionally, the Council standardizes quality control, contract documentation, codes of practice, procurement processes, and legal procedures, likely incorporating environmental and social safeguards.	
Employment Act (2000)	The Employment Act of 2000 reinforces and regulates minimum standards of employment with the purpose of ensuring equity necessary for enhancing industrial peace, accelerated economic growth and social justice; and for matters connected therewith and incidental thereto. Part II of the Act states fundamental principles guiding the act, and these include: Section 4(1) - Prohibition against forced labour Section 5(1) - Anti-discrimination Section 6(1) - Equal pay Section 7 - Remedies for infringement of fundamental rights Part IV of the Act prevents employment of young persons and the restrictions are provided in detail in sections 21(1) and 22(1) as follows: "21. (1) subject to subsection (2), no person under the age of fourteen will be employed or work in any public or private agricultural, industrial or non-industrial undertaking or any branch thereof. 22. (1) No person between the age of fourteen and eighteen years will work or be employed in any occupation or activity that is likely to be - (Hazardous work) a) Harmful to the health, safety, education, morals or development of such a person; or b) Prejudicial to his attendance at school or any other vocational or training programme."	The employment Act will be highly relevant in serving as a guide that will curb issues of un-fair hiring practices, child labour, violation of workers' rights, discrimination and inequality, lack or no evidence of formal contractual obligations and poor wages and benefits.

3.2 Applicable Environmental and social permits

Table 3-2 summarises all the regulatory licenses, approvals and standards that have to be obtained or met for the proposed project to ensure that the project activities are in line with sound and environmental management practices and comply with relevant legislation.

Table 3- 2: Regulatory licenses and approvals relevant for the project

No	Regulations/ Standards/ Approvals	Description	Reference	Issuing Institution
1	Environmental and Social Management Plan Approval	The approval will be provided after review of the ESMP report	EMA, 2017 and EIA Guidelines 1997	MEPA
2	Workplace Registration Certificate	During construction the sites will have to be registered and the contractors must commit to abide by occupational safety and health requirements of the OSHWA	Occupation Safety Health and Welfare Act (1997)	Ministry of Labour
3	Development Permission	It is a requirement to obtain a development permission issued by the local council's planning committee	Physical Planning Act, (2016)	Blantyre City Council
4	Sand Mining Permit	Sand mining is done in various places in the district. As such, it is important that the Blantyre District Council provides a permit for sand mining at a site to be selected.		Blantyre District Council

3.3 World Bank Environmental and Social Framework

The World Bank Environmental and Social Framework sets out the World Bank's commitment to sustainable development through a Bank Policy and a set of Environmental and Social Standards designed to support Borrowers' projects to end extreme poverty and promote shared prosperity. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and their citizens. The Environmental and Social Standards that apply to the project are given in Table 3-3.

Table 3- 3: Relevance of WB Environmental and Social Standards to the project

Environmental & Social Standards	Main requirements and conducted activities to meet them
ESS 1 - Assessment and Management of Environmental and Social	ESS1 sets out the Client'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, to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). The objective of the standard is to identify, assess, evaluate, and manage environment and social risks and

Environmental & Social Standards	Main requirements and conducted activities to meet them
Risks and Impacts	impacts in a manner consistent with the ESF. Adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing developmental benefits and opportunities *The proposed work has identified E&S risks and impacts based on consultations with stakeholders. This ESMP has also been prepared in line with the standard* and World Bank EHS guidelines
ESS 2 – Labour and Working Conditions	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. ESS2 applies to project workers, including full-time, part-time, temporary, seasonal, and migrant workers. *The project has a Labour Management Plan that guides implementation of its activities, and this will apply to this sub-project. This ESMP has also identified impacts related to labour and working conditions and their mitigation measures are also provided. The project will also adhere to national labour, health and safety-related laws and policies.*
ESS 3 – Resource and Efficiency, Pollution Prevention and Management	ESS3 Promote the sustainable use of resources, including energy, water, and raw materials. Avoid or minimise adverse impacts on human health and the environment caused by pollution from project activities. Avoid or minimise project-related emissions of short and long-lived climate pollutants. Avoid or minimise the generation of hazardous and non-hazardous waste. Minimise and manage the risks and impacts associated with pesticide use. The standard requires the implementation of technical and financially feasible measures to improve efficient consumption of energy, water, and raw materials, and introduces specific requirements for water efficiency where a project has high water demand. *The SAVE project will adhere to the provision by the National Construction Industry Council to ensure that sustainable construction materials are used. Additionally, the project will shall follow the waste management hierarchy to reduce the impacts from pollution and promote the efficient use of resources.*
ESS 4 – Community Health and Safety	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 circumstances, may be vulnerable.

Environmental & Social Standards	Main requirements and conducted activities to meet them
	The construction works will take place on the existing university campus where there will be students who need special protection from possible accidents. The project has ensured that the ESMP documents have provided mitigation measures to ensure community safety.
ESS 10 – Stakeholder Engagement and Information Disclosure	This ESS 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 boost the environmental and social sustainability of projects, increase project acceptance, and play a crucial role in successful project design and implementation. *The SAVE project has been engaging with stakeholders and will continue to do so throughout the project life cycle. This ESMP also has a Grievance Redress Mechanism that is to be used at each project site and this GRM is in line with provisions of the project's Stakeholder Engagement Plan (SEP) which was developed in January 2021. The project shall carry out continuous stakeholder engagement to reduce direct adverse impacts to the communitires from risks related to pollution, sexual exploitation and abuse, unfair labour practices and others as specified under Chapter Five.*

3.4 World Bank EHS Guidelines

These guidelines are essential for the project as they are guiding the implementation in terms of environmental protection, workers health and safety, community health and safety as well as risk management and regulatory compliance. These are described as below.

- **Environmental Protection**: The EHS Guidelines ensure construction projects minimize ecological impacts, such as air and water pollution, waste management, and biodiversity conservation. The project will follow the guidelines to reduce negative environmental impacts, align with sustainable development goals, and comply with regulatory standards.
- **Worker's Health and Safety**: Construction sites often pose various hazards, and the EHS Guidelines offer frameworks for creating safe working environments. They include best practices for hazard identification, accident prevention, and emergency response planning, which help protect workers from injuries, illness, or fatalities. The project will ensure that these are followed through measures proposed under Chapter five.
- **Community Health and Safety**: Construction can affect surrounding communities, from noise pollution to traffic and dust among others. The guidelines provide standards for mitigating such impacts, ensuring that the project minimizes disruptions and maintains public health, safety, and local quality of life. The project will ensure that these are followed through measures proposed under Chapter five.

- **Risk Management and Regulatory Compliance**: The guidelines help the project implementers (KUHeS) in risk assessment, monitoring, and regulatory compliance, ensuring the construction project adheres to both local and international standards. This reduces legal risks and helps in securing public and financial support. The project will ensure that these are followed through measures proposed under Chapter five.

3,5 Gaps between Malawi Legal Framework and World bank ESF

The project has identified gaps which exist between the World Bank ESS and the Malawi Legal Legislations as specified in the Environmental and Social Management Framework for the project. The following table 3-4 shows the identified gaps as specified in the ESMF of the project.

Table 3- 4: Gaps between World Bank ESS and Malawi Legislation

World Bank ESS provisions	**Malawi Legislation**	**Gaps Identified**	**Mitigation Measures**
ESS 1: Assessment and Management of Environmental and 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 whose exact locations are not known. Only ESIA process is discussed.	Preparation of the ESMP for the KUHeS 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 procedures including the requirement for grievance mechanism to be established as early as possible in the project development phase.	SAVE project has followed ESS2 and developed labour management procedures with relevant provisions and GRM 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.	SAVE project will follow provisions of ESS3 on resource efficiency including the project screening its activities and implementation of the ESMP
ESS 4: Community Health and Safety	Occupational Safety, Health and Welfare	Though issues of Infrastructure and Equipment Design and Safety are highlighted in the National Construction Industry Policy	This gap has been addressed through the implementation of ESS4 which addresses

	Act, (1997);	(2015), and issues of workers OHS in the Occupational Safety, Health and Welfare Act, (1997), The later does not focus much on community health and safety but that of workers	potential risks and impacts on communities that may be affected by project activities
ESS 10: Stakeholder Engagement & Information Disclosure	EIA guidelines (1997) Local Government Amendment Act (2017) National Decentralization Policy (2000)	No provision for development	The project has developed a stakeholder engagement plan which includes a GRM

Chapter Four: Environmental and Social Setting

This chapter provides an overview of the existing environment for the project, which is related to the proposed areas' physical, biological, socio-economic, and structural aspects. It also forms a part of baseline information within the project area that might be used for future planning.

4.1 Area of Influence

Consistent with World Bank Environment and Social Framework (ESF), specifically ESS1, the Area of Impact (AoI) refers to the geographic area over which environmental and social impacts of a project are expected to occur. Primary data was collected within a radius of 100 meters of the proposed construction site which is the University. Secondary data for the wider areas were also considered to assess the baseline conditions. The AoI for this proposed project encompasses:

- *Direct Impact Areas:* These are areas where the project activities directly affect the environment and communities. The University buildings and structures adjacent to the construction site will be directly impacted by noise, dust, and potential disruptions due to construction activities.
- *Indirect Impact Areas:* These include areas that may be indirectly affected by the project activities. The broader university grounds including green spaces and access roads will experience indirect impacts such as increased traffic, noise, and potential changes in air quality.
- *Cumulative Impact Areas:* These areas consider the combined impacts of the project in conjunction with other existing or planned projects in the region. The cumulative impact area encompasses the commercial areas including shops and offices at Ginnery Corner. These areas will experience cumulative impacts due to increased construction activity in the region. Potential impacts include changes in traffic patterns, increased noise levels, disruptions to business operations, and potential strain on local infrastructure. The presence of construction traffic and activities may affect the accessibility and attractiveness of these spaces, necessitating effective planning and mitigation strategies to manage these impacts.

The study area selected for the ESMP includes sensitive receptors most likely impacted by the Project's development activities. Sensitive receptors include but are not limited to, existing university structures and facilities within the college compound, green spaces within the university compound, roads and pathways within and around the university, and shops and offices in this commercial zone of Ginnery Corner (Figure 4-1). These are areas which are more susceptible to the adverse effects of anthropogenic activity, such as noise, air emissions, traffic influx, and privacy issues.

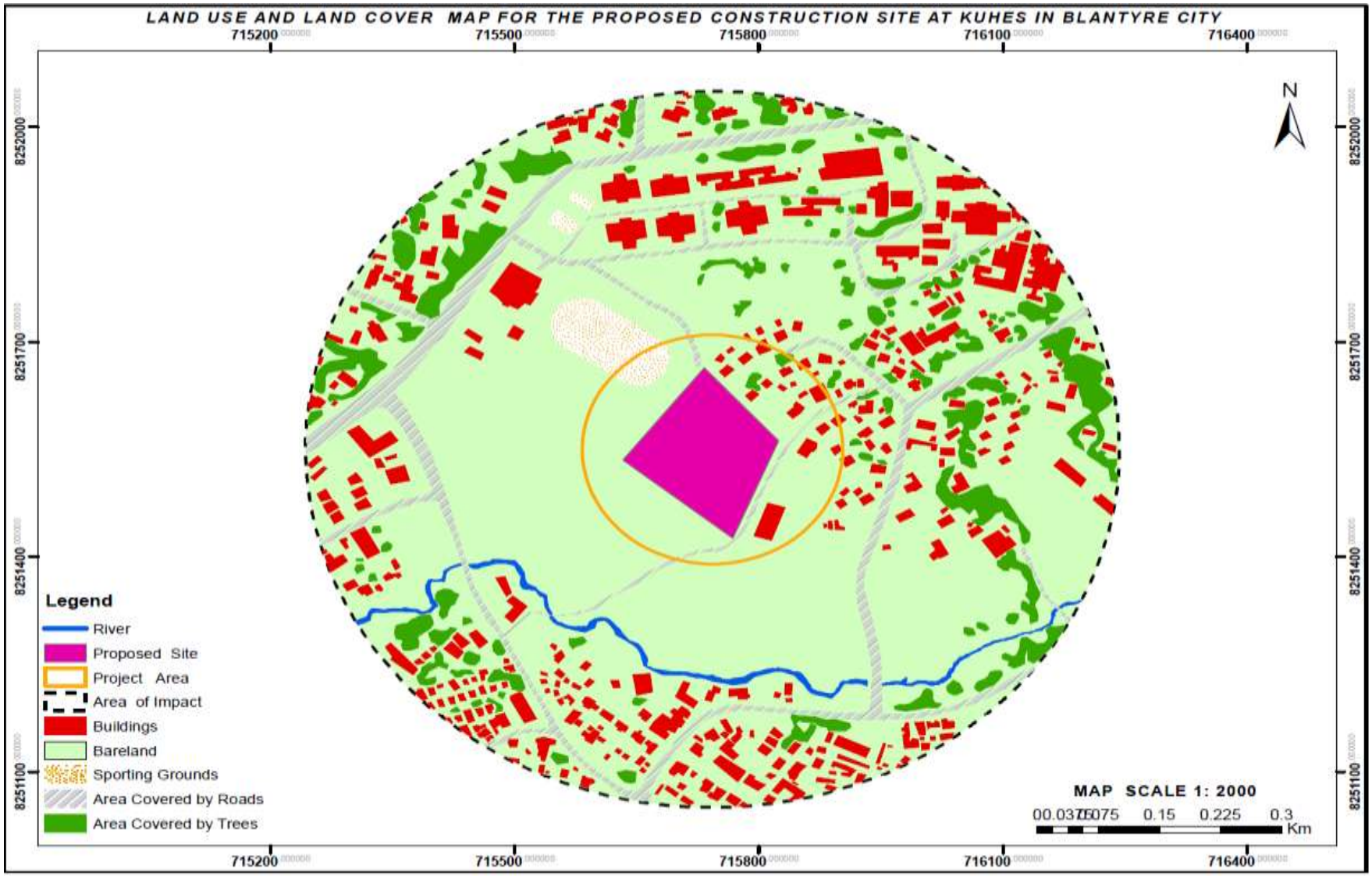


Figure 4- 1: Land use map for the Area of Impact.

4.2 Physical Environment

4.2.1 Topography of the Project Area

The construction site for the proposed construction of the school of dentistry in Blantyre exhibits a gentle slope, with the northern side at an elevation of 1086 meters and the southern side at 1083 meters above sea level. This 3-meter elevation difference creates a natural drainage gradient towards the south, which is beneficial for managing stormwater runoff and preventing water accumulation. The slight elevation change will influence foundation design and require erosion control measures to ensure stable construction.

4.2.2 Geology

The geology of the project site has been inferred to be that of Blantyre City, which is primarily characterised by ancient rock formations dating back to the late pre-Cambrian period, approximately 500 million years ago. The site is predominantly underlain by pyroxene granulite gneiss and syenitic gneiss. Pyroxene granulite gneiss, which constitutes a significant portion of the local geology, provides a stable and durable foundation ideal for construction. Syenitic gneiss, also present in the area, further contributes to the robustness of the geological foundation. Although these rock types are generally impervious and not well-suited for groundwater storage, they provide excellent material properties for building foundations due to their stability and resistance to weathering. The geology of Blantyre City is influenced by its proximity to the eastern edge of the southern branch of the Eastern African Rift, making it prone to seismic activity. Therefore, incorporating seismic-resistant design features in the construction of the building is essential.

4.2.3 Soils

The soils at the project site have been inferred to be like those found in Blantyre City, influenced by the underlying geological formations and regional soil characteristics. As part of an urban built-up area, the site predominantly features disturbed soils altered by construction and other human activities. Despite this disturbance, the native soil characteristics remain significant. Typically, the soils in this region are derived from the weathering of ancient rock formations, such as pyroxene granulite gneiss and syenitic gneiss. These soils are generally well-drained, which promotes good natural drainage and minimizes the risk of waterlogging. The soil texture at the site is likely a mix of sandy loam and clay loam, reflecting the influence of the parent rock material. Given these characteristics, the project site will provide a stable foundation for construction.

4.2.4 Weather and Climate Conditions

Weather measurements are taken daily by the Department of Climate Change and Meteorological Services.

4.2.4.1 Temperature

The proposed project site is generally cool with mean annual temperatures ranging from 10 degrees centigrade during the cold season to 25 degrees centigrade during the hot season. There are particularly two spells of uncomfortable weather; the hottest season associated with high humidity soon before the onset of the first rains (end October to November), and the frost along rivers, mist and chilly showers and winds characteristic of the cold season in June and July (Blantyre SEP 2017).

4.2.4.2 Rainfall

The annual rainfall for the project site, inferred from the Department of Climate Change and Meteorological Services, is typically between 800 mm and 1,200 mm, with an average annual rainfall of 1,127. Most of the rainfall occurs between December and March. During the rainy season, the prevailing winds are generally from the northeast and are known as the northeast monsoon or locally as the Chiperoni winds. These winds bring moisture-laden air from the Indian Ocean, contributing to the rainfall in the region.

4.2.5 Water resources

The nearest flowing water body is Naperi River, located approximately 150 meters south side. This proximity to the river is significant for considerations related to water management, potential flood risk, and the project's overall environmental impact.

With the information on physical setting of the project sites, no risk on any natural hazards close to project site and no history of such has occurred at the actual project site. However, Blantyre as a City was hut with Cyclone Freddy which occurred southern part of the City which is not close the project site.

4.2.6 Flora and fauna

The proposed site has vegetation, with 16 trees and Bermuda grass. The primary notable fauna in the project area include birds, small reptiles such as lizards, and various types of insects.

4.3 Facility Management and Health Safety Protocols

4.3.1 Population

The population of KUHeS main campus is estimated to be 1,500. This figure encompasses the student population, estimated at 1,200, with the remainder representing academic and support staff. The proposed facility is expected to accommodate more than 4000 people hence it is expected that the campus population will increase.

4.3.2 Water Supply

The University is supplied with water from the Blantyre Water Board, managed by the Southern Region Water Board. This source consistently provides potable water to the facility. The proposed project will utilize water from the same board for both the construction and operational phases.

4.3.3 Sanitation Facilities

Blantyre City Council oversees waste management and the provision of sanitation. The formal areas have access to basic urban services while the informal settlements and the Traditional Housing Areas have little or no access to basic urban services. Regarding solid waste management, the institution has a skip bin located on campus, which is emptied by the council once a month.. According to the city council’s Waste Management Department, one skip is not enough for the institution if they are to maintain the once-in-a-month collection arrangement. They recommended that the institution acquire another skip to cater for the expansion of the institution.

Liquid waste is managed through BCC sewer line and currently, the plan is to connect the proposed facility to the same line. The project needs to consider issues of sewer lines when making designs of the facility to ensure that it blends with existing sewage infrastructure

4.3.4 Communication and Transport Systems

In the project area, Telekom Networks Malawi Limited (TNM) and Airtel are the primary providers of mobile phone services, leading to extensive coverage of cellular networks. Site visits and interviews confirmed excellent network connectivity provided by both providers. Transportation is easily accessible, with the site located within 42 meters of the southern side of the M2 road, where there is a bus stage along the M2 road.

4.3.5 Security

Blantyre's security is upheld by both public and private institutions, with the Malawi Police serving as the public sector representative. At the University, the crime rate is low, mostly involving incidents of petty theft.

4.3.6 Air Quality

No air quality measurements were taken on-site to determine specific ambient air characteristics. However, based on observation of key socioeconomic activities taking place in the project impact area, it can be inferred that the air may contain some air pollutants mostly from machinery emissions from the incinerator at Queen Elizabeth Central Hospital. The pollutants are likely to dissipate quickly to insignificant levels below the standards owing to the high dilution factor in the absence of other pollutant sources. Apart from machinery emissions, there are also vehicular emissions, other pollution sources include wind gust and dust, especially during the dry season.

4.3.7 Noise Status

Ambient noise conditions were deduced from socioeconomic activities taking place in and surrounding the project site. It has been inferred that the noise levels in the area may be low to moderate, occurring mostly during the day when there are high socioeconomic activities. It is anticipated that with the nature of the project, the noise levels are likely not going to change during the project activities. Hence, there is no need for setting in place a monitoring program for noise pollution. However, on the campus it is envisaged that some construction activities may generate noise that may increase the general levels of noise.

4.3.8 Energy Supply

Electricity Supply Corporation of Malawi (ESCOM) supplies electricity to the institution and the surrounding areas. The laboratory uses solar power and has a capacity of 10kVA and is deemed to be enough for the facility. The institution uses electricity for lighting, cooking and to power devices and appliances in the offices, classrooms, and hostels. The institution has five (5) generators that provide backup power in case of power outages on campus.

Chapter Five: Assessment of Environmental and Social Impacts

This chapter outlines the anticipated beneficial and adverse impacts, direct and indirect, on each environmental feature at the project site.

5.1 Impact identification

Identifying impacts involves considering positive and negative effects resulting from the interaction between project-related activities and valued environmental components (VECs). These VECs encompass physical, biological, social, economic, or cultural aspects. The potential environmental impacts identified are based on the interactions between project activities and selected VECs. The selection of VECs was informed by the existing project environment (environmental baseline conditions), stakeholder consultations, and the consultant's professional judgment. The potential interactions between the project-related activities and the selected VECs for each project implementation phase are illustrated in Table 5-1.

Table 5- 1: Potential Interactions of the Project with VECs.

	Construction Sub-structure	***Construction of super-structure***	***Finishing***	***Demobilisation***	***Operation***
Activity Code	***P1***	***P2***	***P3***	***P4***	***P5***
VEC					
Air Quality	x	x	x	X	x
Noise & Vibration	x	x	x	X	x
Water Resources	x	x	x	X	-
Aquatic Ecosystem	-	-	-	-	-
Wetlands	-	-	-	-	-
Terrestrial Biodiversity	x	-	-	-	-
Public Health & Safety	x	x	x	X	x
Labour & Economic Conditions	x	x	x	X	x
Service Infrastructure & Utilities	x	x	x	X	x
Transportation & Access	x	x	x	X	x
Land Use & Resources	x	x	x	X	-
Soil and Land Capability	x	x	x	X	-
Visual Impact	x	x	x	-	-
Waste Management	x	x	x	X	x
Social Dynamics and Community Well-being	x	x	x	X	x
Climate Change and Greenhouse Gas Emissions	x	x	x	X	x
Hazardous Materials and Contamination Risks	x	x	x	X	x
Cultural & Historical Heritage	-	-	-	-	-
Key					
No Substantial Interaction	-				
Possible Interaction	X				

5.2 Description of Identified Impacts

This section outlines the project's construction phase's potential positive and negative environmental and social impacts. The construction phase is divided into specific activities to track

their impacts: mobilisation, demolition, construction, finishing, and demobilisation. The impacts are organised according to the stages of the project life cycle, specifically construction and operation.

5.2.1 Anticipated Positive Impacts during construction, operation and demobilisation phases

5.2.1.1 Improved teaching and learning at the University

The addition of a new teaching complex, equipped with well-furnished laboratories and ICT resources, will enable lecturers to enhance their teaching methods across various subjects, thereby improving student performance

5.2.1.2 Creation of Job Opportunities

The construction of the new unit will bring significant economic and social benefits to the community. During the construction phase, the project will create job opportunities for local workers, providing a boost to the local economy. In the long term, the operation of the new unit will require additional healthcare staff, creating more permanent employment opportunities. The presence of a state-of-the-art school of dentistry will also attract more students to be enrolled into the program hence creating more jobs for dentists in the long run.

5.2.1.3 Public Health Benefits

The construction of the School of Dentistry will increase the number of dentists in the country, thereby improving overall health, particularly for individuals with dental issues.

5.2.1.4 Increase students' intake at the University

Currently the demand for education in the country by far outstrips the existing learning institutions and facilities. With the construction of a 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 in increasing the enrolment and employment of both academic and non-academic members of staff.

5.2.2 Anticipated Negative Impacts during Construction Phase

5.2.2.1 Traffic Congestion and Potential Accidents

Given the location of KUHeS Blantyre campus in a densely populated area with significant commercial and transportation activity, the construction activities are expected to exacerbate traffic congestion. Increased vehicular traffic from the transportation of construction materials and equipment will further congest the roads around the university. This congestion poses a higher safety risk of road accidents involving vehicles and pedestrians, including students and staff.

5.2.2.2 Temporary Air Quality Deterioration

During construction, significant and particulate matter emissions are anticipated due to movement of heavy machinery and vehicles used during construction and handling of cement and aggregates. In addition, pollutants such as nitrogen oxides, sulphur dioxide, carbon dioxide released from construction machinery and vehicles will contribute to local air quality deterioration. These emissions can have adverse effects on the health of nearby populations including students, staff and nearby residents which may lead to respiratory health issues, eye irritation and other effects

they may have on human health. Although it is unlikely that ambient air quality standards will be exceeded, the presence of construction-generated pollutants may cause temporary air quality deterioration, particularly during dry and wind conditions, reducing the overall quality of life and comfort in surrounding areas.

5.2.2.3 Elevated Noise Levels from Machinery and Construction Activities

Construction machinery and equipment will produce elevated noise levels, which can impair the hearing of workers and disturb the university community. Noise generated by these activities can be heard over long distances, albeit typically for short durations. If noise levels exceed 65 dBA at a receptor or significantly surpass the ambient sound level by more than 15 dBA, it can increase annoyance levels and result in noise complaints.

5.2.2.4 Potential for Accidents and Injuries On-site Affecting Workers, including students and staff

Construction workers may face various occupational hazards during the project. These hazards include operating large machinery and equipment, working at heights, using electrical tools, and handling hazardous and flammable chemicals. The construction site itself poses risks such as slips, trips, and falls, which can lead to injuries.

5.2.2.5 Infectious Diseases Impact

A. Sexually Transmitted Diseases (STIs including HIV and AIDs)

The influx of labour in the project area may increase sexual activities amongst the workers, students, staff and other community members. STIs and HIV and AIDs can affect productivity of people leading to a decrease in their participation in socio-economic activities as they have long-term health issues.

B. Respiratory Infectious Diseases (COVID 19)

COVID-19 falls under Respiratory Transmitted Diseases since it primarily spreads through respiratory droplets. The ministry of health declared a COVID -19 outbreak on 2nd April 2020. According to the World Health Organization (WHO), as of 2024, Malawi has experienced four main waves of COVID-19 and official COVID-19 attributed deaths are close to 3,000. This just shows how deadly COVID-19 is. Poor sanitation practices can increase chances of contacting COVID-19. These practices include, not washing hands frequently and thoroughly with soap and water, not using hand sanitizer, not observing social distance, participating in crowded gatherings without precautions among others.

5.2.2.6 Gender-Based Violence (GBV), Sexual Harassment (SH) and Sexual Exploitation and Abuse (SEA) Impact

The construction site has the potential to create an environment where gender-based violence (GBV), Sexual harassment (SH)and sexual exploitation and abuse (SEA) may occur. These impacts can affect both workers and the surrounding community, including academic staff, patients, and residents. The presence of construction workers, often from different areas and backgrounds, may increase GBV, SH and SEA issues particularly affecting women, girls and other vulnerable groups, including men and boys. In addition, female workers on the construction site may face sexual harassment, discrimination, or exploitation from their colleagues or supervisors.

A hostile work environment can lead to mental health issues, reduced job satisfaction, and decreased productivity among female workers.

5.2.2.7 Generation of Solid Wastes, Spills, and Effluent

Various construction activities are expected to generate many types and varying quantities of wastes that will include construction rubble, spoil from land clearing, packaging materials, vehicles and machine maintenance wastes, remains from form works, general mixed wastes (glass, wooden pallets, plastic, paper, metal scraps and cut-offs, fillings, food items, etc.), material residues, hazardous wastes (used oils, discarded fuels and paints, termite proofing material residues, discarded thinners and cleaning agents, etc.), and others. Spillages of chemicals, oils, paints, thinners, fuel, and other hazardous fluids, pastes or powders together with affected soils or surfaces should be regarded as hazardous waste. Effluents may consist of concrete spills, kitchen and bath wastewater, cleaning wastewater, and other similar types.

5.2.2.8 Water pollution and Soil contamination

Construction activities can lead to water pollution and soil contamination Runoff carrying construction debris, dust, and potentially hazardous substances such as oils, fuels, and chemicals used in the process can contaminate water resources and soil. This poses risks to aquatic life in the Naperi River, affects plant growth, and poses health risks to humans, potentially entering the food chain and impacting local agriculture.

5.2.2.9 Increased incidences of child labour due to the presence of street kids

According to the International Finance Corporation (IFC, 1998), poverty is the main reason children are forced to work. The supply of child labour is directly linked to the need for children to provide supplemental income for their families or to support themselves. a significant number of street children are present around the university. These street children may be at risk of being used as child labourers during the construction works.

5.2.2.10 Increase in Energy Consumption

The construction of the school of dentistry will significantly increase energy consumption. Key activities contributing to this include transporting construction materials and equipment to the site, which requires significant fuel consumption by trucks and heavy vehicles. Additionally, operating construction machinery like excavators, bulldozers, and cement mixers consumes substantial amounts of fuel. Temporary power supply systems, such as generators, will also be used to provide electricity for lighting and power tools, further elevating energy demands. This increased energy consumption leads to higher greenhouse gas emissions, contributing to air pollution and climate change. Implementing energy-efficient practices and alternative energy sources can help mitigate these impacts.

5.2.2.11 Increase in Water Consumption

The construction of the School of Dentistry will result in a significant increase in water consumption. This increase is necessary for various construction activities, including concrete mixing, which requires large quantities of water for the foundation, walls, and other structures. Water is also used for dust suppression, cleaning construction equipment, and maintaining hygiene in temporary sanitary facilities for workers. Additionally, providing adequate drinking water for workers is essential. This increased water demand can place a strain on local water resources,

particularly in regions that are already experiencing water scarcity. Implementing water-saving measures, such as using recycled water for non-potable purposes and optimizing water use in concrete mixing, can help reduce the impact on local water resources.

5.2.2.12 Discriminatory Working Conditions

There is a significant risk of discriminatory working conditions. Unfair hiring practices may favour certain groups over others based on gender, age, or ethnicity. Workers might face unequal pay and benefits, with temporary labourers receiving lower compensation compared to permanent staff. On-site harassment and discrimination, particularly against female workers, can affect mental and physical well-being. Inclusivity issues may arise, lacking support for diversity and accommodations for disabilities. Furthermore, health and safety measures may be applied inconsistently, placing some workers at higher risk. Implementing fair hiring, equal pay, anti-harassment policies, inclusivity programs, and comprehensive safety training can mitigate these risks.

5.2.2.13 **Risks of Fires**

Minor welding works will be carried out on-site to repair broken-down machines or vehicles and this increases the chances of fires. The project will need to implement fire prevention and management measures of which some include provision of fire extinguishers in risky areas, training of workers in fire prevention and management, and safe materials storage systems among others.

5.2.2.14 Occupational Health and Safety (OHS) Risks

Construction works might be associated with physical, chemical, ergonomic, biological, psychological and noise and vibration hazards. The mitigation measures will include; regular training sessions on equipment use, safety protocols, and hazard recognition, provision of appropriate PPE (helmets, gloves, goggles, earplugs) tailored to specific tasks, conduct regular inspections to identify and address potential hazards in the workplace, install proper ventilation systems in areas where chemicals are used or stored to minimize exposure, whenever possible, substitute hazardous chemicals with less harmful alternatives, conduct assessments of workstations and tasks to identify ergonomic risks and implement changes, encourage frequent breaks to reduce repetitive strain and fatigue, promote good hygiene practices such as handwashing and use of sanitizers, conduct training on recognizing symptoms and preventing the spread of infectious diseases, implement programs to support mental health and stress management among employees. use sound barriers, acoustic panels, and maintenance of machinery to minimize noise levels. establish work schedules that limit the amount of time workers spend in noisy or vibrating environments and ensure that designated personnel are trained in first aid and emergency response.

5.2.2.15 Soil Erosion and Sedimentation

Excavation and earthmoving activities could lead to soil erosion, particularly during rainy seasons, affecting nearby water bodies through sedimentation. Some of the mitigation and management measures shall include establishing grass, shrubs, or trees to stabilize the soil with roots and reduce runoff, and designing effective drainage systems to manage runoff and prevent erosion.

5.2.3 Anticipated Negative Impacts during Operational Phase

5.2.3.1 Increased Generation of Hazardous Waste

The operation of the school of dentistry will result in the generation of significant amounts of both general and hazardous waste. Hazardous waste includes infectious materials such as used needles, syringes, and other medical supplies contaminated with bodily fluids. Pharmaceutical waste, including expired or unused medications, also falls into this category. Improper segregation and disposal of these wastes can lead to contamination of the environment, posing risks to public health. This contamination can occur through accidental punctures, spills, or exposure to infectious agents, which can cause disease outbreaks both within the healthcare facility and in the surrounding community.

5.2.3.2 Wastewater Discharges

The facility will produce wastewater containing biological agents, pharmaceuticals, and chemicals from various activities. This includes wastewater generated from patient care, laboratory processes, and cleaning operations. Contaminants in the wastewater, such as antibiotics, pathogens, and disinfectants, can enter the municipal sewage system. Without proper treatment, these substances can pollute water sources, leading to the spread of waterborne diseases and harming aquatic ecosystems.

5.2.3.3 Exposure of students and Health Workers to Infections

Workers and students may be exposed to various occupational hazards. These include the risk of contracting infectious diseases from patients or contaminated materials, exposure to hazardous chemicals used in medical treatments and cleaning, and the potential for injuries from sharps and other medical instruments. Handling and disposing of hazardous waste present a constant risk of infection, while using radiation in certain diagnostic and treatment procedures poses additional safety concerns. These occupational hazards can result in illness, injury, and long-term health issues for healthcare workers if not properly managed.

5.2.3.4 Traffic management issues

Construction of the new facility will likely increase the traffic flow to the college, hence leading to traffic management issues. Some of the mitigation measures will include installing clear traffic signs to guide vehicles and pedestrians around the campus, creating designated areas for drop-offs and pickups to minimize congestion and establishing specific areas for students, staff, and visitors to reduce on-street parking pressure.

5.2.3.5 Chemical storage and handling

The operation of the dental school will likely use chemicals which will require special handling procedures as specified in the material safety data sheets (MSDS). Some of the mitigation measures that shall be implemented will include conduct regular inspections to identify and address potential hazards in the workplace, install proper ventilation systems in areas where chemicals are used or stored to minimize exposure, whenever possible, substitute hazardous chemicals with less harmful alternatives,

5.3 Significance Ranking of the Impacts

The primary goal of implementing this methodology was to identify potential environmental issues and associated impacts from the proposed project and to assign a significant ranking to them. Issues or aspects were reviewed and evaluated against a series of significant criteria to identify and document interactions between activities and aspects, as well as resources and receptors, providing a detailed discussion of impacts. The significance of environmental aspects is determined and ranked by considering criteria presented in Table 5-2.

Table 5- 2: Significance Ranking Criteria

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
IMPACT SIGNIFICANCE RATING					
Total Score	**4 to 15**	**16 to 30**	**31 to 60**	**61 to 80**	**81 to 100**
Environmental Significance Rating (Negative (-))	**Very low**	**Low**	**Moderate**	**High**	**Very High**
Environmental Significance Rating (Positive (+))	**Very low**	**Low**	**Moderate**	**High**	**Very High**

Annex 3 presents the assessed potential environmental and social impacts along with their significance rankings. The significance of impacts without mitigation measures is evaluated with the design controls already in place. Residual impact refers to the remaining level of impact after applying mitigation and management measures, representing the final impact level associated with the development. Residual impacts are the primary focus of management and monitoring activities during project implementation to ensure that actual impacts align with the predictions in this report.

5.4 Environmental and Social Management and Monitoring Plan

An Environmental and Social Management and Monitoring Plan has been developed to assist in mitigating and managing environmental impacts associated with the construction works. It is noteworthy that key factors and processes may change during the construction works, and considerable provisions have been made for the dynamism and flexibility of the ESMP. As such, the ESMP will be subject to a regular periodic review regime during project implementation. Table 5-3 forms the core of this ESMP for the construction phase of the proposed project respectively. In general, the table outlines the potential environmental and social risks associated with the project and details all the necessary mitigation measures, their financial costs, and the institutions responsible for their implementation.

Table 5- 3: Environmental and Social Management and Monitoring Plan

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
KPI	**Anticipated Positive impacts of the project**							
KPIA	Improved teaching and learning at the university and increased enrolment	i. Conducting regular capacity building trainings and professional development opportunities for lectures and other teaching supporting staff to improve their skills and adapt to modern technologies and methodologies. ii. Awarding/offering scholarships for exceptionally performing students in academics and needy students. iii. Curriculum development by continuously reviewing and updating the curriculum to align with new technological advancements to ensure that students are up to date.	Start: Beginning of equipment installation; End: 1 month after installation	MK750,000	Number of staff trained	Monthly	KUHeS Administration	National Council for Higher Education (NCHE)
		i. Sound proofing be considered in the lecture theatres and the public hub to	During operational phase	MK1,000,000	Percentage of room soundproofed	Yearly during design	Design Engineer	KUHeS

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		avoid disruption, since the college will also be used by the public.						
		ii. Outside teaching and outdoor study spaces are provided to enhance the teaching and learning environment. iii. Provide climate-resilient building through: ○ Shading devices including vertical screens. ○ Large roof to provide shade. ○ Permeable areas between inside and outside ○ Warm spaces using warm materials. ○ Limited but refined palette of materials ○ Double height spaces	During operational phase	MK1,000,000	Design with open spaces	Yearly during design	Design Engineer	KUHeS
		iv. Utilize the building flyers and corridors that have good	During operational phase	MK1,500,000	Design with natural lighting	Yearly during design	Design Engineer	KUHeS

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		lighting and shielding as excellent study areas or for small group discussions.						
		v. Conduct regular servicing and maintenance of the school equipment	Start: Post-installation; End: Ongoing, quarterly	MK200000 / year	Equipment uptime; number of maintenance checks	Quarterly	KUHeS Administration	NCHE
KPI2	Creation of Job Opportunities	i. Inform local communities of employment opportunities and prioritize their employment.	Before construction phase starts	MK100,000	Number of local workers employed	Before construction begins	Contractor	Supervising Consultant (SC); PIU E&S Expert
		ii. Treat employees in compliance with Malawi Labour Regulations and labour and working conditions as per the project's Labour Management Plan.	Ongoing during construction phase	MK0	Compliance with labour regulations	Monthly	Contractor	SC; PIU E&S Expert
		iii. Pay the same rates for workers working on similar tasks regardless of gender and origin.	Ongoing during the construction phase	MK0	Pay equity records	Monthly	Contractor	SC; PIU E&S Expert
		iv. Have workers sign a code of conduct. The code of guide is provided in Annex 5.	Before employment starts	MK0	Number of signed codes of conduct	Before employment starts	Contractor	SC; PIU E&S Expert
		v. Sensitize workers to a full range of risks related to	During induction and ongoing	MK500,000	Number of sensitization sessions;	Monthly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		occupational health and safety, labour rights, public health, community safety, SEA, SH and GBV.			worker awareness levels			
		vi. Ensure that 30% of the workforce are women.	Ongoing during the construction phase	MK0	Workforce gender ratio	Monthly	Contractor	SC; PIU E&S Expert
KPI3	Public Health Benefits through improved treatment of dental patients	i. Employ qualified staff to work at the University ii. Provide adequate equipment for the facility iii. Attract dental students to return to the country by offering competitive remuneration. iv. Carry out frequent exchange programs for both lecturers and students. v. Procure modern dental equipment's to be installed in the clinic and school vi. Social inclusion of access by the disabled. This has been done by providing a lift in the building. Additional if this lift breaks down, the scheme has	Ongoing during operational phase	MK2,000,000	Number of qualitied staff employed Percentage of appropriate equipment in place	Yearly	KUHeS	NCHE

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		been reduced to 2 floors for the public and teaching areas. Both floors are accessible from the external landscaping. vii. Security strategy has been devised alongside the building layout to ensure that there is restricted access around the building and ensuring the public did not enter into areas off limits (use of digital security system in the buildings). viii. Provide capacity building to the existing lecturers in the dental field of study; and ix. Give equal employment opportunities for both men and women.						
KNI	**Anticipated Negative Impacts of the project**							
KNI1	Traffic Congestion and Accidents	i. Develop and implement a Traffic Management Plan using guidance	Before construction starts	MK5,000,000	Traffic Management Plan in place	Weekly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		provided in Annex 8.						
		ii. Employ flaggers and traffic wardens to direct traffic during critical periods of construction.	During construction phases	MK200,000/month	Flaggers and wardens deployed during peak times	Weekly	Contractor	SC; PIU E&S Expert
		iii. Ensure safe pedestrian movement by installing well-marked crossings and signage near the site.	Before construction starts	MK250,000	Crossings and signage installed	Weekly	Contractor	SC; PIU E&S Expert
		iv. Schedule delivery of materials and heavy equipment movement during off-peak hours.	Throughout construction	MK0 (Operational cost)	Reduced traffic disruption during peak hours	Weekly	Contractor	SC; PIU E&S Expert
		v. Erect safety barriers around the construction site to prevent unauthorized access.	Before construction starts	MK1,000,000	Safety barriers installed	Weekly	Contractor	SC; PIU E&S Expert
		vi. Hire transporters with valid CoF and appropriately licensed drivers.	Throughout construction	MK200,000/month	Transporters comply with CoF and licensing	Monthly	Contractor	SC; PIU E&S Expert
		vii. Installing clear traffic signs to guide vehicles and pedestrians around the campus	During the construction and operation phases	Budget to be included in the design of the structure	Presence of signage	Daily	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		viii. Creating designated areas for drop-offs and pickups to minimize congestion	Operation phase	Budget to be included in the design of the structure	Signate of drop off and pick ups installed	Daily	Contractor	SC; PIU E&S Expert
		ix. Establishing specific parking areas for students, staff, and visitors to reduce on-street parking pressure. x.	Operation phase	Budget to be included in the design of the structure	Signage for parking spaces provided	Daily	Contractor	SC; PIU E&S Expert
		xi. Ensure construction vehicles observe a 20 km/hr speed limit on the university campus.	Throughout construction	MK150,000	Speed limit signs installed and observed	Monthly	Contractor	SC; PIU E&S Expert
KNI2	Temporary Air Quality Deterioration	i. Plan construction works to minimize dust, avoid windy periods	Before demolition start	MK0 (Operational cost)	Reduced dust levels during demolition	Weekly	Contractor	PIU E&S Expert
		ii. Wet down entire construction area periodically, wherever possible.	Throughout excavation and construction works	MK0 (Operational cost)	Regular wetting schedule maintained	Daily	Contractor	PIU E&S Expert
		iii. Transport particulate materials with adequate load cover	During material transport	MK150,000	Properly covered loads observed	Weekly	Contractor	PIU E&S Expert
		iv. Unload powdery materials using drop-height regulation equipment	During material unloading	MK150,000	Minimal dust observed during unloading	Weekly	Contractor	PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		v. Regular maintenance of vehicles, avoid old vehicles emitting black smoke	Throughout construction	MK150,000	Emission levels within acceptable limits	Monthly	Contractor	PIU E&S Expert
KNI3	Elevated noise levels from machinery and construction activities	i. Limit noisy construction activities only to daytime hours.	Ongoing during construction phase	MK0 (Operational cost)	Compliance with work hours; noise level readings	Daily	Contractor	PIU E&S Expert
		ii. Notify university management at least twenty-four hours in advance if particularly noisy activities are anticipated.	As needed during the construction phase	MK0 (Operational cost)	Number of notifications sent; community feedback	As needed	Contractor	PIU E&S Expert
		iii. Ensure that noise levels at the university do not exceed 55 dB (A) and keep noise levels for workers below 80 dB (A).	Ongoing during construction phase	MK100,000	Noise level readings; compliance with standards	Monthly	Contractor	PIU E&S Expert
		iv. Place stationary noise sources (e.g., the generator) away from sensitive receptors such as wards and staff houses.	During equipment setup	MK100,000	Placement compliance; noise level readings	As needed	Contractor	PIU E&S Expert
		v. Regular maintenance of machinery to minimize noise	Ongoing during construction phase	MK100,000	Noise level readings; compliance with standards	Monthly	Contractor	PIU E&S Expert
KNI4	Potential for accidents and injuries on-site	i. Erect safety barriers around the construction site to	Before construction begins	MK150,000	Number of barriers erected;	Weekly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
	affecting communities	prevent unauthorized access.			incidence of unauthorized access			
		ii. Schedule construction deliveries and heavy machinery movement during off-peak hours to minimize disruption.	During construction phase	MK0	Delivery schedule compliance; community feedback	Monthly	Contractor	SC; PIU E&S Expert
		iii. Coordinate with University administration to ensure that alternative routes and access points are available during construction.	Before construction begins	MK0	Number of coordination meetings; availability of alternative routes	Quarterly	Contractor	SC; PIU E&S Expert
		iv. Employ transporters whose vehicles have a valid Certificate of Fitness (CoF) and ensure that drivers possess the appropriate driving license category.	During construction phase	MK0	Number of compliant vehicles and drivers	Quarterly	Contractor	SC; PIU E&S Expert
		v. Construction vehicles to observe a 20 km/hr speed limit on the University campus. Put in place signposts indicating the speed limits on the construction site.	During construction phase	MK50,000	Compliance with speed limits; number of signposts	Before construction begins	Contractor	SC; PIU E&S Expert
KNI5		i. Carry out monthly health education for	Ongoing; monthly	MK150,000	Number of health	Monthly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
	Sexually Transmitted Infectious Diseases (STIs including HIV and AIDS)	construction workers in liaison with health personnel using the toolbox talks.			education sessions; worker participation			
		ii. Free condoms are to be made available to all (100%) workers by placing them in the workers' toilets to ensure access and confidentiality.	Ongoing	MK100,000	Availability and usage of condoms	Monthly	Contractor	SC; PIU E&S Expert
	Respiratory infectious diseases (COVID-19)	i. Sensitize construction workers on Covid-19 prevention including hand washing with soap, use of hand sanitizers, proper use of face masks, and workspace disinfection among others.	Ongoing	MK50,000	Number of sensitization sessions; worker compliance	Before employment starts	Contractor	SC; PIU E&S Expert
		ii. Distribute information, education, and communication (IEC) materials on Covid-19, HIV and AIDS prevention, and cholera.	Ongoing	MK250,000	Number of IEC materials distributed; worker awareness	Monthly	Contractor	SC; PIU E&S Expert
		iii. Provide necessary PPE and other materials (e.g. cloth masks, hand	Ongoing	MK150,000	Availability and usage of PPE; compliance	Monthly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		sanitizers, hand-washing facilities) to help prevent construction workers from contracting and spreading Covid-19 at the workplace.			with health protocols			
KNI6	GBV and SEA Impact	i. Develop an induction program including a code of conduct for all workers which they will be required to sign prior to starting their work.	Before construction phase starts	MK50,000	Existence of induction program; number of signed codes of conduct	Before construction begins	Contractor	SC; PIU E&S Expert
		ii. Ensure a copy of the code of conduct is presented to all construction workers and signed by each of them.	Before construction phase starts	MK50,000	Number of signed codes of conduct	Before construction begins	Contractor	SC; PIU E&S Expert
		iii. Implement a GBV, SEA and Management plan as presented in Annex 9.	During construction phase	MK250,000	Existence and implementation of GBV management plan	Before construction begins	Contractor	SC; PIU E&S Expert
		iv. Provide clear, trusted, and responsive channels for filing GBV/SEA/SH cases to the police or other relevant government authorities.	Ongoing during construction phase	MK150,000	Number of reported cases; resolution time	Before construction begins	Contractor	SC; PIU E&S Expert
		v. Ensure the availability of an effective Grievance	Ongoing during construction phase	MK50,000	Existence and accessibility of GRM; number	Weekly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		Redress Mechanism (GRM).			of grievances addressed			
KNI7	Generation of solid wastes, spills, and effluent	i. Provide adequate on-site waste receptors such as colour-coded bins or skips for temporary waste storage. Use of rubbish pits should be discouraged.	Before construction phase starts	MK250,000	Number and type of waste receptors; compliance with waste management protocols	Weekly	Contractor	SC; PIU E&S Expert
		ii. Arrange with the District Council to identify a suitable site or sites (new or existing) for waste disposal at different project sites if possible, within 5 km radius.	Before the construction phase starts	MK50,000	Number of waste disposal sites identified; compliance with disposal protocols	Weekly	Contractor	SC; PIU E&S Expert
		iii. Obtain permits to handle, store, transport, and dispose of hazardous waste from the Environmental Authority in advance of construction.	Before the construction phase starts	MK50,000	Number of permits obtained; compliance with hazardous waste regulations	Weekly	Contractor	SC; PIU E&S Expert
		iv. Segregate and clearly label hazardous waste and store in suitable drums or containers in secure facilities that have a banded impermeable layer.	During construction phase	MK100,000	Segregation and labelling compliance; condition of storage facilities	Weekly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		v. Promote good housekeeping and sanitation practices at each site.	Ongoing	MK50,000	Cleanliness and organization of the site; worker compliance	Monthly	Contractor	SC; PIU E&S Expert
		vi. Provide spill-control kits and materials (e.g. oil binding agents, sand, shovels, etc.) to drivers and workers, to clean up spills, if necessary. vii. Train workers on spill management, provide spill kits, and regularly monitor hazardous material storage areas. viii. - Arrange for waste collection services through the District Council. ix.	During construction phase	MK100,000	Availability and usage of spill-control kits; number of spill incidents	Monthly	Contractor	SC; PIU E&S Expert
KNI8	Water and Soil Pollution/ contamination	i. Engineer an effective drainage system to manage stormwater runoff from the construction site by ensuring that the system directs runoff to designated collection areas where it can be treated or safely discharged.	Start: Pre-demolition; End: During demolition	MK5,000,000	Effective runoff management	Weekly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		ii. Establish designated areas for storing demolition debris and construction materials away from storm drains.	Start: Pre-demolition; End: Throughout construction	MK1,500,000	No incidents of storm drain contamination	Daily	Contractor	SC; PIU E&S Expert
		iii. Use approved disposal methods and sites, and avoid illegal dumping of construction waste, including hazardous materials.	Start: During demolition; End: Post-construction	MK5,000,000	Compliance with waste disposal regulations	Daily	Contractor	SC; PIU E&S Expert
		iv. Use containment systems such as spill containment pallets, bunded areas, and drip trays to store hazardous substances like oils, fuels, and chemicals. This will prevent leaks and spills from contaminating soil and water.	Start: Pre-demolition; End: Throughout construction	MK3,000,000	Zero incidents of hazardous spills	Weekly	Contractor	SC; PIU E&S Expert
		v. Ensure that spill kits are readily available on-site. These kits should include absorbent materials, gloves, protective clothing, and disposal bags.	Start: Pre-demolition; End: Throughout construction	MK1,000,000	Availability and accessibility of spill kits	Weekly	Contractor	SC; PIU E&S Expert
		vi. In case of a spillage incident, quickly	Start: During demolition; End:	MK1,500,000	Number of successfully	Monthly	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		identify the type and source of the spill (e.g., oil, fuel, chemicals). If it is safe to do so, stop the source of the spill to prevent further leakage.	Throughout construction		contained spills			
		vii. To contain the spill, use absorbent materials from the spill kit to create a barrier around the spill to prevent it from spreading. Immediately block any nearby drains or waterways to prevent contamination.	Start: During demolition; End: Throughout construction	MK1.500,000	Number of spills effectively contained	Daily	Contractor	SC; PIU E&S Expert
		viii. To clean up, use absorbent pads or other materials to soak up the spilt substance. Gather the used absorbent materials and place them in the provided disposal bags. Seal the bags and store them in a designated area for proper disposal according to MEPA guidance.	Start: During demolition; End: Throughout construction	MK2,500,000	Proper disposal of used absorbent materials	As needed	Contractor	SC; PIU E&S Expert

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
KNI9	Increased incidences of child labour due to presence of street kids	i. During the recruitments of the construction workers, use national identification cards to ascertain the age of the prospective workers.	Ongoing during construction phase	MK0	Compliance with labour regulations	As needed	Contractor	SC; PIU E&S Expert
		ii. Ensure that all contractors and subcontractors adhere to local and international labour laws prohibiting child labour.	Ongoing during construction phase	MK0	Compliance with labour regulations	As needed	Contractor	SC; PIU E&S Expert
		iii. Strategically, erect signage, which are three metres high, with prevention of child labour messages at construction sites	Ongoing during construction phase	MK1,500,000	Number of erected signposts	Weekly	Contractor	SC; PIU E&S Expert
		iv. Set up an anonymous reporting system where incidents of child labour can be reported without fear of retribution.	Before commencement of construction	K750,000	Number for uptake systems in place	Weekly	MoH	SC; PIU E&S Expert
KNI10	Increased in Energy Consumption	i. Promote energy-efficient practices.	Ongoing during construction phase	MK10,000,000	Percentage of energy from renewable energy sources	Monthly	Contractor	Supervising Consultant; PIU E&S Expert
		ii. Utilize renewable energy sources such as solar panels for providing temporary power on-site,						

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		reducing reliance on diesel generators.						
		iii. Train workers on energy-saving practices and the importance of reducing energy consumption.		MK500,000	Number of workers trained			
		iv. Use of fuel-efficient vehicles and machinery.		MK5,000,000	Amount of fuel used		Contractor	
		v. Optimise logistics to minimise transportation distances and fuel consumption.					Contractor	
KNI11	Increased in Water Consumption	i. Implement water-saving measures.	Ongoing during construction phase	MK500,000	Water saving technologies in place	Monthly	Contractor	Supervising Consultant; PIU E&S Expert
		ii. Source non-potable water from water bodies within 2 km radius for construction purposes, ensuring it does not affect University water supplies.		MK400,000	Alternative water sources provided			
		iii. Reuse water where possible e.g. use greywater for dust suppression and sanitation purposes		MK300,000	Water reuse system in place			

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		iv. Monitor and minimize water wastage.		MK50,000	Water usage monitoring in place			
KNI12	Discriminatory Working Conditions	i. Treat employees in compliance with the Malawi Labour Regulations and labour and working conditions as per World Banks ESS 2.	Ongoing during construction phase	MK00	Percentage of workers with signed contracts	Monthly	Contractor	Supervising Consultant; PIU E&S Expert
		ii. Implement the project as required by the projects Labour Management Plan.		MK50,000	Labour management plan in place and used	Monthly	Contractor	
		iii. Pay the same rates for the workers working on similar tasks regardless of gender and origin.		MK50,000	Salary scale structure in place	Monthly	Contractor	
		iv. Report regularly on workforce profile, labour grievances, labour incidents and workforce management activities and results using World Bank templates, government requirements, and international good practice.		MK00	Employment registers in place	Monthly	Contractor	
		v. Have workers sign a code of conduct.		MK100,000	Percentage of workers sign	Monthly	Contractor	

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
					the code of conduct			
		vi. Sensitise workers to a full range of risks related to occupational health and safety, labour rights risks, public health, community safety, sexual harassment, GBV, and other risks.		MK200,000	Percentage of workers sensitised	Monthly	Contractor	
KNI13	Potential for accidents and injuries on-site affecting workers	Develop and implement an Occupational Health and Safety Plan that aims to avoid, minimize, and mitigate the site-specific risk of workplace accidents.	Before construction phase starts	MK250,000.00	Existence of OH&S plan; compliance with safety protocols	Quarterly	Contractor	Supervising Consultant; PIU E&S Expert
		Provide OSH orientation training and hazard-specific training including regular risk assessments and safety training	During induction and ongoing	MK50,000.00	Number of training sessions; worker awareness levels	Monthly		
		Conduct a thorough risk assessment before excavation to identify potential hazards and implement necessary safety measures.	Before excavation starts	MK50,000.00	Risk assessment report; implementation of safety measures			
		Install barriers and warning signs around the excavation area to prevent unauthorized access and to alert workers to potential hazards.	During excavation	MK150,000.00	Number of barriers and signs; compliance			

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
					with safety protocols			
		Use secure and stable ladders or scaffolding that meet safety standards for working at height.	During construction	MK1,000,000.00	Equipment inspection logs; compliance with safety standards			
		Provide personal protective equipment (PPE), including safety harnesses, helmets, and non-slip footwear to all workers working at height and ensure safe working conditions	Before work at height begins	MK1,000,000.00	PPE availability and usage; compliance with safety standards			
		Provide PPE, including gloves, work suits, and boots, to all workers handling cement during construction works.	Before construction begins	MK500,000.00				
KNI14	Increased Generation of Hazardous Waste	Segregate waste at the source	During operation	University budget	Proper segregation, treatment, and disposal	Monthly	KUHeS Administration	MoH - Environmental Health Unit
		Use color-coded bins for different types of waste						
		Train staff on waste management protocols ensuring proper storage and disposal practices are followed.						
		Monitor and audit waste management practices regularly						
		Establish, operate and maintain a health care waste management system						

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		(HWMS) that will promote, (i) waste minimization, reuse, and recycling; (ii) waste segregation; (iii) safe handling, collection, storage and disposal.						
		The sluice rooms should be strategically located to minimise the movement of contaminated materials through clean areas. Consider having exits to corridors towards a dedicated waste holding area on the floor or for the University.	Include in design	Included in design cost		Once before construction phase	Design Consultant	MoH - Planning Department
		Provide for a central storage area within the University facility where different types of waste will be brought for safe retention until it is collected for offsite disposal/incineration.	Include in design	Included in design cost	Availability of temporary waste storage facility			
KNI15	Air pollution	Maintain and replace air filters regularly	During operation	University Operational Budget	Air quality meets safety standards.	Quarterly		MoH - Environmental Health Unit / Health Technical Support Services (HTSS) department
		Use UVGI in air handling units	Design stage	Included in design cost		Quarterly	Design Consultant	
		Conduct air quality testing and adjust systems as needed.	During operation	University Operational Budget		Quarterly	KUHeS Administration	
		Ensure proper storage of medical waste.						

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		Use sealed containers to prevent emissions from medical waste storage.						
		Inspect and maintain medical waste storage facilities regularly.						
		Monitor air quality around storage areas Replace air filters regularly and conduct routine air quality testing around storage areas for medical waste.						
KNI16	Increased generation of wastewater	Procedures and mechanisms for separate collection of urine, faeces, blood, and vomit from patients treated with genotoxic drugs to avoid their entry into the wastewater stream.	During operation	University Operational Budget	Wastewater quality meets discharge standards	Monthly	KUHeS Administration	MoH - Environmental Health Unit
		Regularly test wastewater to ensure it meets discharge regulations.	During operation					
		Use chemical neutralization treatments where chemical contaminants are released in wastewater.	During operation					
		Test and monitor wastewater quality regularly	During operation					
KNI17	Expose Workers to Infections	Develop and implement an Infection Prevention Plan using guidance provided in Annex 8. The plan will	During operation	University Operational Budget	Reduced incidence of	Monthly	KUHeS Administration	MoH - Quality Management Directorate

Impact Code	Impact	Mitigation/ enhancement Measures	Implementation Period	Implementation Cost (MWK)	Performance Indicator	Monitoring Frequency	Implementation Responsibility	Monitoring Responsibility
		include an exposure control plan for blood-borne pathogens, information on infection control policies and procedures, and standard precautions to treat all blood and other potentially infectious materials with appropriate precautions. Implement an infection control plan, providing handwashing facilities, PPE, and regular health surveillance.			occupational illnesses			
		Develop a Life and Fire Safety plan using the guidance provided in Annex 9. This will ensure the safety of patients, staff, and visitors by minimising the risk of fire and ensuring effective emergency response measures are in place.	Before operational phase					
		Install handwashing facilities in critical areas that will include entrances and exits, patient care areas, high-traffic areas, nursing stations, and procedure and treatment rooms.	Design stage	Included in the design cost				
		Establish a health surveillance system	During operation					

5.5 Implementation of ESMP

The ESMP shall be implemented to address all activities that have been identified to have potentially significant impacts on the environment during normal operations and upset conditions. The implementation of the project environment and social component will be overseen by different institutional arrangements. The players are indicated in **Error! Reference source not found.**table 5-4.

Table 5- 4: ESMP Implementation Arrangement

Responsible Party	**Roles and Responsibilities**
Ministry of Education / PIU	• Provide overall support, oversight, and quality control to KUHEs on environmental and social risk management matters. • Ensuring KUHEs and contractor's compliance with national and international standards. • Ensure KUHES is reporting on ESMP, ESCP, SEP implementation, including GRM and Incidents. • Organize capacity building activities in specific areas of need.
KUHEs	• Provide support, oversight, and quality control to contractor on environmental and social risk management. • Planning and implementation of ESMP, ensuring compliance with national and international standards. • Ensuring that the social and environmental protection and mitigation measures in the ESMP are incorporated in contractors contract and KUHEs annual budgets. • Supervise and monitor the progress of contractors' activities and their adherence to the ESMP. • Guide construction teams in conducting subsequent monitoring and reporting and in undertaking corrective actions. • Responsible for modifications to the ESMP when unforeseen changes are observed during implementation. • Ensure the submission of periodic environmental and social management and monitoring reports to the World Bank through PIU. • Promote improved social and environmental performance through the effective use of management systems. • External communications with other implementing partners, government ministries and agencies, and non-government organisations on matters of mutual interest related to environmental management under the project development. • Manage grievances related to environmental and social issues and ensure they are addressed effectively. • Reporting on incidents as guided in the ESCP.
Supervision Consultant	• Development of a monitoring tool or checklist based on the ESMP and guided by the project's physical layout and specific site conditions. • Develop a monitoring program for the works, targeting specific project working sites, material sites, sensitive environments, social areas, etc. • Prepare monthly site meetings to involve the Contractor, Client and Stakeholders to discuss progress and address issues. • Monthly reports in addition to continuous communications to the Contractor, Client, Authorities and Stakeholders as situations require. • The Consulting Engineer will convene monthly meetings for progress reporting by the Contractor and the supervision team.

Responsible Party	Roles and Responsibilities
	• Prepare and submit detailed monthly reports on C-ESMP implementation, highlighting any non-compliance issues and recommend corrective actions. • Manage grievances related to the environmental and social issues and ensure they are addressed effectively.
The Contractor	• Customise the project ESMP and generate a Construction Environmental and Social Management Plan as a tool to guide the implementation and monitoring of indicators. File a copy with the Resident Engineer. • Procure necessary equipment for environment measurements or engage some appropriate expert personnel for the activity in specific environment quality aspects, including air quality, noise, water, and soil quality, • Monthly reporting throughout the project period. • Conduct regular training for workers on environmental and social best practices • Implement Grievance redress mechanisms on-site to address grievances from the workers and the project-affected communities.

5.6 Training and Capacity Building

The Training and Capacity Building Plan aims to equip the project implementation team with the knowledge, skills, and competencies required to effectively implement and oversee the Environmental and Social Management Plan (ESMP). This plan covers the Ministry of Health (MoH) Project Implementation Unit (PIU), the Supervision Consultant team, and the Contractor's team. The objectives of the training and capacity-building approach are as follows:

i. Ensure all team members understand the ESMP and their roles in its implementation.
ii. Cultivate the skills and competencies necessary for effective monitoring, reporting, and management of environmental and social impacts
iii. Ensure all activities comply with the ESMP, World Bank guidelines, and local regulations.
iv. Foster a culture of continuous improvement in environmental and social performance.

Given the need to raise awareness among project workers and stakeholders at multiple levels, a cascading model will be implemented where information flows from the national level to the field levels as shown in **Error! Reference source not found.**table 5-5 This approach ensures that training on environmental and social risk management is integrated into the project cycle and operational procedures.

Table 5- 5: Proposed Training and Capacity Building Approach

Level	Responsibility Party	Audience	Topics / Themes	Estimated Cost (MK)
National	External Consultant	PIU Staff, MoH Staff	• Introduction to ESMP • ESMP Planning and Implementation • Monitoring and Reporting • Environmental and Social Safeguards • Corrective Action Planning • Communication and Stakeholder Engagement • OHS • GBV, SHEA and Child Labour	MK10,000,000

Level	Responsibility Party	Audience	Topics / Themes	Estimated Cost (MK)
			• GRM • Emergency Preparedness and Response arrangements to emergency situations;	
University Level	Environmental Specialist	SAVE Project Implementation Team	• Introduction to ESMP • Development of Monitoring Tools • Monitoring Program Development • Reporting and Communication • Emergency Response and Contingency Planning	MK7,500,000
Contractor Level	Environmental Specialist	Contractor Environmental and Social Expert, Contractor's Staff	• Customizing the ESMP • Construction Environmental and Social Management Plan (CESMP) • Equipment Used for Environmental Measurements • Monthly Reporting • Compliance with Environmental and Social Standards	MK5,000,000
Total Training Program				MK22,500,000.00

To ensure the effectiveness of the training and capacity-building plan, regular evaluations and monitoring will be carried out. This will include:

i. Evaluate participants' knowledge before and after training sessions.
ii. Collect feedback from participants to improve future training sessions.
iii. Regularly review monitoring reports to ensure compliance and identify areas for improvement.
iv. Conduct quarterly review meetings with all stakeholders to assess progress and address any issues.

5.7 ESMP Estimated Budget

Table 5-6 lists estimated cost items for the implementation for the ESMP, which have been included in the overall project budget.

Table 5- 6: Summary ESMP Implementation Budget

Budget Category	Cost Estimates (MWK)
Environmental and Social Management Plan (ESMP) Mitigation/Enhancement Measures	56,750,000.00
The annual cost for implementation of ESMP during the operational phase	3,500,000.00

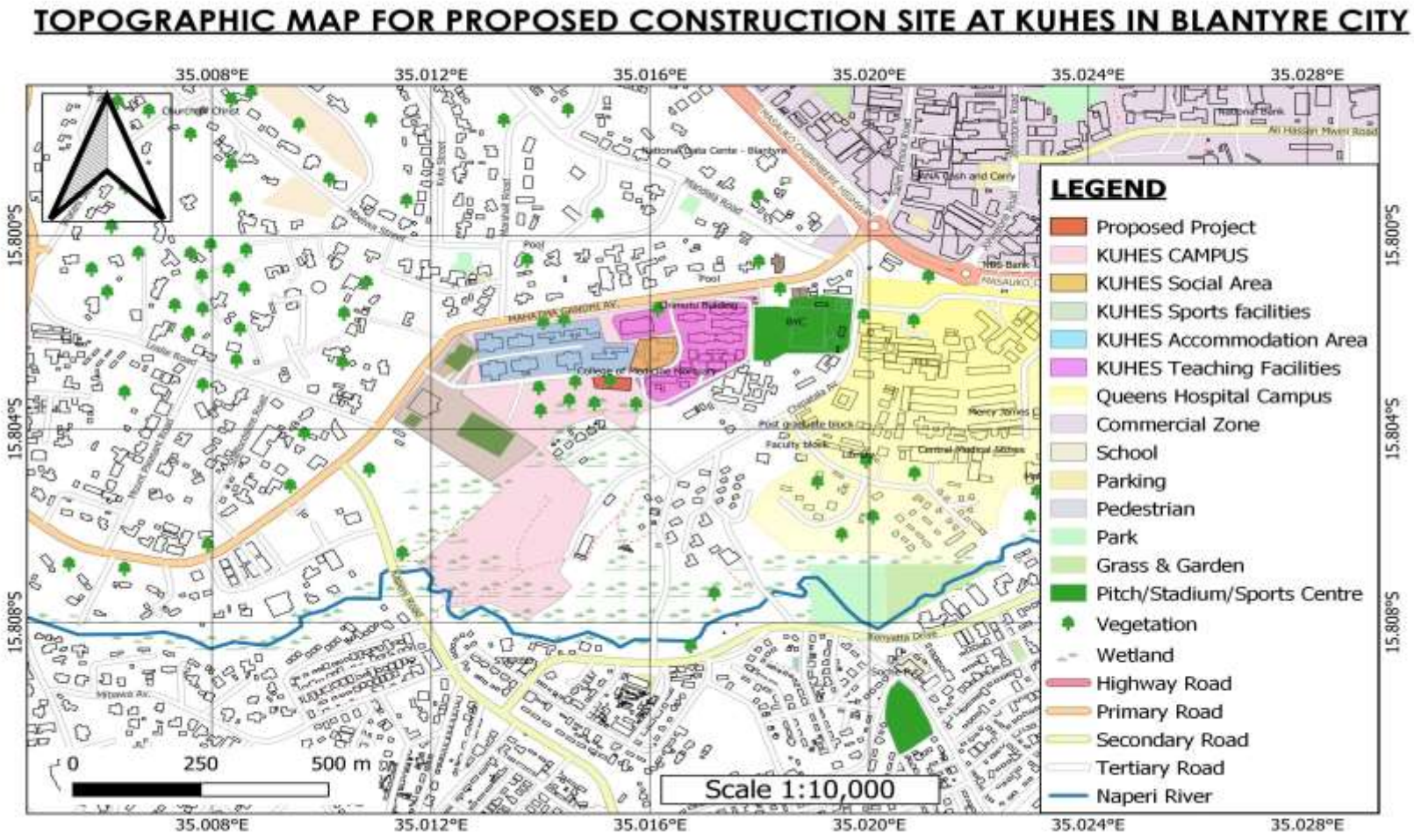
Environmental and Social Monitoring Plan Mitigation Measures	**7,950,000.00**
Grievance Redress mechanism	4,500,000.00
Training program	22,500,000.00
Sum	**95,200,000.00**
Plus 10 % contingency	9,520,000.00
Overall, Sum	**104,720,000.00**

5.8 Stakeholder Engagement, Grievance Redress Mechanism, Disclosure, and Consultations

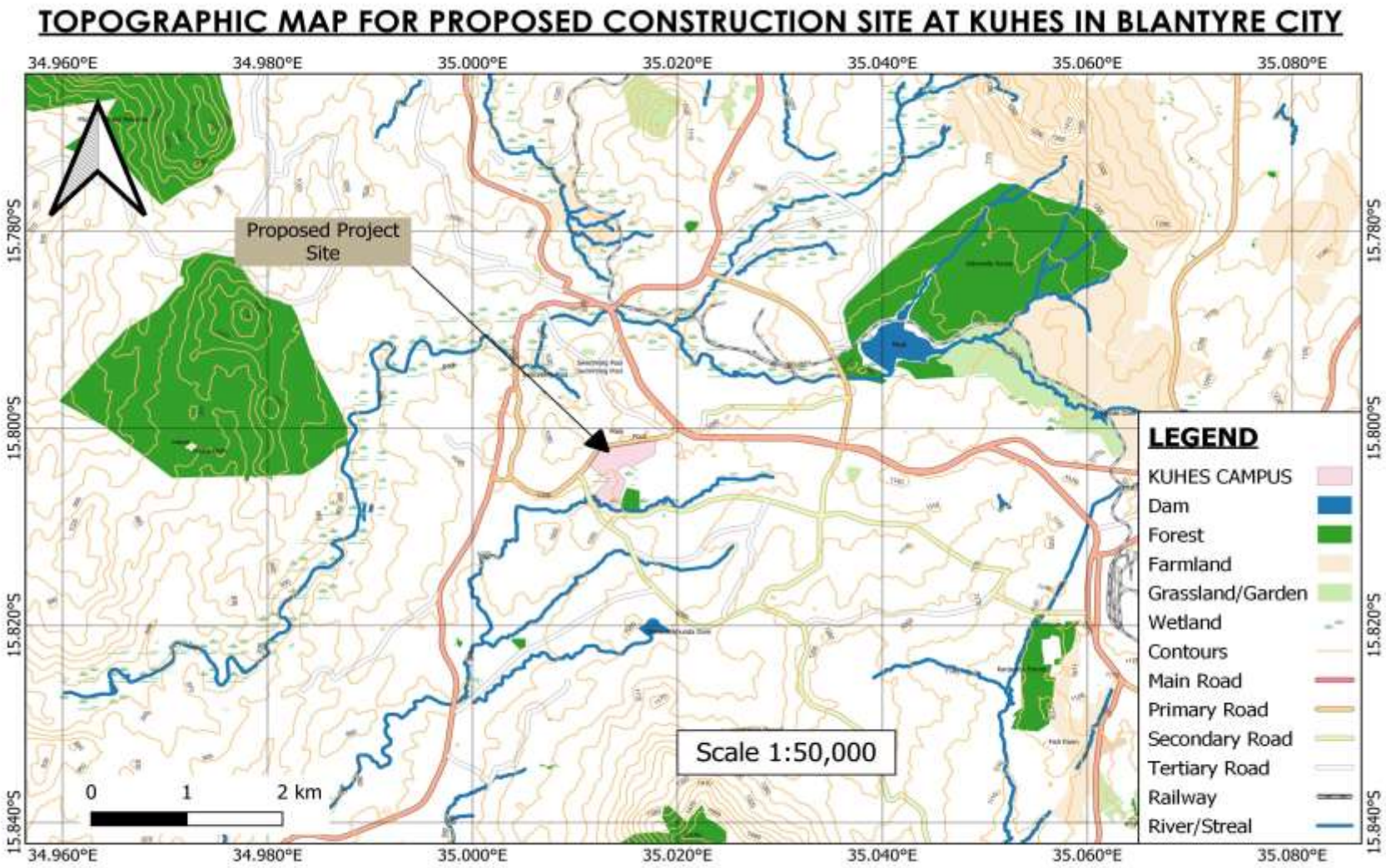
A separate Stakeholder Engagement Plan (SEP) has been prepared for the Project, based on the World Bank's Environmental and Social Standard 10 on Stakeholder Engagement. This ESMP will be disclosed after approval and disclosures have already been done for the SEP and the Environmental and Social Commitment Plan (ESCP) that have been prepared for this project. Key feedback on this ESMP is provided in Annex 4.

Annex 1: Location Maps

A1.1 Topography map showing location o School of Dentistry and innovation centre -KUHeS Blantyre campus



A1.2 Location map of School of Dentistry and innovation Centre -KUHeS Blantyre campus

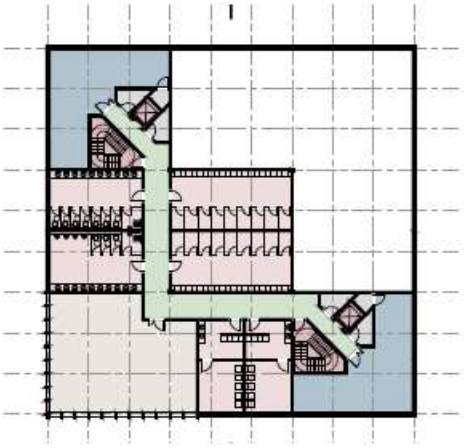


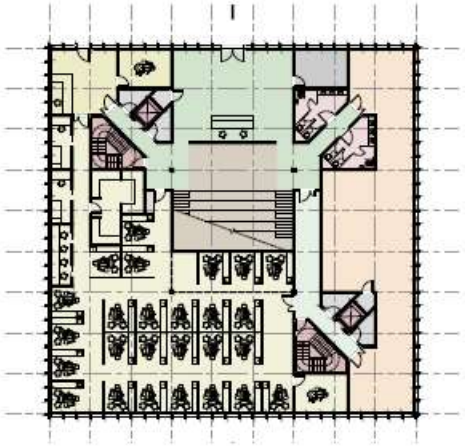
A1.3 Proposed site with other existing facilities

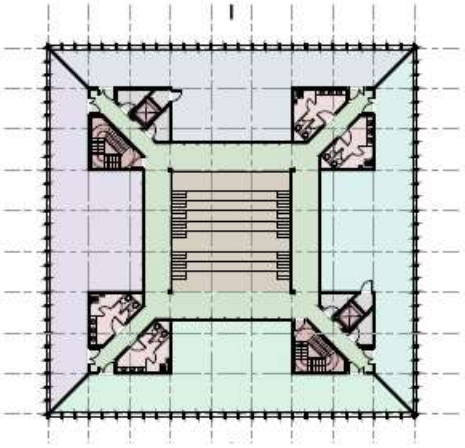
A1.4 Pictures showing status of the site

Annex 2: Proposed layout plans

A2.1 Summary of the structure







KEY

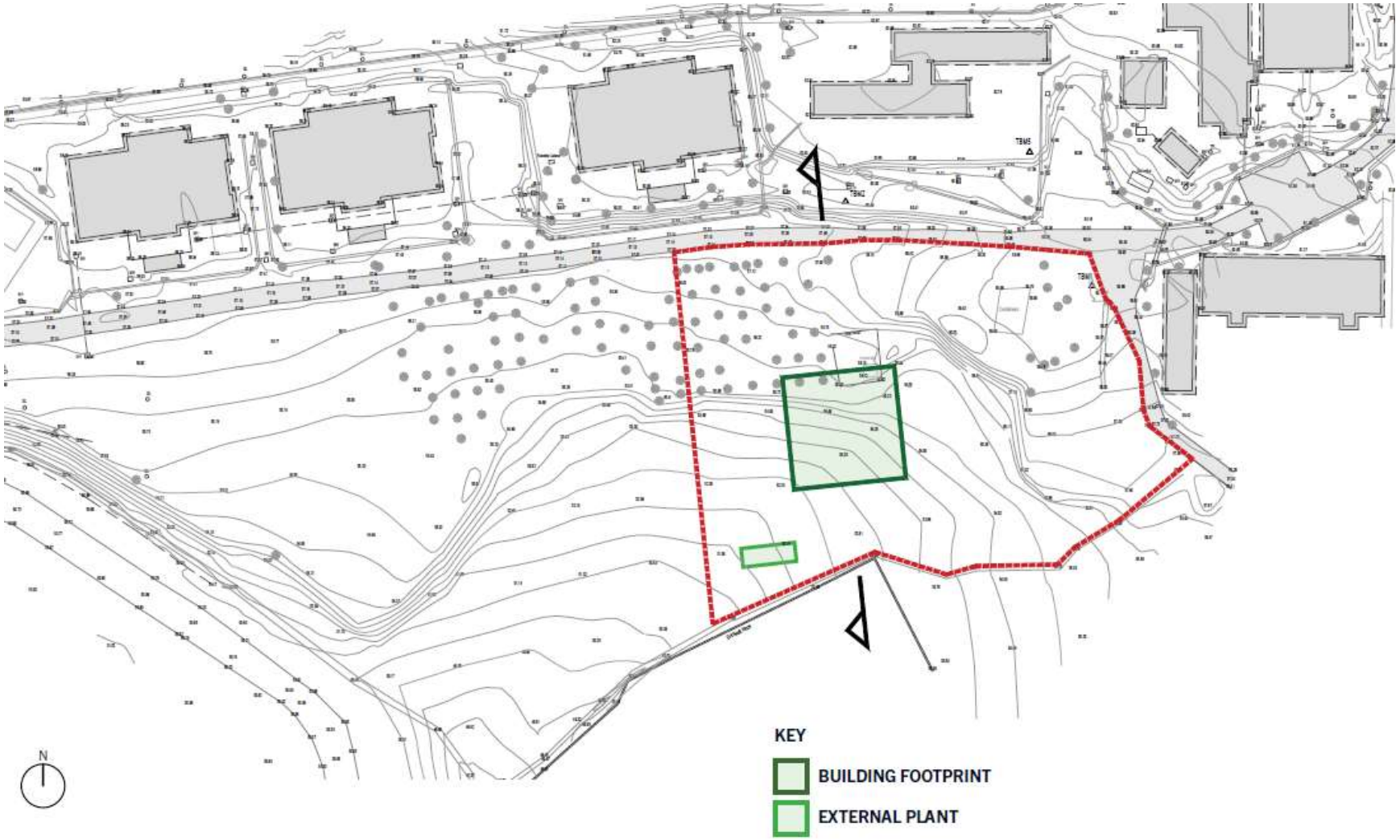
TOILETS & CHANGING	359M2
STAIRS & LIFTS	102M2
STORAGE	100M2
ADMIN OFFICE	14M2
PUBLIC CIRCULATION	463M2
AUDITORIUM	173M2
PLANT	190M2

TEACHING	212M2
DENTAL CLINIC	490M2
COMPUTER LAB	123M2
OFFICE	227M2
PHANTOM HEAD ROOM	133M2
TRAINING / MEETING	301M2
DENTAL LAB	168M2

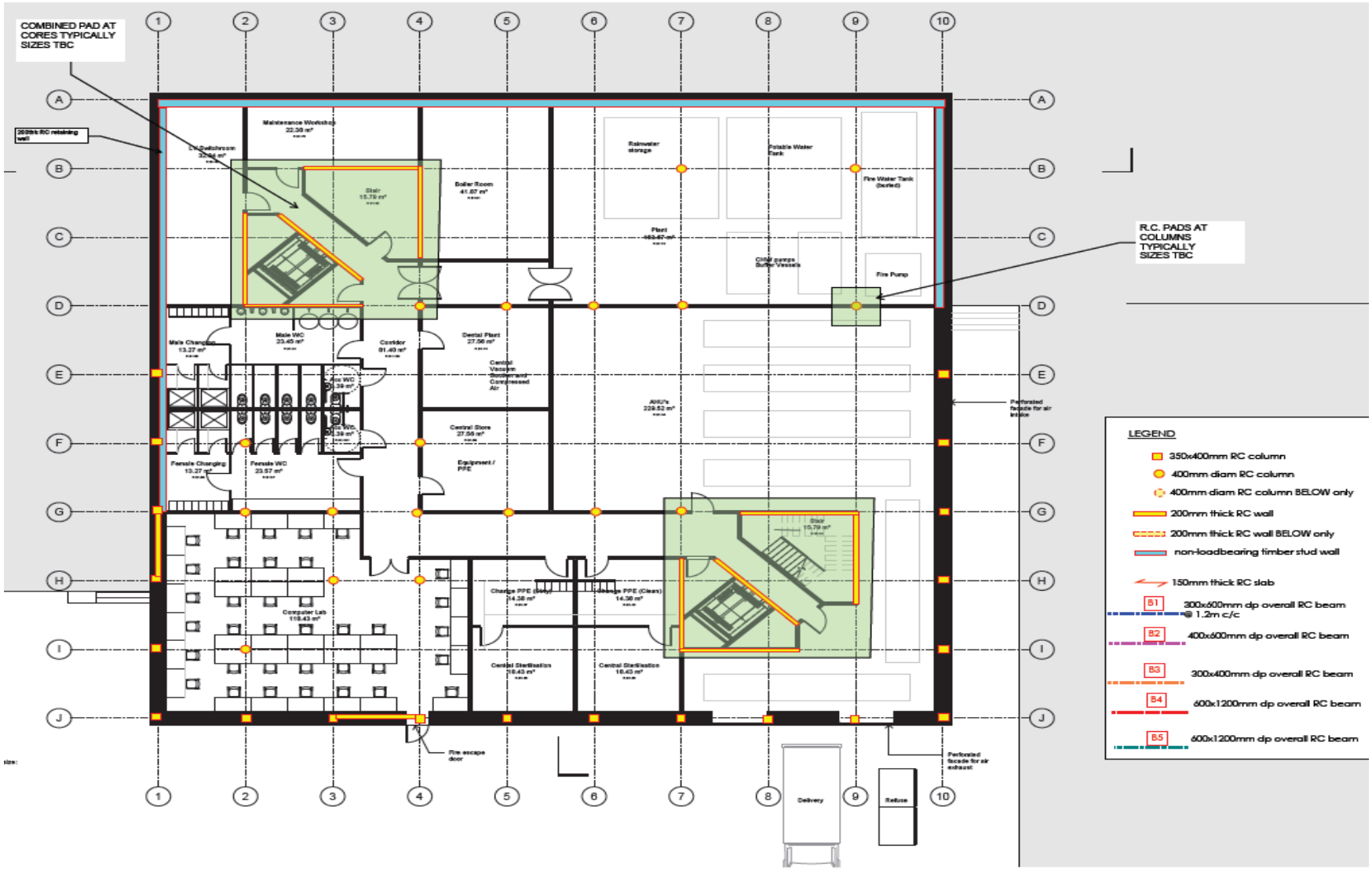
PHASE 1 AREA SUMMARY

TOTAL GROSS AREA	3095M2
TOTAL OPERATIONAL AREA	1841M2
OPERATIONAL VS TOTAL = 60%	

A2.2 Building scheme

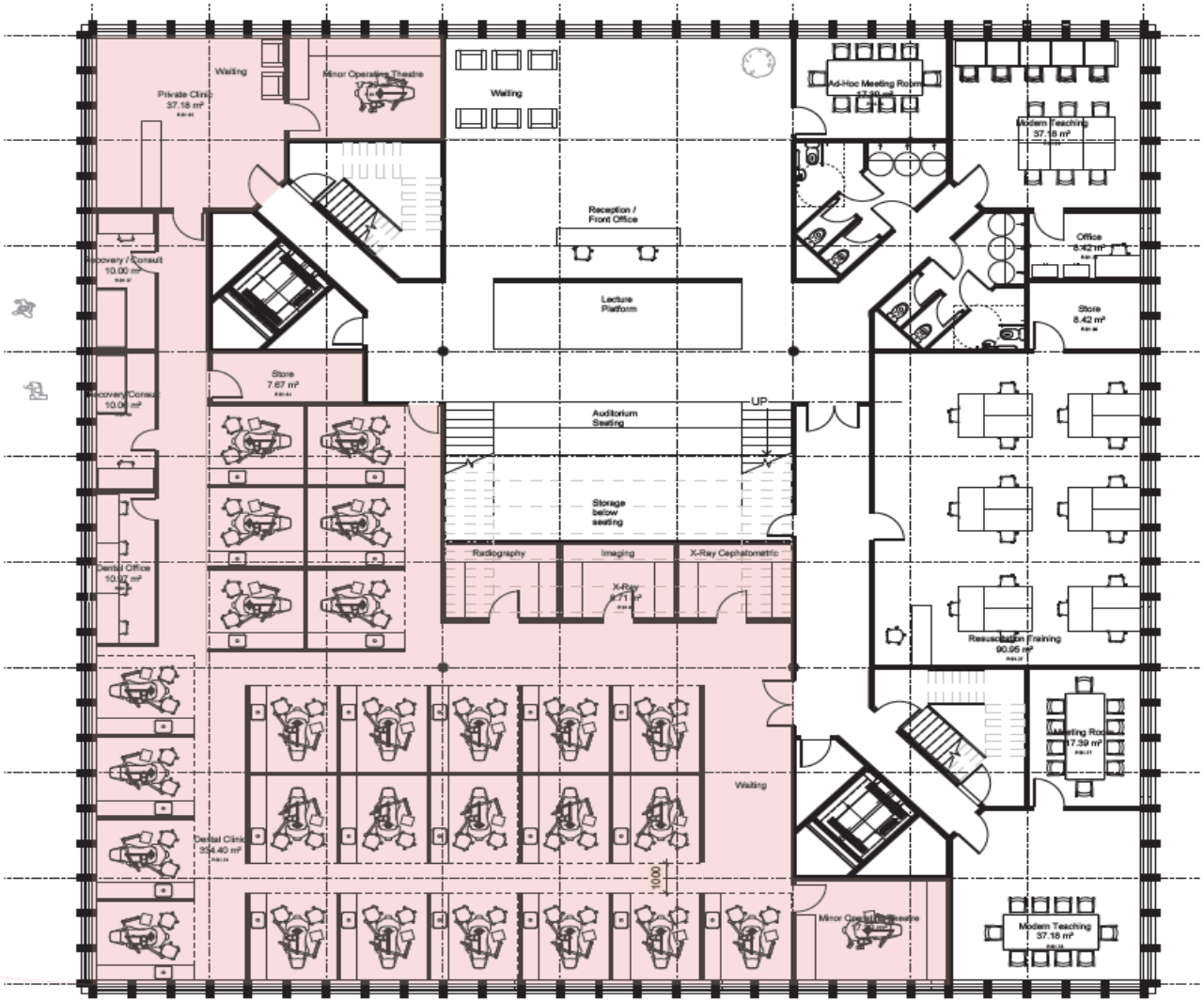


A2.3 Basement floor



A2.4 Ground floor level

KEY SPACES
GROUND FLOOR LEVEL

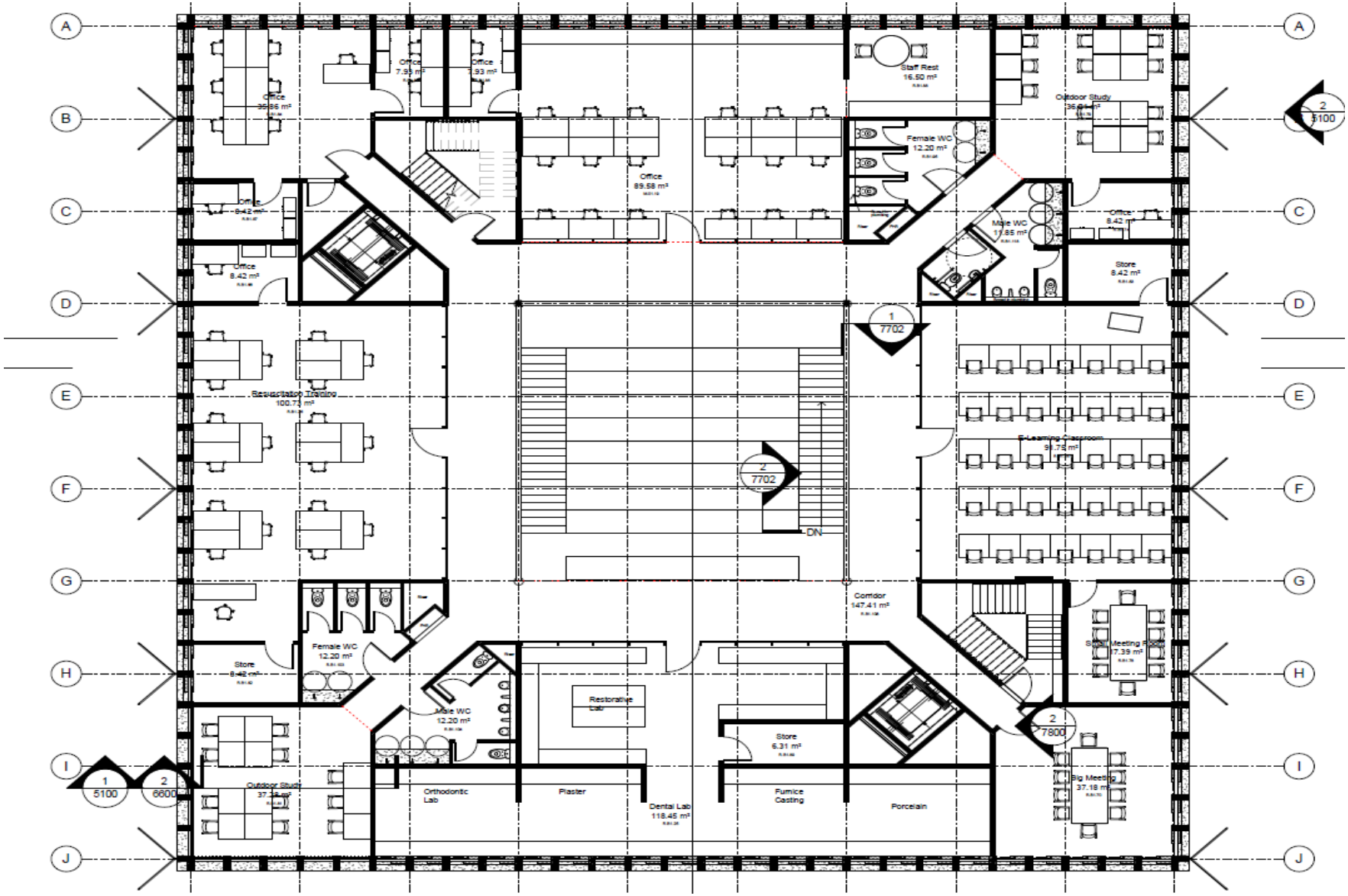


DENTAL CLINIC

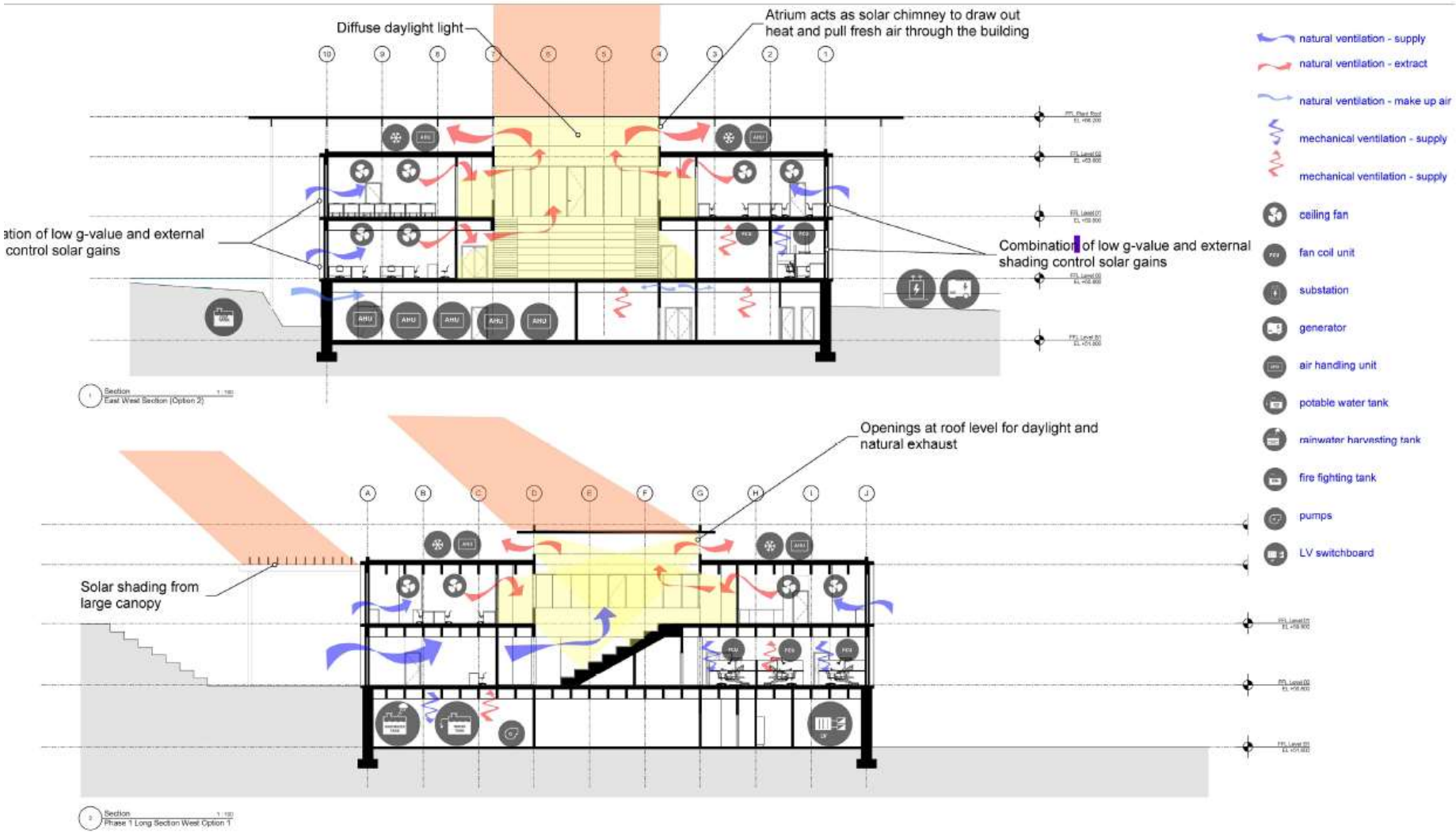
453M2

26 DENTAL CHAIRS + (19+)
2 MINOR OPERATION THEATRE (1)
X RAY PROVISION (SEPARATE)
PRIVATE CLINIC RECEPTION (0)

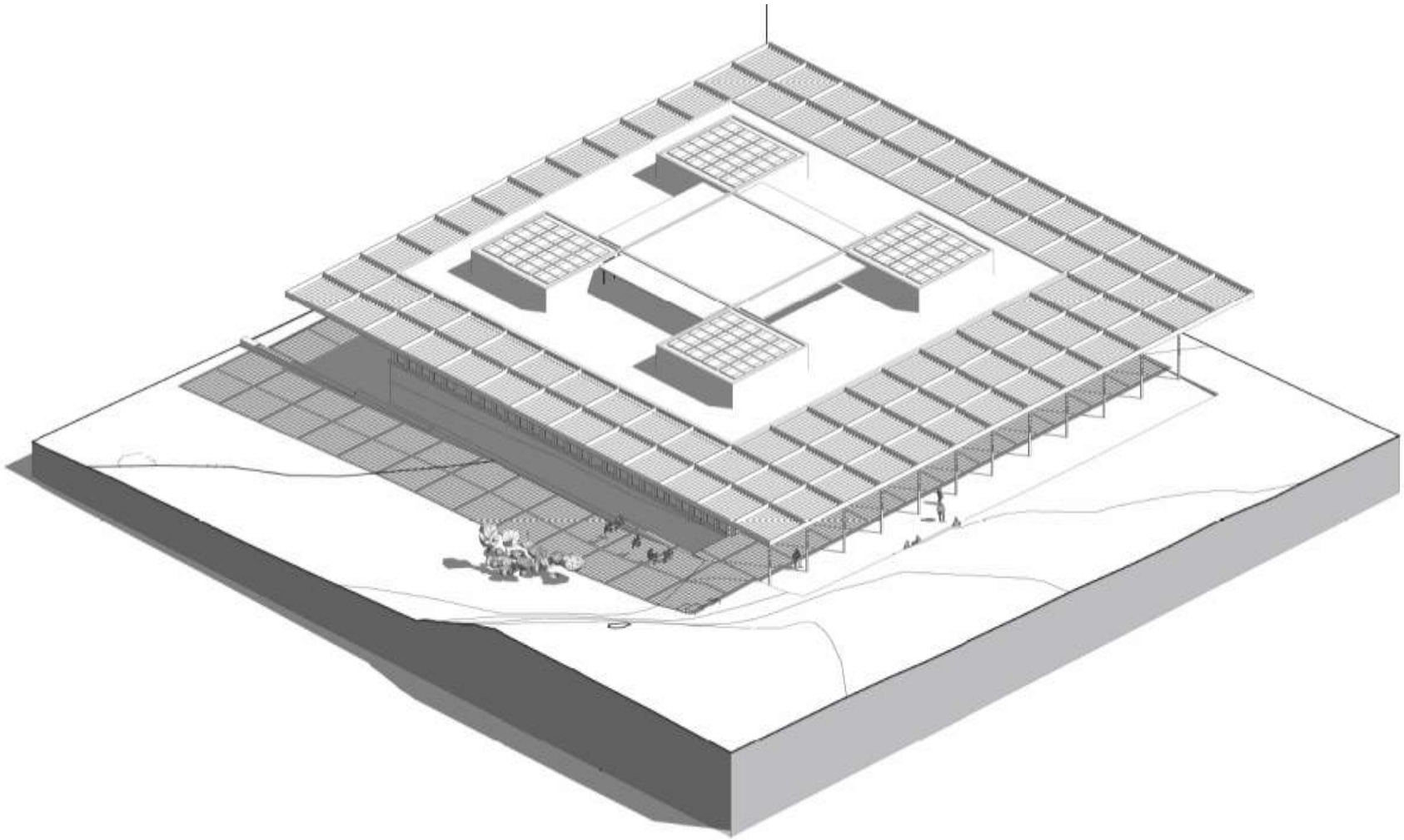
A2.5 First floor level



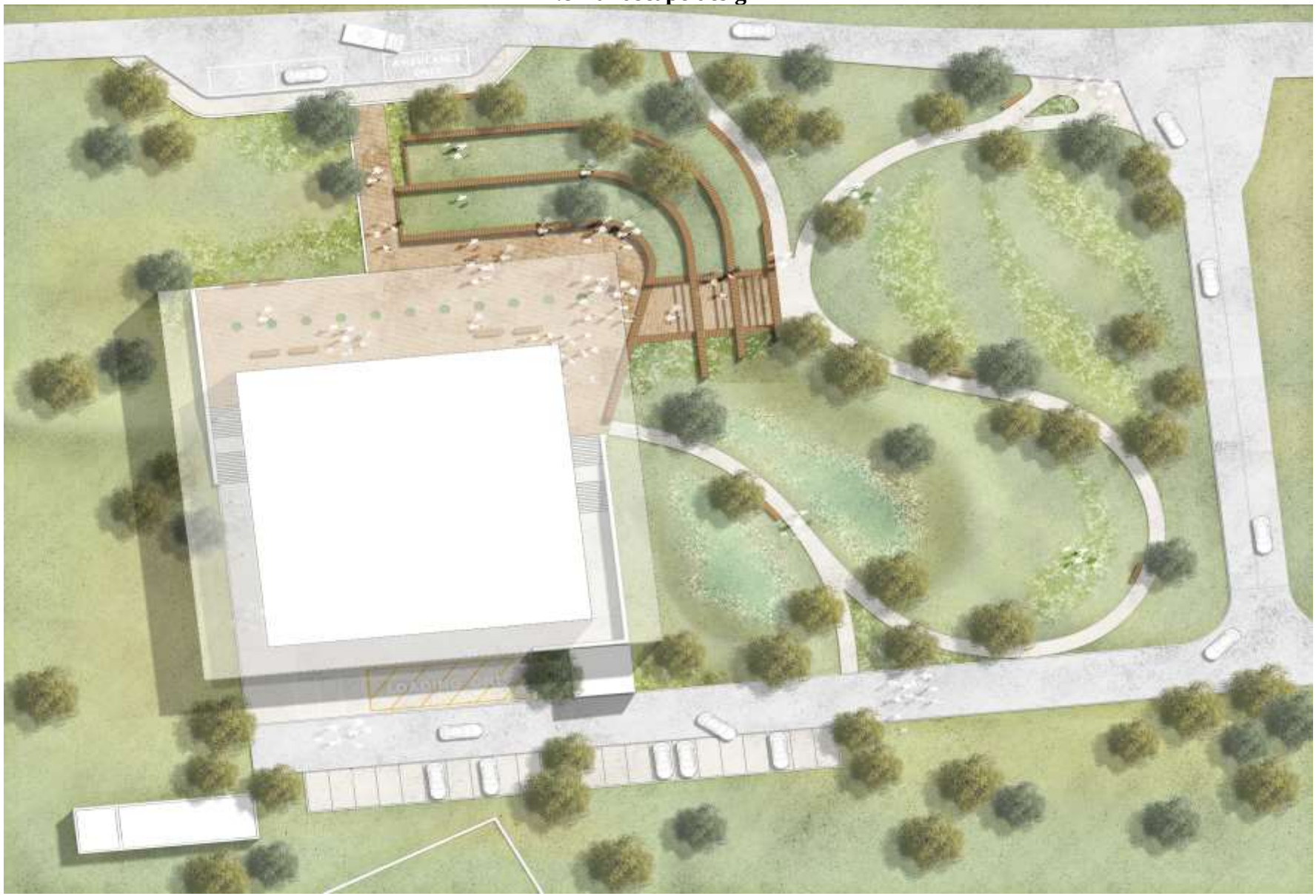
A2.6 Environmental design consideration (air flow)



A2.7 Bird's view of the proposed structure



A2.8 Landscape design



A2.9 Landscape visual

A2.10 Landscape visual

Annex 3: Project Impacts and their Ratings

Construction phase impacts and their ratings

Aspect	Impact	Nature	Impact Assessment Criteria and Scoring						Significance	Significance
			Impact Magnitude	*Impact Extent*	*Impact Reversibility*	*Impact Duration*	*Probability of Occurrence*	*Significance*	(Before Mitigation)	(After Mitigation)
Air Quality	Dust and particulate emissions	Negative	3	2	3	2	3	30	**Low**	**Very Low**
	Increase in combustion emissions	Negative	3	2	3	2	2	20	**Low**	**Very Low**
Noise and Vibration	Increase in construction noise levels	Negative	3	2	3	2	4	40	**Low**	**Low**
	Risk of vibration	Negative	2	1	3	2	2	16	**Low**	**Very Low**
Surface Water	Storm water runoff and increase in flooding	Negative	3	2	3	2	2	20	**Low**	**Very Low**
	Decrease in surface water quality	Negative	1	1	1	1	2	8	**Very Low**	**Very Low**
	Disruption of surface drainage	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Groundwater	Decrease in groundwater quantity due to borehole water use	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Decrease in groundwater quality due to leachate/spills from fuel storage areas.	Negative	1	1	1	1	2	8	**Very Low**	**Very Low**
Waste	Poor waste disposal practices	Negative	3	2	3	2	4	40	**Moderate**	**Low**
Soils and Land Capability	Soil erosion	Negative	1	1	1	1	2	8	**Very Low**	**Very Low**
	Soil compaction	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Soil contamination	Negative	2	2	3	4	2	22	**Low**	**Very Low**
	Loss of access to agricultural land for crop cultivation and livestock grazing	Negative	2	1	1	1	2	10	**Very Low**	**Very Low**
Terrestrial Biodiversity	Direct loss and disturbance of natural habitat and associated flora SCC	Negative	2	2	3	2	2	18	**Low**	**Very Low**
	Establishment and spread of AIS	Negative	2	1	3	2	1	8	**Very Low**	**Very Low**
	Loss and fragmentation of faunal habitat	Negative	2	2	1	2	1	7	**Very Low**	**Very Low**
Heritage	Disturbance to known cultural resources	Negative	3	1	5	5	1	14	**Very Low**	**Very Low**
	Chance-find of cultural resources	Negative	3	2	5	5	2	30	**Low**	**Very Low**
	Conflict in perception of value of heritage resources	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Visual	Potential visual intrusion resulting from large construction vehicles and equipment	Negative	2	2	3	2	2	18	**Low**	**Very Low**

Aspect	Impact	Nature	Impact Assessment Criteria and Scoring						Significance	Significance
			Impact Magnitude	*Impact Extent*	*Impact Reversibility*	*Impact Duration*	*Probability of Occurrence*	*Significance*	**(Before Mitigation)**	**(After Mitigation)**
	Potential visual effect of construction laydown areas and material stockpiles.	Negative	2	2	3	3	3	30	**Low**	**Very Low**
Traffic	Impact of construction vehicles on roads and access roads	Negative	1	2	3	1	2	14	**Very Low**	**Very Low**
	Deterioration of the surrounding road network due to an increase of traffic around the site	Negative	2	2	3	1	2	16	**Low**	**Very Low**
	Transportation of abnormal loads	Negative	2	2	3	1	1	8	**Very Low**	**Very Low**
Social	Economic impacts	Positive	3	3	3	2	4	44	**Moderate**	**High (+)**
	Creation of employment opportunities	Positive	3	2	3	2	4	40	**Moderate**	**High (+)**
	Artisanal skill development	Positive	3	2	5	4	4	56	**Moderate**	**High (+)**
	Disruption on provision of education services	Negative	4	2	3	2	4	44	**Moderate**	**Low**
	Community, health, and safety risk	Negative	4	2	3	4	4	52	**Moderate**	**Low**
	Increased risk to diseases, STIs and HIV and AIDS	Negative	4	3	5	5	4	68	**High**	**Moderate**
	Disruption of sanitary management due to demolition of the incinerator used by female students	Negative	4	3	5	5	4	70	**High**	**Very High (+)**
	Land acquisition and population displacement	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Health and safety of site personnel	Negative	4	2	5	5	4	64	**High**	**Low**
	Influx / in-migration by jobseekers	Negative	2	2	1	2	2	14	**Very Low**	**Very Low**
	GBV and sexual exploitation and abuse	Negative	4	2	3	2	4	44	**Moderate**	**Low**
	Increased Incidences of child labour	Negative	4	3	5	5	4	68	**High**	**Low**

Operational phase impacts and their ratings

Aspect	Impact	Nature	Impact Assessment Criteria and Scoring						Significance	Significance
			Impact Maanitude	*Impact Extent*	*Impact Reversibility*	*Impact Duration*	*Probability of Occurrence*	*Significance*	**(Before Mitigation)**	**(After Mitigation)**
Air Quality	Dust and particulate emissions	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Increase in combustion emissions	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Noise and Vibration	Increase in noise levels	Negative	2	1	3	1	4	28	**Low**	**Low**
	Risk of vibration	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Surface Water	Storm water runoff and increase in flooding	Negative	3	2	3	1	3	27	**Low**	**Very Low**
	Decrease in surface water quality	Negative	3	2	3	2	2	20	**Low**	**Very Low**
	Disruption of surface drainage	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Groundwater	Decrease in groundwater quantity due to borehole water use	Negative	3	2	3	2	2	20	**Low**	**Very Low**
	Decrease in groundwater quality due to leachate/spills from fuel storage areas.	Negative	1	1	1	1	2	8	**Very Low**	**Very Low**
Waste	Poor waste disposal practices	Negative	3	2	2	2	4	36	**Moderate**	**Low**
Soils and Land Capability	Soil erosion	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Soil compaction	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Soil contamination	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Terrestrial Biodiversity	Direct loss and disturbance of natural habitat and associated flora SCC	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Establishment and spread of AIS	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**

Aspect	Impact	Nature	Impact Assessment Criteria and Scoring						Significance	Significance
			Impact Maanitude	*Impact Extent*	*Impact Reversibility*	*Impact Duration*	*Probability of Occurrence*	*Significance*	**(Before Mitigation)**	**(After Mitigation)**
	Loss and fragmentation of faunal habitat	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Heritage	Disturbance to known cultural resources	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Chance-find of cultural resources	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
	Conflict in perception of value of heritage resources	Negative	1	1	1	1	1	4	**Very Low**	**Very Low**
Visual	Improved outlook of the institutions	Positive	4	3	3	4	5	70	**High**	**Very High (+)**
Social	Promotion of teaching and training of labour market relevant skills	Positive	4	3	5	5	4	68	**High**	**Very High (+)**
	Creation of employment opportunities	Positive	4	4	3	4	4	60	**Moderate**	**High (+)**
	Increase enrolment of female students	Positive	4	3	5	4	5	80	**High**	**Very High (+)**
	Increased risk to diseases, STIs and HIV and AIDS	Negative	4	3	3	5	3	45	**Moderate**	**Low**
	Occupational health and safety of learners and staff	Negative	4	2	3	4	4	52	**Moderate**	**Low**
	Security of the campus	Negative	3	2	3	2	4	40	**Moderate**	**Low**
	Impacts for vulnerable people	Negative	3	1	3	4	2	22	**Low**	**Very Low**
	Increased energy and water use	Negative	4	2	3	4	2	26	**Low**	**Very Low**

Decommissioning phase impacts and their ratings

Aspect	Impact	Nature	Impact Assessment Criteria and Scoring						Significance	Significance
			Impact Maanitude	*Impact Extent*	*Impact Reversibility*	*Impact Duration*	*Probability of Occurrence*	*Significance*	**(Before Mitigation)**	**(After Mitigation)**
Air Quality	Dust and particulate emissions	Negative	4	2	3	1	3	30	**Low**	**Low**
Noise	Increase in construction noise levels	Negative	4	2	3	1	3	30	**Low**	**Low**
Surface Water	Contamination and runoff	Negative	4	2	5	5	3	48	**Moderate**	**Low**
	Disruption of surface drainage	Negative	4	3	5	5	3	51	**Moderate**	**Low**
Groundwater	Decrease in groundwater quality due to hydrocarbon spills from moving equipment	Negative	4	3	5	2	3	42	**Moderate**	**Low**
Waste	Poor waste disposal practices	Negative	3	2	3	2	4	40	**Moderate**	**Low**
Soils and Land Capability	Soil erosion	Negative	4	2	3	4	3	39	**Moderate**	**Low**
	Soil compaction	Negative	3	2	3	3	3	33	**Moderate**	**Low**
	Soil contamination	Negative	2	2	3	4	3	33	**Moderate**	**Low**
Terrestrial Biodiversity	Establishment and spread of AIS	Negative	2	3	5	3	3	39	**Moderate**	**Low**
Visual	Potential visual scarring of the landscape because of site clearance and earthworks	Negative	4	2	3	5	3	42	**Moderate**	**Low**
Traffic	Impact of construction vehicles on roads and access roads	Negative	3	2	3	2	3	30	**Low**	**Low**
	Impact on school children due to proximity of the site to the primary school	Negative	4	2	5	5	4	64	**High**	**Low**
Social	Loss of employment	Negative	3	4	1	2	3	30	**Low**	**Low**
	Community, health and safety risk	Negative	4	2	3	4	4	52	**Moderate**	**Low**
	Health and safety risk for personnel	Negative	4	1	3	2	4	40	**Moderate**	**Low**

Annex 4: Stakeholder Consultations

A4.1 Stakeholder Consultation Checklist for the ESMP

1. What type of environmental and social positive impacts will result from this proposed project and how will these impacts be enhanced (State positive impacts for each phase of construction and operation)?
2. What type of environmental and social negative impacts should be expected during the construction of the proposed project and what are the proposed mitigation measures?
3. What type of environmental and social negative impacts should be expected during the operational and maintenance phase of the proposed project and what are the proposed mitigation measures?
4. Who else should be consulted regarding the environmental and social impacts of the proposed project?

A4.2 Stakeholder Consultations

Stakeholder participation involved engaging institutions within the project impact area and selected public institutions who expressed their views about the proposed projects. The stakeholder participation process tried to ensure that due consideration will be 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 proposal and its likely effects.
- Canvass their inputs, views, and concerns; and
- Take account of the information and views of the public in the EIA and decision making.

The key objectives of stakeholder involvement were to:

- Facilitate consideration of alternatives, mitigation measures and trade-offs (if any).
- Ensure that important impacts are not overlooked, and benefits are maximized.
- Reduce chances of conflict through early identification of contentious issues.
- Provide an opportunity for the stakeholders to influence project design in a positive manner (thereby creating a sense of ownership of the proposal).
- Improve transparency and accountability of decision-making; and
- Increase public confidence in the Environmental and Social Impact Assessment process.

Stakeholder participation in this project was facilitated through interviews and was guided by a checklist of questions that are presented in following sections.

A4.3 Stakeholders Comments

The comments stakeholders raised were collated and analysed to see which issues are of concern and should be addressed through the ESMP and are presented in Box below. The following subsections list these stakeholders and the comments they raised, whilst referencing to the impact assessment section and the proposed mitigation measures to elaborate how they contributed to the formulation of the ESMP of this report. This was done in respect to the fact that public concern is fundamental to the delineation and management of the project's significant risks.

Consultation with Blantyre District Environment Sub-committee

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
Positive Impacts	
The project will create employment opportunities for individuals in the community, leading to an improvement in their livelihoods. By providing job opportunities during both the construction and operational phases	Gender equality should be promoted, and both men and women should equally benefit from the project.
	Salaries and wages should me above the government recommended minimum wage
	workers should not be below the age of 18 years
	Workers should be aware of their pay day.
There will be an increase in business opportunities for individuals residing near the project area and during the construction phase thereby providing local entrepreneurs with the opportunity to supply and meet these needs. For instance, selling vegetables can be a viable business opportunity as workers and construction personnel require food	They should ensure that they are selling their goods at an affordable price
Negative Impacts	
There may be increased spread of HIV/AIDS and STIs among workers and students due to engaging in sexual activities.	Implementing an HIV /AIDS prevention plan
	Workers and students should be sensitized on HIV AIDs and STIs issues
	Provision of condoms and contraceptive methods should be ensured
The project will contribute to an increase in gender-based violence and harassment among both workers and students.	Sensitization on gender-based violence and harassment issues should be conducted
	People should be encouraged to express their views and be aware of their rights regarding issues of gender-based violence and harassment.
	Reporting gender-based violence and harassment issues to relevant authorities
There will be traffic congestion due to the movement of machines and people on the project site	Provision of adequate road signs to ensure clear guidance and promote safety on the roads
	Developing a traffic management plan
There will be air pollution and dust emissions from vehicles and machines working on the project site.	Creating an alternative access way away from hostels and classrooms to minimize disruptions and ensure the smooth movement of people without causing inconvenience or disturbance to the daily activities

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
	Suppressing dust by spraying water along the pathways as an effective measure to mitigate dust pollution
	Barricading the work area as a safety measure to prevent unauthorized access and protect individuals from potential hazards
Increased number of accidents on the site due to the movement of machines and workers.	Providing a checklist for all machines is essential to ensure their proper functioning and maintenance
	Providing personal protective equipment (PPE) to ensure the safety and well-being of workers
	Implementing clear and visible signage in the work area for safety.
	Observing speed limits to ensure safety in the work area.

Consultation with KUHeS Project Staff committee

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
Positive Impacts	
The project will contribute to an increase in student enrolment, encouraging more individuals to pursue their studies.	Ensuring a fair selection process for both men and women is essential to promote gender equality and equal opportunities for all individuals involved in the project
	The program can be offered through online distance learning, providing accessible and flexible educational opportunities for individuals to participate and engage remotely
	The curriculum should be reviewed to ensure its relevance, effectiveness, and alignment with current educational needs
The project will create employment opportunities during both the construction and operational phases, resulting in increased job opportunities for individuals	The project should ensure that no workers below the age of 18 are employed, in compliance with legal regulations and standards regarding minimum age requirements for employment.
	Ensuring the recruitment process is free from corruption to maintain transparency, fairness, and equal opportunities
	There should be no gender bias during the recruitment process, promoting equal opportunities and fair treatment for all people regardless of their gender
The project will enhance the literacy level of the dentistry department nationwide, contributing to improved	Ensuring that the dental department has sufficient equipment and experienced personnel to provide quality dental services and meet the healthcare needs of the community effectively

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
knowledge and skills in the field of dentistry across the country	Incorporating practical sessions to enhance the learning experience and skills development within the dental department, allowing students to gain hands-on experience and apply theoretical knowledge in a practical setting
	Conducting trainings to enhance the knowledge, skills, and competencies of the dental department's personnel, ensuring they are equipped with the necessary tools to deliver high-quality dental services and stay updated with the latest advancements in the field
Community engagement will be enhanced in the area as community members will have opportunities to interact during the construction phase and through exhibitions during operation, fostering increased interaction and participation	People should be given the opportunity to volunteer, as it allows individuals to contribute their skills, time, and efforts towards the project's goals, fostering community involvement and creating a sense of ownership
	Employing people from the community can enhance a sense of ownership and foster a stronger connection between the project and the local residents and ensuring that the project benefits the very people it serves
The project will establish a dental clinic that will contribute to the improvement of health services for both students and the community, ensuring access to quality dental care.	The community members should have access to services at a fair and affordable price, ensuring that the project's benefits are accessible to all individuals within the community, regardless of their financial means.
	Employing skilled personnel is essential to ensure the project's success and efficiency. Hiring individuals with the necessary expertise and qualifications enables the project to be carried out effectively, resulting in high-quality outcome
The project will improve its financial sustainability through the enrolment of students, as they will contribute by paying fees, ensuring a steady source of income.	Increasing enrolment for both men and women is crucial to promote gender equality and equal access to educational opportunities
	Creating space for individuals to conduct their research at the laboratories is essential to facilitate scientific exploration and innovation By providing well-equipped and accessible research facilities, the project enables researchers to pursue their investigations, contribute to income generation
Negative Impacts	
The project's activities may result in increased levels of dust and noise around the campus, potentially raising the risk of respiratory tract infections and related diseases	Water bowser should be used to suppress the dust
	Choosing a place away from classrooms and hostels to do the drop-offs
There will be traffic disturbances due to the ongoing construction activities at the campus, impacting the flow of vehicles and potentially causing	Creating access ways or alternative routes to reduce traffic
	Signage should be placed along the streets to avoid accidents and guide traffic around

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
delays or inconvenience to commuters and surrounding areas.	
The ecosystem surrounding the project area may be disrupted as a result of careless cutting down of trees and other vegetation.	Re-planting trees were they have been cut
The project may potentially lead to an increase in the prevalence of HIV/AIDS and sexually transmitted infections (STIs) among workers and students.	Conducting sensitization meetings on preventative measures for HIV/AIDS and STIs
	Providing condoms to both workers and students is important in promoting safe sexual practices and reducing the risk of HIV/AIDS and STIs by making condoms readily available,
	Ensuring that HIV-infected workers have access to antiretroviral therapy on their scheduled dates
There is a potential for conflicts to arise between workers and students during the construction period of the project. This could be due to various factors such as noise, disruptions, limited space, or differing needs and priorities.	The establishment of a grievance redress committee to handle such issues is important because it can provide a platform for workers and individuals involved in the project to raise concerns, report grievances, and seek resolution for any conflicts or issues that may arise
	Workers should adhere to a code of conduct and disciplinary measures should be implemented if they fail to comply with the required standards

Consultation with KUHeS Students Representative Committee (SRC)

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
Positive Impacts	
The project will reduce the number of overcrowded classrooms and increase the enrolment of students in the dental department by creating additional classrooms and facilities and the project will provide a conducive learning environment for dental students	Making sure that student are having more time for their practicals
	Providing enough learning materials and equipments for dental students
	Providing internships for students during holidays
The proximity of the dental classes to the students' hostels will help reduce the distance they need to travel, resulting in increased convenience and accessibility. This close proximity is expected to enhance students' interest and motivation in the field of dentistry	Making sure that classes are open at all times to access them for studies and discussions
	The dental clinic will also help students that get lazy to access dental medical help at the Queen Elizabeth Hospital since its within the campus
	Putting more lights along the streets

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
The implementation of the project will contribute to enhancing the security of students on the campus, particularly regarding issues of theft. With improved security measures in place, students will experience a safer and more secure environment conducive to their academic	More guards should be placed along the streets for maximum security
The project will contribute to the beautification of the campus, especially considering that the project site is currently being used as a dump site.	Maintaining the existing designs of buildings
	Re-planting trees where they will be cut and planting more flowers and grass
More community members will be employed in the project area during the construction phase, and this employment opportunity will continue even after the project is completed. This will greatly contribute to improving their livelihoods and economic well-being	Making sure that both men and women are employed is essential to promote gender equality and ensure equal opportunities in the workforce
	No children below the age of 18 should be employed, as it is important to prioritize their safety, well-being, and educational development.
Small scale businesses will be improved on the project site since people will be buying goods from the community members such as vegetables, ,mandasi	Selling goods at an affordable price in ensuring accessibility and affordability
The project will contribute to the improvement of the local economy as the dental clinic will attract visitors and generate income from the services provided	Making sure that medical consultation prices are fair is important for ensuring equitable access to healthcare services
	Having enough dental equipment for providing quality dental care and ensuring efficient treatment processes.
	Introducing dental camps during holidays for secondary school students would provide an opportunity for them to receive dental care, education, and preventive services there by generating income
Negative Impacts	
The project may potentially lead to an increase in incidents of sexual harassment and abuse among both workers and students	Workers should have a code of conduct, and these issues should be addressed
	The work area should be fenced for proper security.
	Workers should be sensitized on issues of gender-based violence
There will be an increase in noise due to the movements of heavy machines around the campus, which may cause disruptions during classes	The working area should be barricaded to avoid attracting students' attention and to reduce noise
	An access way should be created away from the hostels to ensure convenience and minimize disruptions

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
The project will result in an increase in dust on campus, which may contribute to an elevated risk of respiratory tract infection diseases	A water bowser should be used to effectively suppress the dust and minimize its impact on the surrounding area
There may be an increase in security concerns on campus due to the influx of new individuals involved in the project activities.	Workers should wear personal protective equipment (PPE), such as work suits, to ensure easy recognition and promote safety in the work environment.
	Reducing the construction period will help minimize the overall impact of the project
There may be an increase in air pollution due to the emission of gases from the machines, which can have negative effects on the environment.	Ensuring that all machines are in good condition is crucial for the smooth progress of the project and the safety of workers
Due to the movement of machines around the campus, there is a possibility of causing structural damage and creating cracks in some buildings	Creating access routes that are separate from buildings is important to ensure the safety of the structures and the people within them.
The project may lead to an increase in conflicts between workers and students due to various factors such as changes in differing priorities.	Forming a grievance redress committee is essential to provide a platform for addressing and resolving any concerns, complaints, or disputes that may arise during the project
The project may contribute to an increase in the prevalence of HIV/AIDS, STIs, and other communicable diseases. This could be due to various factors such as an influx of workers and students from different areas, changes in social dynamics, and increased exposure to potential risks.	Workers should be sensitized on methods of preventing sexually transmitted diseases (STDs).
	Condom distribution among workers and students is an effective strategy to promote safe and responsible sexual practices
	Creating awareness through posters and flyers in disseminating information and educating both workers and students about various topics
The project may pose challenges in waste management because the site was previously used as a dump site.	Placing waste bins in open spaces for waste management
	Constructing a new incinerator to replace the existing one is a viable solution for waste management

Consultation with KUHeS Students Body

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
Positive Impacts	
Improved practical experience for students in dentistry department	Students should be involved to gain skills and experience

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
The facility will offer employment opportunity for graduating students	The institution should consider new graduates when employing personnel at the clinic as well as academic staff
The project will provide more teaching space which is currently a huge problem at the institution.	The teaching spaces should be fully furnished and all equipment provided and accessible for all
Reduced risk of theft on the proposed area as it used to be a hiding spot	There should be enough lighting around the building to increase visibility of the whole area
	Construct a fence around the building
The project will provide employment opportunities for the local community	Ensure that job opening are advertised and there is transparency when employing people
	Offer competitive wages to employees
The project will boost small scale businesses on campus i.e. food stuff and other amenities that are found on campus	Offer competitive wages to employees
There will be improved access to dentistry services for the surrounding areas and Blantyre in general	The cost of accessing the services should be fair so that most people can afford
Negative Impacts	
There is a big potential for noise pollution which may disrupt academic activities	The activities should be restricted to daytime
There will be increased dust emission	The site should be sprayed with water to suppress dust
Influx of workers will increase risk of theft	Workers should be sensitised and warned against stealing things on campus
	The site should have enough security personnel to search the workers
	The workers should be restricted from accessing other areas of the campus apart from the worksite
Risk of the incinerator being close to the site	The students were told that the incinerator will be relocated
Increased risk of sexual relations between students and workers	The workers should sign code of conduct and those found should be punished
There will be increased risk of traffic congestion on campus	There should be signage to reduce the speed and also put up speed humps in strategic places
There is a footpath close to the proposed site which may be at risk of being closed to pave way for the project	The project should consider leaving the path to allow students to use it because it is a short route for students who stay at nearby houses
Disruption of habitat for flora and fauna including fruit trees that are endowed on the site	The site should be re-vegetated to maintain the greenery that was there

ISSUES RAISED	SUGGESTED ENHANCEMENT /MITIGATION MEASURES
Loss of carpark space as part of the proposed site is used for such a purpose	There should be a 'No Parking' signage to deter vehicles from being parked close to the site

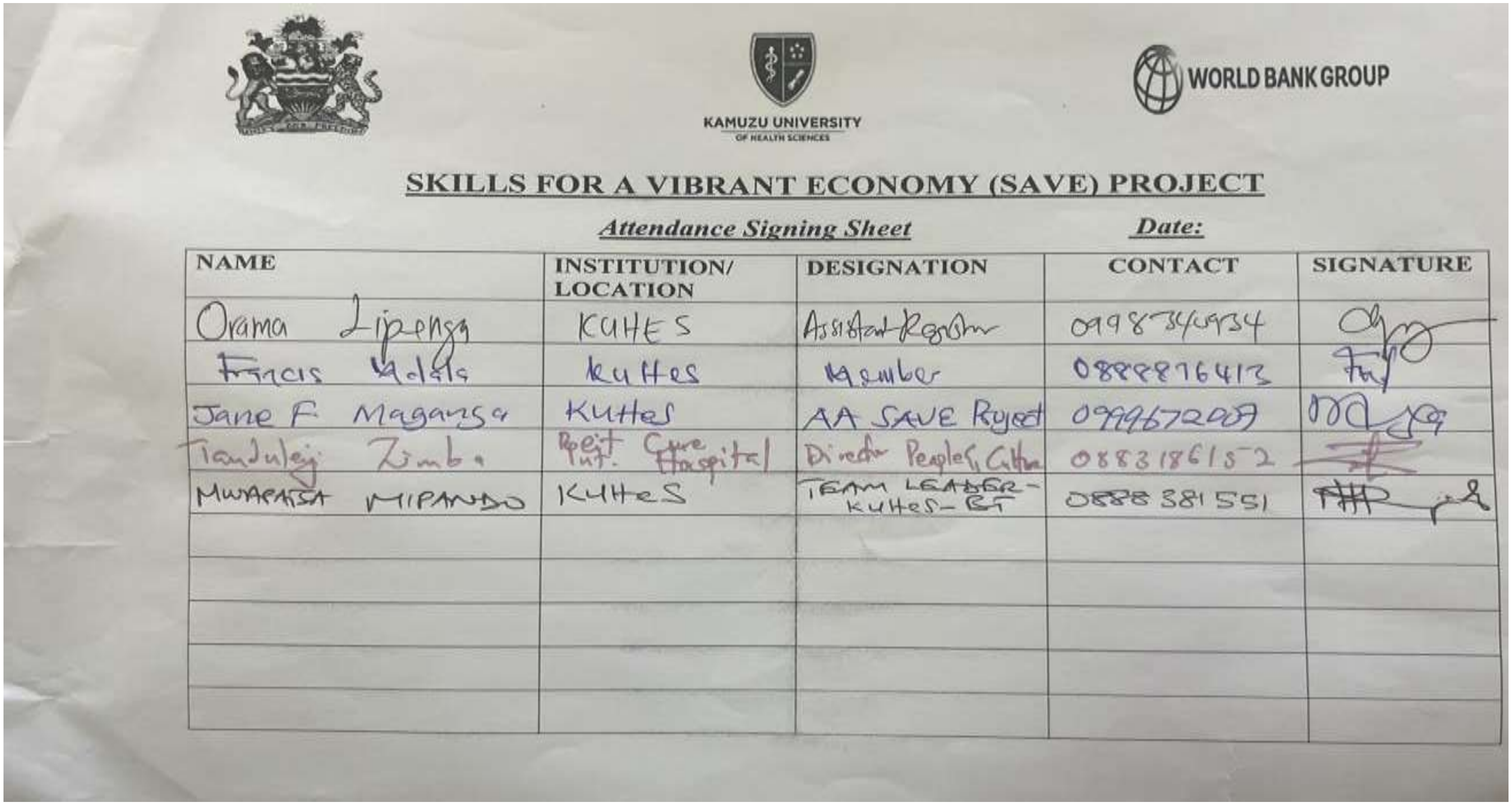
A.4.4 Consultation meeting with GRM committee

A4.5 Consultation with Blantyre District Council

A4.6Consultation with Students Body

Annex 5: Evidence of Public Consultations

A5.1 College Staff FGD Participants (GRM committee)



KAMUZU UNIVERSITY OF HEALTH SCIENCES

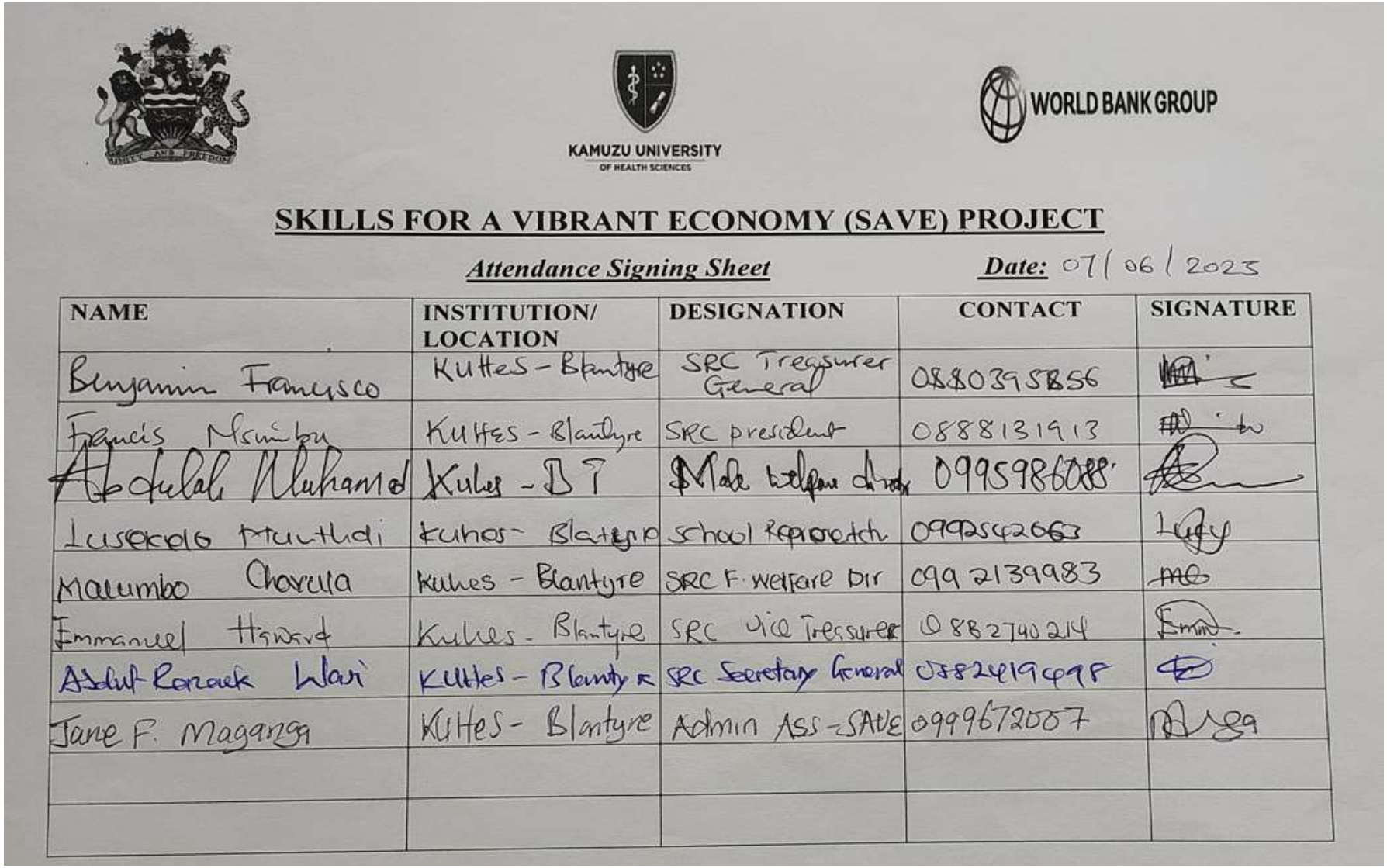
WORLD BANK GROUP

SKILLS FOR A VIBRANT ECONOMY (SAVE) PROJECT

Attendance Signing Sheet ***Date:***

NAME	INSTITUTION/ LOCATION	DESIGNATION	CONTACT	SIGNATURE
Orama Lipenga	KUHES	Assistant Registrar	0998340934	
Francis Ndala	KuHes	Member	0888876413	
Jane F Maganga	KuHes	AA SAVE Project	0999672009	
Tandulaji Zimba	Rapid Int. Care Hospital	Director Peoples Catholic	0883186152	
MWAPATSA MIPANDO	KUHeS	TEAM LEADER - KUHES-BT	0888381551	

A5.2 Students FGD Participants



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SKILLS FOR A VIBRANT ECONOMY (SAVE) PROJECT

Attendance Signing Sheet ***Date:*** 07/06/2023

NAME	INSTITUTION/ LOCATION	DESIGNATION	CONTACT	SIGNATURE
Benjamin Francisco	KUHeS - Blantyre	SRC Treasurer General	0880395856	
Francis Msimbu	KUHeS - Blantyre	SRC president	0888131913	
Abdulahi Muhamad	Kuhes - BT	Male welfare dir	0995986088	
Lusekelo Mwithdi	Kuhes - Blantyre	School Representative	0992542063	
Malumbo Chavula	Kuhes - Blantyre	SRC F. welfare Dir	099 2139983	
Emmanuel Howard	Kuhes - Blantyre	SRC vice Treasurer	0882740214	
Abdul-Razack Wari	KUHeS - Blantyre	SRC Secretary General	0882419495	
Jane F. Magangi	KUHeS - Blantyre	Admin Ass - SAVE	0999672007	

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Attendance Signing Sheet ***Date:***

NAME	INSTITUTION/ LOCATION	DESIGNATION	CONTACT	SIGNATURE
IRON KONDWANI	KUHES	Student	0991119473	
Patrick Misomali	Kuhes	student	0888163419	
Francis Banda	KUHES	Student	0886244110	
Evans Ngwale	KUHES	Student	0882712956	
Jacob Ndalema	KUHES	Student	0883507954	
Carlos Kapito	KUHES	Student	0881048347	
Alfred Banda	KUHES	student	0881234244	Alfred
Steven Chetsyika	KUHES	student	0880333290	

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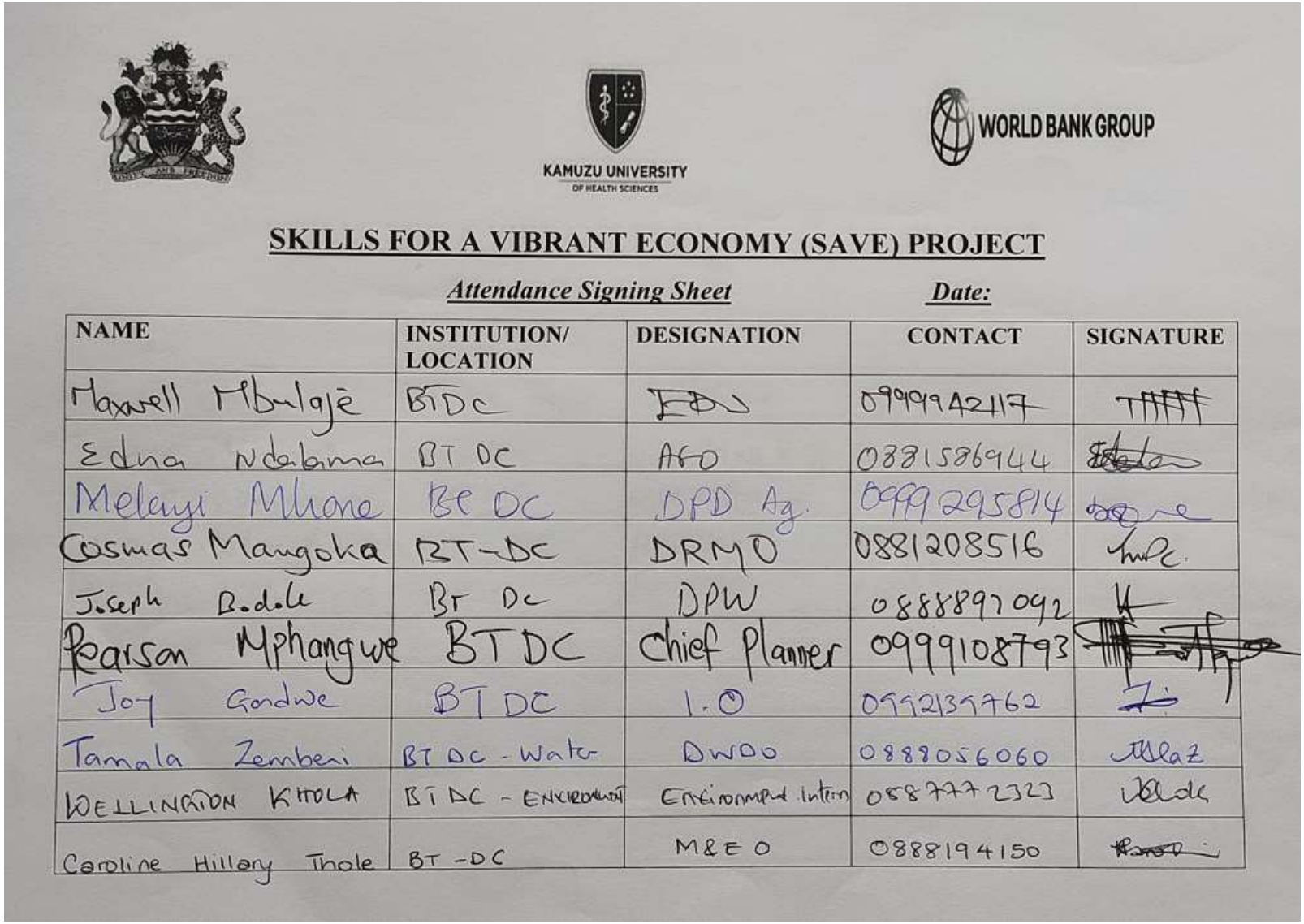
Attendance Signing Sheet ***Date:***

NAME	INSTITUTION/ LOCATION	DESIGNATION	CONTACT	SIGNATURE
Joyce Chisale	KUHES	MLS Student	0994646654	
Deborah Mandaula	KUHES	MBBS student	0998533033	
Manietta Lesson	KUHES	Physio student	0992614088	
Kettie Hauli	KUHES	MLS 4 student	0885303022	
MARIA BILLIAT	KUHES	PHARMACY STUDENT	0884482974	
MARTHA CASSIM	KUHES	PHYSIOTHERAPY STUDENT	0883635044	
Leah Gawani	KUHES	PHARMACY	0990351460	

A5.3. Blantyre District Council



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SKILLS FOR A VIBRANT ECONOMY (SAVE) PROJECT

Attendance Signing Sheet ***Date:***

NAME	INSTITUTION/ LOCATION	DESIGNATION	CONTACT	SIGNATURE
Maxwell Mbulaje	BTDC	EDO	0999942117	
Edna Ndabama	BT DC	AEO	0881586944	
Melayi Mhone	BT DC	DPD Ag.	0999295814	
Cosmas Mangoka	BT-DC	DRMO	0881208516	
Joseph Bodole	BT DC	DPW	0888897092	
Pearson Mphangwe	BT DC	Chief Planner	0999108793	
Joy Gondwe	BT DC	I.O	0992139762	
Tamala Zembeni	BT DC - Water	DWDO	0888056060	
WELLINGTON KHOLA	BT DC - ENVIRONMENT	ENVIRONMENTAL INTERN	0887772323	
Caroline Hillary Thole	BT -DC	M&E O	0888194150	

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Attendance Signing Sheet ***Date:***

NAME	INSTITUTION/ LOCATION	DESIGNATION	CONTACT	SIGNATURE
Olive Vokhima	BT-DC Agr	LRCO	0884900543	
Felix Khama	BTDC	Supporting staff	0881350738	
Fatsaranwo Dzungomura	DCCMS	Met officer	0888855033	
Lizzie Gabriel	BCC	Planner	0884831895	L. Gabriel.
Alijeao Nyemer	BCC	ADHSS	0881934764	

Annex 6: GBV, SEA and SH Management Plan

Prevention of GBV,SEA and SH is a multifaceted effort which should deal with or focus on:

1. women empowerment or agent of change
2. women participation and capacity to influence decision making
3. women economic empowerment
4. increased access to sexual and reproductive health and rights
5. incorporate men and boys in efforts (as perpetrators, victims and agents of change)
6. social gender norms and behaviour transformation (challenging gender stereotyping that perpetuate GBV,SEA)

The specific prevention measures have been included in a GBV,SEA and SH Management plan to ensure the implementation of actions in this regard and to allow for close monitoring of the contractor.

Activities	**Action party**	**Responsibilities**
Stakeholder engagement	KUHeS PIU; District Social Welfare Office (DSWO)	• Identify GBV, SEA and SH service providers in the area. • Identify vulnerable groups within the community. • Inform community members about the details of the Project and the GBV,SEA and SH risks associated with the project. • Conduct GBV,SEA and SH training including what to do in case of grievance.
GBV training for GRC, contractor and staff, consultants and adjoining community members	KUHeS PIU; Contractor; DSWO	• Training and sensitisation of all workers associated with the Project on GBV, SEA and SH, and how the project can contribute to GBV SEA and SH, risks. • Training and sensitisation of adjoining communities on GBV, SEA and SH, risks, channels to report GBV, SEA and SH, incidents and services available for GBV, SEA and SH survivors.
Codes of conduct signed and understood	KUHeS PIU; Contractor	• Ensure requirements in the CoCs are clearly understood by those signing. • Have the CoCs signed by all those with physical presence in the site. • Train construction workers on the behaviour obligation under the CoCs with a focus on preventing GBV, SEA and SH
Handling GBV, SEA and SH complaints (including support of survivors)	GRM	• Grievance redress committees to ensure confidential complaint uptake mechanisms are in place. • The GBV,SEA and SH cases should be immediately reported to the Police (Victim Support Unit), District Social Welfare Office, psychosocial support institutions working in the project area or district. • Provide timely support to survivors
Provision of separate, safe and easily accessible facilities for women and men working on the site	KUHeS PIU; Contractor	• Ensure construction sites have separate facilities like toilets and/or bathrooms for men and women.
Monitoring and reporting	KUHeS PIU; Contractor; DSWO	• Selection of monitoring indicators (such as: No. of reported cases of GBV SEA and SH,; Resolved cases and time it took to address the complaints, No. of workers that have attained GBV SEA and SH, training courses;

		No./percentage of workers that have signed CoC and No. of GBV, SEA and SH cases that were referred to the GBV service provider). • Ensure new risks are uncovered and mitigated.

Annex 7: Code of Conduct for Contractor in Relation to Child Protection

The contractor will be required to prepare a code of conduct in relation to child protection among others that they shall be following when undertaking construction works. These rules shall form part of the assessment criteria when selecting the contractor. A satisfactory code of conduct will contain obligations on all project staff (including sub-contractor and day workers) that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to concerns of the region, the location, and the project sector or to specific project requirements. The issues to be addressed include:

1. Compliance with applicable laws, rules, and regulations of the jurisdiction.
2. Protection of children (including prohibitions against abuse, defilement, or otherwise unacceptable behaviour with children, limiting interactions with children, and ensuring their safety in project areas).
3. Sexual harassment (for example to prohibit use of language or behaviour, towards women or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate).
4. Violence or exploitation (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading, or exploitative behaviour).
5. Compliance with applicable health and safety requirements (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment).
6. The use of illegal substances.
7. Non-discrimination (for example based on family status, ethnicity, race, gender, religion, language, marital status, birth, age, disability, or political conviction).
8. Interactions with community members (for example to convey an attitude of respect and non-discrimination).
9. Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas).
10. Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favours, are not provided to any person with whom there is a financial, family, or personal connection).
11. Respecting reasonable work instructions (including regarding environmental and social norms).
12. Duty to report violations of this Code; and
13. Non-retaliation against workers who report violations of the Code, if that report is made in good faith.

The Code of conduct should be written in local and plain language, and signed by each worker to indicate that they have:

- Received a copy of the code.
- Had the code explained to them;
- Acknowledged that adherence to this Code of conduct is a condition of employment; and
- Understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

Annex 8: Guide for Developing an Infection Control Plan

Please follow the structured guide below to assist in developing a university -specific infection control plan for the Infectious Disease Unit at the KUHeS. This guide integrates key components from WHO and World Bank guidelines and provides clear directives for implementation.

A8.1 Establish Governance and Responsibilities

- **Infection Prevention Committee (IPC)**: Form a multidisciplinary team including healthcare workers, infection control specialists, and administrative staff to oversee and implement the infection control plan.
- **Infection Prevention Officer (IPO)**: Appoint a trained individual responsible for the daily management and monitoring of infection control practices.

A8.2 Develop Comprehensive Infection Control Policies

- **Hand Hygiene**:
  - Implement WHO's "My Five Moments for Hand Hygiene".
  - Ensure hand washing facilities and alcohol-based hand rubs are accessible at key locations such as entry points, patient rooms, and treatment areas.
  - Train all staff on proper hand hygiene techniques.
- **Personal Protective Equipment (PPE)**:
  - Define and provide appropriate PPE for different tasks and areas.
  - Train staff on the correct use, donning, doffing, and disposal of PPE.
- **Isolation Precautions**:
  - Develop protocols for isolating patients with infectious diseases.
  - Ensure isolation rooms have negative pressure ventilation and dedicated hand washing facilities.

A8.3 Implement Environmental Cleaning and Disinfection Protocols

- **Routine Cleaning**:
  - Establish daily cleaning schedules using EPA-approved disinfectants.
  - Focus on high-touch surfaces such as doorknobs, bed rails, and medical equipment.
- **Terminal Cleaning**:
  - Perform thorough cleaning and disinfection of patient rooms upon discharge or transfer.
- **Waste Management**:
  - Segregate, handle, and dispose of medical waste according to WHO guidelines.
  - Use colour-coded bins and ensure proper labelling.

A8.4 Establish Surveillance and Reporting Systems

- **Infection Surveillance**:
  - Monitor hospital-acquired infections (HAIs) by collecting and analyzing data on infection rates, sources, and trends.

- **Outbreak Management**:
    - Develop protocols for identifying and managing infection outbreaks, including steps for isolation, treatment, and reporting to health authorities.

A8.5 Create an Antibiotic Stewardship Program

- **Antibiotic Use Policies**:
    - Implement guidelines for the appropriate use of antibiotics to prevent the development of resistant strains.
- **Monitoring and Review**:
    - Regularly review antibiotic prescribing patterns and adjust policies based on surveillance data.

A8.6 Provide Staff Training and Education

- **Ongoing Education**:
    - Conduct regular training sessions on infection prevention and control practices.
- **Competency Assessments**:
    - Periodically assess staff proficiency in infection control procedures.

A8.7 Educate Patients and Visitors

- **Information Dissemination**:
    - Provide educational materials on infection prevention to patients and visitors using posters, pamphlets, and digital displays.
- **Visitor Policies**:
    - Restrict visitor access to high-risk areas and provide hand hygiene and PPE guidelines.

A8.8 Ensure Facility Design and Maintenance Support Infection Control

- **Ventilation Systems**:
    - Ensure proper ventilation in patient rooms and treatment areas to reduce airborne transmission, using HEPA filters where necessary.
- **Facility Layout**:
    - Design the unit to minimize cross-contamination, with dedicated pathways for clean and contaminated materials.

A8.9 Prepare for Emergencies

- **Emergency Infection Control Procedures**:
    - Develop protocols for infection control during emergencies such as pandemics or natural disasters.
- **Supply Chain Management**:
    - Maintain a stockpile of essential infection control supplies, including PPE, disinfectants, and antibiotics.

A8.10 Implementation and Continuous Monitoring

- **Regular Audits**:
    - Conduct regular audits to ensure compliance with infection control practices.
- **Feedback Mechanism**:
    - Establish a system for reporting and addressing infection control hazards promptly.
- **Continuous Improvement**:
    - Data from surveillance and audits should be used to improve infection control measures continually.

A8.15 Community Outreach and Engagement

- Engage the community in infection prevention efforts, including education on vaccination and hygiene practices.
- Collaborate with community organizations to disseminate information and resources for infection prevention.

A8.12 Stakeholder Engagement

- Involve key stakeholders, including local health authorities, in the development and implementation of the infection control plan.
- Facilitate regular communication with stakeholders to align on best practices and respond to emerging infection threats.

A8.21 Emergency Response Drills

- Conduct regular emergency response drills that include infection control scenarios to prepare staff for real-world situations.
- Evaluate the effectiveness of drills and adjust protocols as needed based on outcomes.

Annex 9: Life and Fire Safety Plan

A9.1 General Safety Measures

1. **Fire Detection and Alarm Systems**:
    - Install smoke detectors and fire alarms throughout the unit, ensuring they are connected to a central alarm system.
    - Place manual call points at strategic locations, including near exits and in high-risk areas.

2. **Emergency Lighting and Signage**:
    - Ensure all escape routes and exits are clearly marked with illuminated signs.
    - Install emergency lighting along escape routes to provide visibility during power outages.

3. **Fire Suppression Systems**:
    - Equip the facility with fire extinguishers, ensuring they are appropriate for different types of fires (e.g., electrical, chemical).
    - Install sprinkler systems in high-risk areas like the laboratory, radiology room, and operating theatres.

4. **Evacuation Plans**:
    - Develop and display clear evacuation maps on each floor, indicating all exits, escape routes, and assembly points.
    - Conduct regular fire drills to ensure staff and patients are familiar with evacuation procedures.

5. **Fire Safety Training**:
    - Provide comprehensive fire safety training for all staff, including the use of fire extinguishers and evacuation protocols.
    - Include specific training for handling infectious disease areas and the safe movement of patients in such zones.
6. Emergency Response Team:

    - Establish a dedicated emergency response team trained in fire safety protocols, first aid, and communication during emergencies.

A9.2 Ground Floor Safety Measures

1. **Wide Walkways (3,600 mm to 4,200 mm)**:
    - Ensure walkways are free of obstructions to facilitate rapid evacuation.

- Maintain clear access to emergency services.

2. **Public Restrooms (1,200 mm wide)**:
   - Install fire-resistant doors and keep them closed to prevent the spread of smoke and fire.

3. **Physiotherapy and Recreation Rooms (3,000 mm to 3,600 mm wide)**:
   - Equip these rooms with smoke detectors and ensure windows can be used as alternative escape routes.

A9.3 Second Floor Safety Measures

1. **Diagnostic and Maternity Services**:
   - Due to the presence of electrical equipment, equip the ultrasound, CT scan, and X-ray rooms with localised fire suppression systems.
   - Ensure waiting areas have clear signage and escape routes.

2. **Storage/Records and Collection Points (1,000 mm to 2,000 mm wide)**:
   - Use fire-resistant materials for storage areas and ensure proper ventilation.

Annex 10: Traffic Management Plan

Given the dense population and significant commercial and transportation activity around the university, it is crucial to implement a comprehensive traffic management plan during the construction of the 150-bed Infectious Diseases Unit. The following plan aims to minimize traffic congestion, enhance road safety, and ensure smooth transportation operations.

A10.1 Assessment and Planning

- **Traffic Impact Assessment (TIA)**: Conduct a thorough TIA to understand the potential impact of construction activities on local traffic patterns. This should include peak traffic times, road capacities, and key congestion points.
- **Stakeholder Consultation**: Engage with local authorities, community leaders, and stakeholders to discuss the proposed traffic management measures and obtain necessary approvals.

A10.2 Traffic Control Measures

- **Temporary Traffic Signals and Signs**: Install temporary traffic signals and signs around the construction site to guide drivers and pedestrians. Mark detour routes and alternative pathways.
- **Road Closures and Diversions**: Plan and schedule road closures and diversions during off-peak hours to minimize disruption. Provide advance notice to the public about these changes.
- **Dedicated Construction Routes**: Designate specific routes for construction vehicles to minimize their impact on general traffic. Ensure these routes avoid high pedestrian areas and critical University access points.

A10.3 Construction Logistics

- **Staging Areas**: Establish staging areas for construction materials and equipment to reduce on-site congestion. These areas should be located away from main traffic routes.
- **Scheduled Deliveries**: Coordinate the timing of deliveries to avoid peak traffic hours. Use smaller, more frequent deliveries if necessary to reduce the impact on traffic flow.

A10.4 Pedestrian Safety

- **Pedestrian Pathways**: Create safe and marked pedestrian pathways around the construction site. Use barriers to separate pedestrians from construction activities.
- **Crossing Guards**: Deploy crossing guards at critical points to assist pedestrians, especially during peak hospital visiting hours.

A10.5 Public Communication

- **Information Dissemination**: Use multiple channels (e.g., local radio, social media, University newsletters) to keep the public informed about construction schedules, road closures, and alternative routes.
- **Signage and Maps**: Provide clear signage and maps around the University to help drivers and pedestrians navigate the area during construction.

A10.6 Emergency Access

- **Uninterrupted Emergency Routes**: Ensure that access routes for emergency vehicles to the University are always clear and unobstructed. Coordinate with University security and local emergency services to develop contingency plans.
- **Regular Coordination**: Hold regular coordination meetings with emergency services to review and adjust access routes as needed.

A10.7 Monitoring and Adjustments

- **Traffic Monitors**: Deploy traffic monitors to observe and report on traffic conditions in real-time. Use their feedback to make immediate adjustments to traffic control measures.
- **Regular Reviews**: Conduct weekly reviews of traffic management measures and make necessary adjustments based on feedback from stakeholders and observed traffic patterns.

A10.8 post-construction

- **Site Restoration**: Ensure that all temporary traffic control devices are removed and the area is restored to its original condition. Repair any road surfaces or pedestrian pathways damaged during construction.
- **Feedback and Evaluation**: Collect feedback from the community and stakeholders on the effectiveness of the traffic management plan. Use this feedback to improve future projects.

A10.9 Environmental Considerations

Environmental Impact Assessment (EIA):

- Assess the potential environmental impacts of traffic management measures, including air quality and noise pollution.
- Implement mitigation strategies to minimize negative effects on the surrounding environment.

Sustainable Transportation Options:

- Encourage the use of public transportation, cycling, and walking to reduce vehicular traffic during construction.
- Provide incentives for staff and visitors to use alternative modes of transportation, such as discounted transit passes or bike storage facilities.

Worker Safety Training

- Conduct Risk Assessments: Identify potential hazards in the workplace through regular inspections and employee feedback.
- Develop a Hazard Communication Program: Ensure employees are aware of hazardous materials and their safe handling.
- Orientation for New Employees: Provide safety training as part of the on boarding process for all new hires.
- Regular Refresher Courses: Conduct periodic safety training sessions to reinforce knowledge and update on new safety regulations or practices.
- Job-Specific Training: Offer tailored training for specific tasks or roles that carry unique risks (e.g., operating machinery, handling chemicals).

Annex 11: Covid-19 Construction Site Prevention Guidelines

The proposed construction activities are likely to continue during the restrictions likely to be in place due to Covid-19. Contractor operating during the Covid-19 pandemic should ensure all possible steps are taken to protect their workforce and to minimise the spread of the infection. This guidance is based on WHO's key messages for infection prevention and control, and illustrates some basic measures and principles to be followed in this scenario. This guidance does not encompass all aspects of health and safety and should be seen a complement of standard health and safety policy in place for all construction projects, rather than a standalone document. The main underlying approaches are:

- Reduce access to site;
- Adapt work plan and activities to reduce close contact;
- Increase overall level of hygiene of the site;
- Prioritise health and safety of staff, workers and their surrounding communities; and
- Increase awareness of the workforce.

Access to Construction Sites

- Only essential visitors (workers, supervisors, and managers) should be allowed on site;
- Programme or monitoring visits should be reduced to the minimum and should be planned when workers are not on site (i.e. lunch or prayer time);
- Fence off the construction site to ensure no one can enter or approach the workers without authorisation;
- Entry and exit gates should be clearly marked and guarded;
- Body temperature should be measured for all persons entering the site;
- Allow enough space for people to queuing in a safe manner at the entrance of the site while they wash their hands and get screened;
- Ensure there are sufficient hand washing stations at the entrance and that they have water and soap, as well as clearly display signs requesting persons entering to wash their hands;
- Provide adequate hand-washing stations with water and soap or an alcohol-based hand sanitizer (min. 60% alcohol). Ensure water and soap are topped up regularly;
- Clean the hand washing facilities regularly during the day, establishing a clear cleaning plan;
- Anyone falling in one of the following categories should not be allowed on site:
    - Has a family member suspected Covid-19 patient living in the same household or self-isolating, or if s/he has got in close contact with a confirmed Covid-19 patient in the previous two weeks. S/he should not report on site and self-quarantining at home for two weeks;
    - Is showing one or more symptoms related to Covid-19 (high temperature, new persistent cough, shortness of breath). S/he should not report on site, stay home and self-isolate or seek medical care in case of severe symptoms;
    - Is a vulnerable person (by virtue of age, clinical or health condition or pregnant)?
- All persons should wash or clean their hands before entering and leaving the site;

- Workers should be encouraged to reach the site using individual modes of transportation and avoid public transport when possible.

During construction

- An orientation on Covid-19 should be provided to all workers, including description of the disease, symptoms, transmissibility, severity and WHO's key prevention messages to be followed on site, public spaces as well as in their homes;
- Prevention messages should be printed and clearly displayed on site. Consider providing an additional printed copy of the key prevention messages for all workers to disseminate in their families (and communities);
- Workers should be clearly informed on protocols to follow in case they or their family members get sick;
- To the most possible extent, workers should maintain physical distance of two metres from others at all times. Performing activities that must be conducted in close proximity should be avoided when possible. If these activities must take place, workers should wear masks;
- If possible, construction crews should be segregated and tasks allocated so they do not overlap. It is suggested to establish crew shifts to be also applied for break, lunch and pray time;
- If a worker develops Covid-19 symptoms on site, the following actions should be followed:
    - Avoid touching anything;
    - Cough and sneeze into a tissue and put it in a closed bin, or in their flexed elbow in case they do not have tissues;
    - Return home and self-isolate, or seek medical care in case of severe symptoms;
    - All surfaces and tools s/he may have recently touched should be cleaned and disinfected.
- In spaces where queuing may happen (including latrines and hand washing stations), consider marking safe distance of two metres;
- Meetings on site should be avoided at all times. Instruction to workers should be given in open spaces and maintaining physical distance;
- When receiving and unloading goods and construction materials, workers should always keep distance from the drivers. When possible, drivers should remain in their vehicles. If drivers must unload the goods for safety reasons, they should do so without the help of the workers and they should wash or clean their hands before and after. Any contact between deliverers and receivers should be avoided (including delivery papers and pens for signature, etc.). It is recommended that everyone needing to sign paperwork have their own pen or wash their hands after.
- Advice workers to wash their clothes frequently (daily if possible).

Annex 12: Chance Find Procedures for SAVE Project

Purpose of the Chance Find Procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A chance find procedure, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

Scope of the Chance Find Procedure

This chance find procedure shall be applied in case previously unknown culturally valuable materials are unexpectedly discovered during the SAVE Project implementation. This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item or site. The procedure details the actions to be taken when a previously unidentified and potential heritage item or site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction or Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items or sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1) Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained.
2) Immediately notify a foreman. The foreman will then notify the construction manager and the officers responsible for environmental and social safeguards.
3) Record details in incident report and take photos of the find.
4) Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over.
5) Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find.
6) Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the Ministry or Agency, once completed.

7) In case of significant find the Ministry or Department (responsible for Protection of National Heritage or Archaeological resources) should be informed immediately and in writing within seven days from the find.
8) The onsite responsible officer should provide the heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.
9) The Ministry or Department must investigate the fact within 2 weeks from the date of notification and provide response in writing.
10) Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
11) Construction works could resume only after permission is granted from the responsible authorities.
12) In case no response is received within the 2-week period mentioned above, this is considered as authorisation to proceed with suspended construction works.
13) One of the main requirements of the procedure is record keeping. All finds must be registered. Photo log, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports - kept.

Additional information

Management options for archaeological site

✓ **Site avoidance**: If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost- effective management option)

✓ **Mitigation**: If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)

✓ **Site Protection:** It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

Management of replicable and non-replicable heritage

Different approaches for the finds apply to replicable and non-replicable heritage. Replicable heritage Where tangible cultural heritage that is replicable and not critical is encountered, mitigation measures will be applied. The mitigation hierarchy is as follows:

- Avoidance;
- Minimisation of adverse impacts and implementation of restoration measures, in situ;
- Restoration of the functionality of the cultural heritage, in a different location;
- Permanent removal of historical and archaeological artefacts and structures;
- Compensation of loss - where minimisation of adverse impacts and restoration not feasible.

Non-replicable heritage

Mostly, cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable damage or even destruction of the cultural heritage. Nonreplicable cultural heritage must not be removed unless all of the following conditions are met:

- There are no technically or financially feasible alternatives to removal;
- The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and
- Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.
-

Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

There are two possible courses of action:

✓ **Avoid:** The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.

✓ **Exhume:** Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the discovery.