ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED ESTABLISHMENT OF THE FIVE STOREY ACADEMIC BUILDING ON PLOT NO. 1, BLOCK "Z" AT UNYANKHAE MTAA, MANDEWA WARD, SINGIDA DISTRICT, SINGIDA REGION

Proponent

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EXECUTIVE SUMMARY

INTRODUCTION

Tanzania Institute of Accountancy (TIA) is one of the Technical Institutions in Tanzania and a Government Agency under Ministry of Finance and planning that was established on 1st July, 2002 by the Government Notice No. 489 of 1st November, 2002. The Institution officially launched on 24th January, 2003 per the Act No. 30 of 1997, to provide education and conduct Research and Consultancy in the field of Accountancy, Procurement and Logistics Management other business-related disciplines. In addition to Singida campus, the Institute has other campuses which are strategically located in Dar es Salaam, Mbeya, Mtwara, and Mwanza. The Dar es Salaam campus serves as the Institute headquarters.

Tanzania Institute of Accountancy has received financial support from the World Bank (WB) through Higher Education for Economic Transformation (HEET: P166415) Project. The project's objective is to strengthen the learning environment and labour market alignment of priority programs at TIA. This will lead to reduced skills gaps and increased economic productivity in priority discipline. Therefore, under HEET Project the Institute shall explore opportunities for income generation by increasing enrolment through making use of the ICT equipment purchased by the project, construction of Academic Block and digitalising teaching and learning environment. Also, strengthening the existing sources of incomes by capacitating staff on consultancy skills to expand business horizons, marketing of Institute's services offered facilities and equipment. Through HEET the Institute is going to construct academic building at Singida Campus.

It is envisaged that the development of the proposed academic building at Singida Campus in terms of design, construction and operation will have both positive and negative environmental and social impacts. In compliance with the Tanzania Environmental Management Act, Cap 191 of 2004 and the World Bank Environment and Social Framework (ESF) as well as the HEET project's Environmental and Social Management Framework (ESMF), TIA would wish to ensure that implementation of proposed project is environmentally sustainable and friendly, socially acceptable and economically viable. Further, TIA as the Recipient of this project shall implement material measures and actions using the Environmental and Social Commitment Plan (ESCP) which sets out a summary of the material measures and actions. Also the preparation of this ESIA study report is informed by other legal instruments including Stakeholders Engagement Plan (SEP) and Resettlement Policy Framework (RPF).

In complying with the ESIA procedure, the Consultant prepared project registration documents and submitted through online system to the National Environment Management Council (NEMC) for registration process. The proposed project has been registered with NEMC on 30/05/2023 and assigned Project Number EC/EIA/2023/4472. The Consultant

has undertaken the scoping study prior to preparation of the Scoping report, as per guiding regulations. To that effect, the consultant conducted field works in May 2023 in order to identify key environmental and social issues and concerns as well as identifying stakeholders requiring special attention during the fully-fledged EIA study. The scoping study resulted into draft Terms of Reference (ToR) that were submitted to NEMC for the review and approval. The draft TOR was approved by the NEMC through letter of Reference Number HD.88/145/116/02 dated 15//05/2023 – see Appendix 1. The approved ToR provided the guidance for which the full ESIA study was conducted. Likewise, the World Bank Environment and Social Standards, specifically ESS1 requires the borrower to identify, assess and manage the potential environmental and social impacts and risks associated with the project.

PROJECT DESCRIPTION

The proposed project is about construction of academic building which is planned to be executed in the existing TIA Singida Campus' plot measures the land's size of 54.5 acres (220,227 m^2). Design of the proposed project shows that plinth area (built-up area) of the proposed academic building and its associated infrastructures is 9,095 m^2. The proposed project scope involves design and construction of five storey single block coupled with support and ancillaries' infrastructures. About 100 people will be engaged during the peak of construction phase who will be working for 10 hours per shift for 2 shifts per day. The duration for construction phase is estimated to be 24 months. Basically, construction works will involve medium to large scale engineering works mainly civil and building engineering works, electrical and mechanical engineering works and plumbing works. Various types and quantities of construction materials will be used. Sizeable quantities of wastes are expected to be generated during construction and operation phases of project. The proposed project site is located within built up area within existing TIA Singida Campus. It is embracing some vegetation in the form of short grasses, flowers and scattered planted trees. The major part of the land holds an intact soil. It has a relatively flat land with good soil for drainage issues. Thus, the site is proximity (not more than 30 m) to other existing TIA education infrastructure including lecture theatres, classroom and office buildings.

POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The implementation of this proposed project is guided by various policies, legal and institutional frameworks which emphasizes and underlines the attainment of the sustainable development principles. Policies and legislation which are relevant for this particular project are listed hereunder:

i. The Urban Planning Act (2007)
ii. Occupation Health Safety (2003)
iii. Employment and Labour Relations Act No. 6 of 2004

iv. The Contractors Registration Act (1997)
v. World Bank Environmental and Social Framework which include Environmental and Social Standards (ESSs) and Environmental Health and Safety (EHS) guidelines. For the case of this ESIA report, only 6 out of 10 ESSs were applied in this out of ten ESSs. These were:
vi. World Bank Environment and Social Framework (ESF) – Environmental and Social Standards such as:
    - ESS1- Assessment and Management of Environmental and Social Risk Impacts,
    - ESS2- Labour and working conditions
    - ESS3- Resources Efficiency and Pollution Prevention and Management
    - ESS4 – Community Health and Safety,
    - ESS8 – Cultural Heritage,
    - ESS10- Stakeholder Engagement and Information Disclosure,
vii. Environmental, Health and Safety Guidelines (EHS).

BASELINE CONDITIONS

The baseline conditions of the project area include the hydrology, biological and built up environment as well as socio-economic activities. The hydrology of the Singida Municipality is mainly characterized by the presence of two permanent lakes namely Kindai and Singidani. There are also few seasonal dams/ponds, providing water for livestock and sometimes water for irrigation for horticultural crops. Rivers in the area are seasonal pouring their water into Lake Kindai and Singidani. However, there is no surface water flow within immediate vicinity (500 m) of the project area. In terms of biological environment, the proposed project area is an urbanized ecological system without marked aquatic or semi aquatic ecosystems. The baseline assessment and review of primary and secondary literature and interviews have indicated that project area has neither protected areas no endangered species. Furthermore, the propose area has no forest reserves, or any form of conservation area. Physical conditions include the existing buildings which are used as offices, class and lecture rooms, laboratory rooms electricity, water supply and Ndago road provide the basic social services.

The main economic activities in Singida Municipality include office works, small to large business, financial services transportation, industries, rental houses, hotels and bar. Horticultural crops are practiced mainly at Kindai Ward. Cattle, goats, sheep, chicken, and guinea fowls are livestock mostly kept under zero grazing. Fishing is also an important economic activity at Lake Kindai and Singidani.

STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

Stakeholder involvement was made to ensure the quality, comprehensiveness and effectiveness of the ESIA study as well as to ensure that various groups' views are adequately taken into consideration in the decision-making process. It was accomplished through stakeholders' consultations which aimed at positively conveying information about the proposed project, clear up misunderstandings, allow a better understanding of relevant issues and how they will be dealt with, and identify and deal with areas which are controversial while the project is still in its early stage.

The main stakeholders consulted include:

i. Ministry of Education Science and Technology (MoEST)
ii. Tanzania Institute of Accountancy (TIA) officials
iii. Singida Municipal Council Office
iv. Singida Urban Water Supply and Sanitation Authority (SUWASA)
v. SingidaTanzania National Roads Agency (TANROADS)
vi. Tanzania National Electric Supply company (TANESCO)
vii. Occupation and Safety Authority (OSHA)-Dodoma Office;
viii. Fire and Rescue Brigade
ix. Tanzania Rural and Urban Roads Agency (TARURA);
x. Tanzania Telecommunication Company Limited (TTCL);
xi. Internal Drainage Basin Water Board;
xii. TIA students including vulnerable students and those with disabilities;
xiii. TIA students organisation;
xiv. Academic and Administrative staffs
xv. Local leaders in Unyankhae Mtaa, Mandewa Ward.

Major stakeholders' views, comments and issues raised are:
Stakeholders consulted generally expressed and viewed the proposed project as beneficial and positive. In line with this general view, stakeholders raised key concerns in relation to project implementation which include:

- Project has got socio-economic influences to local communities due to influx of people to the project area;
- Project will attract more people to join higher learning at TIA which will increase human resource in different working places;
- Project will generate employment opportunities. Stakeholders insisted that, contractor should give priority to local communities;
- Stakeholders recommend that appropriate waste management plan should be put in place to minimize impact related to waste to be generated;
- Project proponent and contractors to be engaged for construction works should comply with all relevant legal/regulatory requirements.

ASSESSMENT OF IMPACTS

Environmental risks and impacts assessed included: (i) those defined by the WB Environmental Health and Safety Guidelines, EHSGs; (ii) those related to community safety; (iii) those related to climate change (iv) any material threat to the protection, conservation, maintenance and restoration of natural habitats and biodiversity; and (v) those related to ecosystem services and the use of living natural resources; and (vi) those related to the design of the physical facilities. The Social risks and impacts assessment done included: (i) threats to human security through crime or violence.

Impacts associated with the project

A: Impacts on the physical Environment

i. Generation of liquid waste
ii. Generation of solid waste
iii. Generation of hazardous waste
iv. Increased runoff/storm water
v. Clearance of vegetation
vi. Land pollution/degradation
vii. Impaired air quality
viii. Contribution to climate change
ix. Nuisance due to noise pollution
x. Generation of vibrations
xi. Visual impact

B. Impacts on social environment

i. Employment opportunities
ii. Increase in income generation opportunities
iii. Changes in lifestyle and quality of life
iv. Increased skills and impart knowledge to local communities
v. Increase of academic facilities in Singida
vi. Population growth
vii. Increased pressure on social services
viii. Increased traffic flow and volume
ix. Increased risks of road accidents
x. Increased risks of communicable diseases
xi. Change in social values and ethics
xii. Food insecurity
xiii. Price inflation of goods and services
xiv. Occupation health, safety and security risks
xv. Community health and safety risks

xvi. Increased transmission of STDs and communicable diseases, etc

C. Economic impacts

i. Increased Revenues to local authorities
ii. Increased commercial and social activities around project locations
iii. Increased Income to local suppliers and service providers
iv. Increased land values

MITIGATION MEASURES

The design of the mitigation measures for the identified Environmental and Social impacts applied the mitigation hierarchy suggested in the ESF which are:

a) Anticipate and avoid risks and impacts;
b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;
c) Once risks and impacts have been minimized or reduced, mitigate; and
d) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

Many of the mitigation measures put forward are essentially good engineering practice that shall be complied through project circles.

Potential mitigation measures during construction phase

Negative Social Impacts

i. Establish good site practices such as prevent public access to the construction site by securing equipment and demarcate excavate, using warning signs with appropriate text (local language) and graphic displays;
ii. Establish traffic management and safety programme including, training and testing of heavy vehicles operators and drivers, enforcement of speed limits, maximum loading restrictions and compliance with all Tanzania transportation law and standards;
iii. Provide more avenues for service providers e.g. cafeteria and restaurants
iv. Awareness campaigns /Education on HIV, COVID-19 and STDs shall be provided to workers;
v. The project will prepare a GBV Action Plan that ensures project awareness raising strategy (for workers and community members), a list of GBV service providers to which GBV survivors will be referred, revisions to the GRM to ensure it can address GBV complaints, and information on GBV allegation procedures in the workplace.
vi. To ensure security services

vii. TIA will conduct regular monitoring of project workers in relation to health, working conditions, hours of work, minimum age, and the other requirement of national law.

Negative Environmental Impacts

i. Equipment shall be maintained in good running condition and equipment, which generate excessive black smoke shall not be used;
ii. Enforce vehicle road restrictions to avoid excessive emissions from engine overloading, where practical switching off engines will be done when machines are not in use;
iii. Protect stockpiles of friable material subject to wind through wetting;
iv. Cover loads with friable material during transportation;
v. Green spaces shall be maximized in project areas and native species are protected;
vi. Vehicles carrying construction materials shall be restricted to work during night time only;
vii. Impact pile driving shall be avoided where possible in vibration sensitive areas;
viii. Proper management and disposal of solid waste,
ix. Wastewater shall be properly and adequately treated using the system consists of the septic tanks and constructed wetlands wetland systems. Only effluents complying with Tanzania standards will be discharged on receiving water body.
x. The contractor shall have adequate facilities for handling the construction and demolition waste;
xi. Construction will be done as per engineering design and procedure of which a maximum requirement of compaction strength is achieved during the construction. That is Maximum Dry Density (MDD) specified in the design manual by consultant;
xii. Locating parts of the development further away from the general public;

Potential mitigation measures during the operation phase

Negative Social Impacts

i. A safety, health and environment induction course shall be conducted to all students and workers, putting more emphasis on HIV/AIDS, which has become a national disaster as well as other emerging pandemics such as COVID 19 and dengue fever;
ii. Use of water efficient technologies (e.g. self-lock water taps) and awareness raising notices to users, etc.;
iii. The project will prepare a GBV Action Plan that ensures project awareness raising strategy (for workers and community members), a list of GBV service providers to which GBV survivors will be referred, revisions to the GRM to ensure it can address GBV complaints, and information on GBV allegation procedures in the workplace.

iv. TIA will conduct regular monitoring of project workers in relation to health, working conditions, hours of work, minimum age, and the other requirement of national law.
v. Provide more avenues for service providers e.g. cafeteria and restaurants.
vi. The cooperation of local people together will help to lessen criminal incidents and maintain security of people and their properties.

Impacts on physical environment

i. Septic tanks and constructed wetland systems shall be designed to achieve the treated effluent that comply to standards;
ii. The design of storm water drainage will be given a high priority;
iii. Adequate number of portable fire extinguishers shall be placed at strategic locations;
iv. Good housekeeping shall be maintained at all the time;
v. The design of buildings shall strictly adhere to the fire safety standards;
vi. To change the consumption behaviour in terms of energy and water.

Mitigation Measures During Decommissioning Phase

Social impacts

- Seminars shall be conducted on alternative means of livelihood after termination of job

Environmental Impacts

i. The debris resulting from the demolition will either be transported by a licensed waste transporter for dumping at an approved site or used as base material for new construction work;
ii. All the necessary health and safety measures will be implemented including provision of personal protective equipment such as, safety harnesses, helmets, gloves, respirators, safety shoes, coveralls, goggles and ear protectors;

ENVIRONMENTAL AND SOCIAL IMPACT MANAGEMENT PLAN

Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMaP) sets the "environmental conditions" that will be abided by project proponents in the course of implementing the project. It aims at ensuring effective implementation of the proposed mitigation measures. The detailed ESMaP for this proposed project is presented in the main body of the report. It highlights responsibilities for implementation of mitigation measures and cost estimates. Total cost for implementation of ESMaP for this proposed project is estimated to be TZS

236,000,000 throughout the entire project implementation cycle. Appropriate bills of quantities should be prepared to clearly give the actual costs.

Environmental and Social Monitoring Plan

Environmental Monitoring Plan (ESMoP) has been proposed for the project, intended to ensure implementation of mitigation measures is done in accordance with regulations and standards. The main body of the report outlines the particular issues that will be monitored during various stages of project implementation. Monitoring plan also includes type of monitoring indicators, frequency of monitoring and responsibility for each monitoring activity. Total costs for implementation of the Environmental and Social Monitoring Plan (ESMoP) for the proposed TIA Singida Campus during the development phase is TZS 91,000,000/=. The cost for implementation of the ESMoP during operation and maintenance phase is TZS 19,000,000/= per year. Likewise, these estimated costs are just indicative. Appropriate bills of quantities should clearly give the actual figures.

ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMME

There will be four types of monitoring activities; i) baseline monitoring, ii) impact monitoring, compliance monitoring, and mitigation monitoring. The monitoring of environmental and social parameters during the construction phase shall be carried out by the Contractor's safeguard team (i.e. Environmental, social and safety experts), under the supervision of the Consultant's safeguard team. The responsibility for mitigation and monitoring during the operation phase will lie with the TIA Estate Department. Depending on the implementation status and sensitivity of any emerging issues, OSHA and /or NEMC will perform annual EHS reviews in which environmental concerns raised will be reviewed alongside project implementation.

DECOMMISSIONING

Proposed project is planned to have a minimum life span of 50 years. After that time infrastructures will have to be closed and or reviewed. Nevertheless, proposed project may also be stopped if there will be changes on land use as per Tanzania government preferences. In those circumstances TIA may decide to decommission the infrastructures. Decommissioning plan has been prepared for purpose of ensuring that decommissioning of proposed project. Preliminary plan is intended to remain a "living document," therefore; the revisions will be made throughout operating life of project. It must be reviewed periodically and revised to reflect any changes in the project development or operation that might affect decommissioning. Prior to initiation of actual decommissioning activities for project, a comprehensive final commissioning plan shall be prepared with the aim of minimizing environmental and social impacts during and after closure of proposed project.

PROJECT COST BENEFIT ANALYSIS

The implementation of the proposed new buildings project at TIA shall have costs to community, government and the environment. For instance, community shall have inherent costs associated with noise, impairment of air quality, and Safety and health risks. However, the introduction of mitigation measures will reduce the anticipated impacts. The government has secured the loan for this project; and there will be costs for mitigating environmental impacts. On the other hand, the proposed new buildings project has both direct and indirect benefits to university, neighbour and the government as well. The benefits of the project are experienced in all phases from mobilization, construction, operation to decommissioning phase. Several benefits are associated with the proposed development both at local and national level in terms of revenue generation and the multiplier effects associated with linkages with local and national economy. However, building construction projects may generate negative benefits though; they are uTIATIAlly minimal compared to the positive benefits. Some of those benefits are non- quantifiable thus cannot be used in the cost- benefit analysis estimations.

SUMMARY AND CONCLUSION

The proposed project will contribute to socio-economic benefits to both TIA and the nation at large. These socio-economic benefits include: Creation of employment opportunities; increase income to the TIA and the country as whole. On the other hand, the proposed project will entail some adverse environmental impacts of which adequate mitigation measures have been proposed and incorporated in the project design. The environmental impacts identified from this project include but not limited to: increased noise levels; increased dust levels; waste management problems, storm water generation and safety and health risks.

It is, therefore, concluded that the proposed TIA buildings project will entail no significant impacts provided that the recommended mitigation measures are adequately and timely implemented. The identified impacts will be managed through the proposed mitigation measures and implementation regime laid down in this ESIA. TIA will implement all the recommendations given in this ESIA and carry-out the environmental auditing and monitoring schedules.

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ACKNOWLEDGEMENTS

Tanzania Institute of Accountancy (TIA) would wish to sincerely thank all people who contributed to the preparation of this Environmental and Social Impact Assessment report. Furthermore, kind acknowledgements deserve to Singida Municipal Council, SUWASA, Fire Rescue Force, OSHA, TANROADS, TARURA; TANESCO and local leaders in Mandewa Ward and Unyankhae Mtaa for providing us with valuable information and data which enabled the Consultant Team assigned to this task to smoothly conduct the study.

Lastly but not least, TIA would like to thank all those who, in a way or another contributed their efforts in the preparation of this Environmental Impact Statement (EIS). Further, TIA acknowledges the work done by the ESIA team. The ESIA team was greatly supported by other teams of experts, comprising of Planners, Surveyors, Engineers, and Quantity Surveyors.

ESIA TEAM

Report was prepared by the following team of experts

Table 1: Experts who carried out the EIA Study

SN	Name	Area of Expertise	Signature
1	Eng. Dr. Richard J. Kimwaga	Civil Engineering, Environmental Management and ESIA	
2	Evody Ndumiwe	Biodiversity and Environmental Management	
3	Nuhu Moto	Municipal Services Engineering	
4	Hezron Magambo	Environmental Engineering	
5	Peter Temu	Sociologist and Gender Expert	

ACRONYMS AND ABREVIATIOS

AQI	Air Quality Index
AADTN	Annual Average Daily Traffic Number
ABR	Anaerobic Biogas Reactor
AIDS	Acquired Immune Deficiency Syndrome
ALPHA	American Publish Health Association
BATNEEC	Best Available Technology Not Entailing Excess Cost
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BOD	Biological Oxygen Demand
BS	British Standard
CBA	Cost Benefit Analysis
CHS	Community Health and Safety
CITES	Convention on International Trade an Endangered Species
CNG	Compressed natural gas
CO	Carbon monoxide
CO2	Carbon dioxide
COD	Chemical Oxygen Demand
CRB	Contractors Registration Board
DoE	Division of Environment
DoE	Division of Environment
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ELO	Environmental Liaison Officer
EMA	Environmental Management Act
EMO	Environmental Management Officer
EMP	Environmental management Plan
ERB	Engineers Registration Board
ERB	Engineering Registration Board
ESIA	Environmental and Social Impact Assessment
ESMoP	Environmental and Social Monitoring Plan
ESMP	Environmental and Social Management Plan
ESF	Environmental and Social Framework
ESS	Environmental and Social Standards
EU	European Union
FYDP	Five Year Development Plan
GHGs	Green House Gases
GIIP	Good International Industrial Practice
GOT	Government of Tanzania

HEET	Higher Education for Economic Transformation
HIV	Human Immune Deficiency Virus
ILO	International Labour Organization
ISP	Institute Strategic Plan
IUCN	International Union for Conservation of Nature
KII	Key Informant Interview
LGA	Local Government Authority
LULUCF	Land Use Land use –change and Forestry
NACP	National HIV/AIDS Control Programme
NAFORMA	National Forest Resources Monitoring and Assessment
NCCSR	National Climate Change Statistics Report
NEMC	National Environment Management Council
NEP	National Environmental Policy
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
NOx	Nitrogen Oxygen
OSHA	Occupational Safety and Health Authority
PLHAS	People Living with HIV/AIDS
PM	Particulate Matter
PPE	Personal Protective Equipment
RHA	Risk Hazard Assessment
SEP	Stakeholder Engagement Plan
SGR	Standard Gauge Railway
SMC	Singida Municipal Council
SO2	Sulfur dioxide
STD	Sexually Transmitted Diseases
SUWASA	Singida Urban Water Supply and Sanitation Authority
TANESCO	Tanzania Electricity Supply Company
TBS	Tanzania Bureau of Standards
TCU	Tanzania Commission for Universities
ToR	Terms of Reference
TCU	Tanzania Commission for Universities
TDV	Tanzania Development Vision
TIA	Tanzania Institute of Accountancy
TRC	Tanzania Railways Corporation
UASB	Up-flow anaerobic sludge blanket
UHI	Urban Heat Island
UN	United Nation
UNFCCC	United Nations Framework Convention on Climate Change
URT	United Republic of Tanzania

VAT	Value Added Tax
VPO	Vice President Office
WB	World Bank
WBG	World Bank Group
WHO-GPA	World Health Organization Global Programme on AIDS

CHAPTER ONE

INTRODUCTION

1.1 Background and justification

Tanzania Institute of Accountancy (TIA) is one of the Technical Institutions in Tanzania and a Government Agency under Ministry of Finance and planning that was established on 1st July, 2002 by the Government Notice No. 489 of 1st November, 2002. The Institution officially launched on 24th January, 2003 per the Act No. 30 of 1997, to provide education and conduct Research and Consultancy in the field of Accountancy, Procurement and Logistics Management other business-related disciplines. In addition to Singida, the Institute has other campuses which are strategically located in Dar es Salaam, Mbeya, Mtwara, and Mwanza Singida. The Dar es Salaam campus serves as the Institute headquarters.

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As a prerequisite to the construction of new buildings, the project will involve various site excavation activities including the demolition of the buildings currently on site. Building construction and associated activities will inevitably have environmental, social and economic impacts, which need to be identified and mitigation measures put in place for ensuring sustainability of the project.

Both the World Bank Environmental and Social Framework and the Environmental Management Act of 2004 of Tanzania require project developers to carry out an Environmental Impact assessment (EIA) prior to project implementation. In accordance with the categories identified in the Third Schedule to Environmental Management Act, Cap 191 and First Schedule to Environmental Impact Assessment and Audit (Amendment) Regulations, 2018, the nature of this project is subject to full EIA study. Likewise, the World Bank Environment and Social Standards require the borrower to identify, assess and manage the potential environmental and social impacts and risks associated with the project.

Thus, the EIA study will be conducted in accordance with the Environmental Impact Assessment and Audit (Amendment) regulations 2018, formulated after the Environmental Management Act (EMA) No. 20 of 2004 and the World Bank Environment and Social Framework (ESF) as well as the HEET project's Environmental and Social Management Framework (ESMF). The Regulations give mandate to NEMC to oversee the EIA process, which culminates with an award of the Environmental certificate by the Ministry responsible for Environment. The certificate is among the prerequisite approvals required before the project takes off. This project will need this approval before it is implemented. Likewise, the World Bank Environment and Social Standards require the borrower to identify, assess and manage the potential environmental and social impacts and risks associated with the project.

Tanzania Institute of Accountancy (TIA) has commissioned a registered Consultant through a force account arrangement and his team of Environmental Experts to conduct Environmental and Social Impact Assessment for the proposed project. The core ESIA study team is composed of the following experts: Environmental Expert, Environmental Engineer, Botanist, Air quality and GIS experts; and Sociologists and Urban Planners.

1.2 The rationale of the project

Since 2015, Tanzania government has achieved remarkable progress in expanding access to basic education. The primary enrolment rose by 24.5% from 2015 to 2018, reaching over 10 million pupils in 2019 and secondary enrolment increased in 2013/14, with more students moving on to post-primary education. However, the Tanzanian education system faces challenges in absorbing the growing number of graduates from basic education into the higher education sector. Furthermore, the higher education sector in Tanzania faces critical challenges, such as a mismatch between university skills and industry needs, low enrolment and completion rates in STEM fields, inadequate infrastructure, weak academia-private sector linkages, and limited research capacity. Urgent needs include expanding investment in infrastructure and facilities, and establishing quality assurance systems in fields such as engineering, medical sciences, agriculture, energy, and natural resource management. Addressing gender issues is also a concern, as women and girls encounter barriers to access and complete higher education. According to the HEET's Environmental and Social Management Framework (ESMF) of 2021, only 35% of the higher education students in Tanzania are female. To address these issues, the World Bank has launched the Higher Education for Economic Transformation (HEET) project. The project aims to improve the quality, relevance, and equity of higher education in Tanzania. It supports the development of academic programs, research centers, and partnerships in priority areas. It also provides scholarships, grants, and loans to students and institutions. The project is expected to benefit over 100,000 students and 3,000 faculty members by 2028.

The HEET project aims to align higher education programs and curricula with the country's economic priorities. It seeks to develop workforce skills, increase access to quality STEM and business education programs, improve teaching quality, and enhance learning resources.

Additionally, the project aims to foster stronger collaboration between universities and industries through university-industry partnerships. By addressing the gaps in Tanzania's higher education system, the HEET project aims to support the country's economic growth and transformation.

The project recognizes the vital role of higher education in driving innovation, economic development, and social inclusion. As the number of graduates from basic education continues to rise, there is an urgent need to accommodate these students in higher education programs. To facilitate this, the HEET project will invest in infrastructure, facilities, and quality assurance systems in fields such as engineering, medical sciences, agriculture, energy, and natural resource management. These strategic investments aim to support Tanzania's ongoing process of rapid economic transformation.

Furthermore, the Government of Tanzania is leveraging the HEET project to enhance the operational capacities of public universities. This empowerment will enable universities to better contribute to and support the country's economic goals through their missions, objectives, and core values. Ultimately, the HEET project aims to ensure that higher education institutions in Tanzania are responsive to the changing economic needs of the country and continue to fuel sustainable economic growth.

1.2.1 Specific Project objectives

To strengthen the learning environment and labor market alignment of priority programs at beneficiary higher education institutions and improve the management of the higher education system.

1.2.2 PDO level indicator

(i) Students and faculty participating in internships/fellowships/forms of placement in industry, companies or research institutions (sub-indicators for gender, individuals with disabilities, and students/faculty ratios) (number)
(ii) Degree programs within priority areas that are aligned to labor market needs (number)
(iii) Students benefiting from direct interventions to enhance learning (corporate indicator) (number)
(iv) Active use of a Tertiary Education Management Information System (TEMIS) (yes/no)
(v) Higher education institutions supported by the project that achieve a minimum threshold of the annual targets set in the performance agreements (number)

1.3 Objectives and rationale of the EIA study

The objective of this ESIA study was to foresee all environmental, social and economic effects of the proposed construction of buildings before the project come into the actual implementation. The study therefore has addressed the social, economic, and environmental issues associated with the project and provided relevant mitigation plan to prevent or minimize adverse impacts.

The study has determined the environmental consequences of the proposed project. In undertaking the EIA study, the consultant collected data on physical, biological and socio-cultural environment of the proposed project area at TIA Singida campus. The information was used to predict the potential impacts of the proposed activities as well as to develop appropriate mitigation measures and to plan programs to monitor any changes that may result after constructing and use of the buildings.

The overall objective of carrying out this ESIA is conduct the impacts analysis in order to identify, predict and assess both positive and negative environmental and social impacts associated with the proposed project and proposes mitigation measures to minimize the negative impacts and enhance the positive ones. The assessment made use of data and information on the physical, biological, and socio-economic environment to attain its intended objective, as well as enabling the development of management and monitoring plans for dealing with the observed impacts. Part IV of the EIA and Audit Regulations of 2005 and its amendment of 2018 provides the general objectives for carrying EIA study, which are:

- To ensure that environmental and social considerations are explicitly addressed and incorporated into the project decision making process;
- To anticipate and avoid, minimize or offset the adverse significant biophysical, social and relevant effects of developmental proposal;
- To protect the productivity and capacity of natural systems and ecological processes which maintain their functions;
- To promote development that is sustainable and optimizes resources use and management opportunities;
- To establish and assess impacts that are likely to affect the environment before a decision is made to authorize the project;
- Propose mitigation and socio-management procedures aimed at managing the proposed mitigation of the identified potential impacts and that will form an all-important part of the overall project execution; and
- To enable information exchange, notification and consultations between stakeholders.

1.4 Project rationale and objective of the project

Tanzania Institute of Accountancy operates its Singida campus in existing facilities located in Singida Municipality. The institute intends to increase number of enrolled students including female and special needs students. However, capacity of existing infrastructures is not supporting intended number of the students' enrolment. Some of existing infrastructure are dilapidated and do not support the current required learning environment. The Institute has received financial support from the World Bank (WB) through HEET Project. The project is expected to strengthen the learning environment and labour market alignment of priority programs at TIA. This will lead to reduced skills gaps and increased economic productivity in priority discipline. The Institute

shall explore opportunities for income generation by increasing enrolment through making use of the ICT equipment purchased by the project, construction of an academic building and digitalising teaching and learning environment. Also, strengthening the existing sources of incomes by capacitating staff on consultancy skills to expand business horizons, marketing of Institute's services offered, facilities and equipment. The TIA effort contributes to the attainment of the TDV 2025.

The 2025 Tanzania Development Vision (TDV 2025) translated into the National FYDP III 2021/22-2025/26; and the National Higher Education for Economic Transformation (HEET) project 2021/22 – 2025/26 provide framework for TIA to expand its training and learning infrastructure and to increase student enrolment. These policies and plans are translated in the Institute Strategic Plan (ISP) and the MTRSP, which highlight the need for TIA to establish new campuses in up-country regions as one of the strategies to expand its training and learning infrastructure and increase students' enrolment. Thus, through HEET project, TIA will contribute to the attainment of sufficient numbers of quality graduates relevant to the labour market demand who will play an active role in supporting the national economy. In addition, the proposed project at TIA shall create many employment opportunities throughout the project life time.

1.5 Scope of work

This study entailed the following: -

i. To provide description of the relevant parts of the project including project location, design, components and activities;
ii. To review of policies, legislation, standards and regulations governing Environment at International, Regional and Local levels;
iii. To assemble, evaluate, and present baseline data on the relevant environmental and social characteristics of the project area;
iv. To make consultation with Government agencies, local communities and the private sector operating near the project area;
v. To assess and quantify the potential environmental impacts resulting from the building development, especially within the zone of influence of the project;
vi. Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives, which would achieve the same objectives;
vii. To develop an Environmental Management Plan (EMP) detailing actions and responsibilities for impacts mitigation and monitoring.

1.6 Methodology

The ESIA being a multidisciplinary field involved a team of experts, the key ones being EIA Expert (Team Leader), Environmental Engineer, Botanist, Air quality and GIS experts, and Sociologist.

The team identified key stakeholders and potential social and environmental impacts (positive and negative).

1.6.1 Desk study

Desk study involved: identification and review of the country policies and laws World Bank Environmental and Social Frameworks (ESSs and EHS), Ministry of Education, Science and Technology related documents including PAD, POM, SEP, ESCP, RPF which are relevant to the project; collection and review of previous study reports (including design reports) pertaining to the project; collection and review of information and data on the physical, social, economic, cultural as well as archaeological (if present); preliminary identification of key issues to be included in scoping report and the main EIA study; and preparation for fieldwork, including notification of all stakeholders on the intention to conduct EIA study as well as seek their co-operation. This was done by making phone calls, writing e-mails, and distribution of letters seeking appointment to the stakeholder.

1.6.2 Fieldwork

The field visit was essential to fully realize the scope of the project, the biophysical environment and the socio-economic conditions in the project core area, immediate vicinity and area of influence mainly from primary and secondary sources. Primary data were collected based on interviews and discussions with key informants notably TIA staff and local leaders in Singida Municipality. Specific checklists and interview guides were used. Site visit was conducted on May 2023. The EIA team used the fieldwork to conduct interviews with stakeholders and also to collect information on the state of the environment. Information collected includes land use, human demography, cultural heritage, water supply, wastewater collection, traffic issues, and other indicators related to environmental and socio-economic trends of Mandewa Ward and Singida Municipal Council. Other information was appraised through key informant interviews and experts' observations. Secondary data collection obtained from review of various reports such as project design report, feasibility study report, geotechnical investigations report, Singida Municipal Council's socio-economic profiles and web search.

Fieldwork was conducted to facilitate acquisition of information and data on physical, biological and social-economic aspects of the project site and neighbouring area. The collection of baseline data was conducted by defining the scope of the EIA. Data collected during scoping allowed the study team to determine whether more detailed information on environmental conditions at the development site and its surroundings are needed and where such information can be obtained.

Measurement of baseline air quality data

Onsite measurements were performed to establish baseline environment at the project area. The measurements included noise levels, vibrations, dust levels and ambient air quality. Five sampling points were established. A set of three readings were taken per sampling point the average of

which established the measured level. Noise level measurement in the selected points was done using a Clas Ohlson digital sound level meter type 36-1604, model ST-805. Dust Measurements was done using Microdust Pro particulate monitor. Ground vibrations were measured at the same established points using vibrometer. The results of onsite measurements are presented in Chapter 4 of this report as baseline data.

The ESIA team measured and recorded baseline data on air quality, noise level and vibrations at the site, and adjacent areas within TIA Singida Campus. Five (5) sampling locations were selected based on relative distance to the proposed project sites, and existing multiple sources of air pollution in the campus.

Sampling and analysis methodology for dust, gaseous pollutants and noise levels are presented in the following sections. Apart from the air quality data, some meteorological data of the site which have direct relationship with project implementation were collected once to enable interpretation of air quality data. These include temperature and relative humidity. The collection of data was done during the busiest day and hours (10am to 2pm) so as to predict the level of air quality during the construction phase. Statistical basis was considered but due to variation of activities during the day, the statistical data could mislead the prediction.

Measurement of ambient dust levels ($PM_{2.5}$ and PM_{10})

Dust levels were measured in terms of $PM_{2.5}$ and PM_{10} using a portable microdust monitor. During measurements, the device was mounted at a breathing height of approximately 1.5 meters above the ground, and measurementswere taken for one hour.

Measurement of ambient gaseous pollutants

Baseline levels of ambient gaseous pollutants were measured using a Portable Multi-Gas Analyzer. Parameters measured included: carbon monoxide (CO), Nitorgen dioxide (NO2), Sulpherdioxide (SO2),and Hydrogen sulphide (H_2S). At the sites, the equipment was mounted at 1.5m above the ground. Three reading were collected at each sampling point, and the mean value was used as a representative value of that particular point. Results were then compared with local and international standards's limits.

Meteorological conditions

Temperature and relative humidity were measured at the same sampling points used for ambient air quality, using Environmental quality meter with thermocouple and RH sensor. Four readings were recorded for each parameter and the average value was used.

Collection of biological information

The proposed area for construction is in the existing TIA Singida campus where no much of biology is existing.

Water samples collection

As there is no any water body within the project area, no any water sampling and laboratory analysis was conducted.

Collection of socio-economic data

Both primary and secondary data were collected. Primary data were collected by direct measurement, observations and using semi-structured interviews with respective and targeted parties (as explained in the previous section). Secondary data were obtained from various relevant sources of information such as education and many other official and non-official documents.

1.6.3 Stakeholders consultation

Stakeholder consultation process was designed to comply with the requirements for public consultation as prescribed in Tanzania's EIA and Audit regulations for stakeholder engagement. Stakeholders' identification was based on the influence, power, interest, role and relevance of an organization, group or individual to the proposed project. The consultants ensured that key stakeholders were given adequate opportunity to participate in the ESIA exercise. Different participatory methods were used. These include: key informant interviews; meetings and assessment of the proposed project site. **S**takeholders were given opportunity to point out issues, concerns, opinions and views on the project and their acceptance of the project. An issue raised by one individual or a group of people was cross-checked by discussing it over with other groups. Description of stakeholders' consultation including the list of stakeholders consulted is provided in Chapter 5.

1.7 Project impact assessment

The environmental and social assessment has been undertaken in close interaction with the master plan team and the design team. In this process environmental impacts have been evaluated for various alternatives. Several project alternatives were considered including that of not implementing the project. The fundamental environmental protection strategy and environmental considerations influencing engineering design were incorporated. However, reasonable regard to technological feasibility and economic capability were considered. *Inter alia*, the assessment entailed the following:

1.7.1 Project impacts identification

Superimposing project elements onto the existing social and environmental natural conditions made it possible to identify the potential impacts of the proposed project. The checklist method was used to identify the impacts in which the contender list of key impacts such as noise pollution, waste management was developed etc.; Further, environmental impact matrix method was adopted in identifying impacts of major concerns. A key guiding assumption in this study is that the project will be designed, constructed and operated with due care for safety and environmental matters using current and practical engineering practices and/or Best Available Technology Not Entailing Excess

Cost (BATNEEC). The implementation schedule of the mitigation measures is summarized in the ESMP.

1.7.2 Impact Assessment

The actions undertaken to determine the significance of potential project impacts involved the following three key steps:

i. **Prediction**: What will happen to the status of specific receptors as a consequence of this project activities (primarily; what is the magnitude of the impact?);
ii. **Evaluation of significance**: How significant is the impact to the identified receptors namely, affected communities and the wider environment – land, air and water? What is its relative significance when compared to other impacts?;
iii. **Residual Impacts**: After mitigation, are the impacts still of concern and/or significant? If yes, the process needs to be repeated at least once before the 'final' determination of residual impact significance occurs.

Potential impacts arising from planned activities, cumulative impacts with other developments and unplanned events (e.g. accidents, natural disasters, etc.) were also assessed. Stakeholder engagement is undertaken throughout the implementation of the proposed project to ensure that Affected and Interested Parties are aware and informed of the proposed project and have an opportunity to provide input regarding potential proposed project impacts and mitigation measures.

1.7.3 Development of Mitigation Measures

As part of the EIA process, when impacts (adverse and/or significant) were identified and could not be managed via design controls, mitigation measures were developed in line with the Mitigation Hierarchy. First, efforts were made develop measures to avoid, or prevent, then minimize or reduce adverse impacts or to enhance potential beneficial impacts. For remaining significant and moderate residual impacts, mitigation measures were developed.

1.8 Report Structure

The report is presented in accordance to the format given in Section 18 (1 and 2) of the Environmental Impact Assessment and Audit Regulations, 2005. This report is structured in the following style:-

i) Executive Summary
ii) Table of Contents
iii) Acknowledgement
iv) List of Acronyms

1. Introduction
2. Project description
3. Policy, administrative and legal framework
4. Baseline/ Existing conditions

5. Stakeholders Analysis
6. Assessment of Impacts and Identification of Alternatives
7. Environmental and Social Mitigation Measures
8. Environmental and Social Management Plan
9. Environmental and Social Monitoring Plan
10. Resource Evaluation / Cost Benefit Analysis
11. Decommissioning and Closure
12. Summary and Conclusions

References

Appendices

CHAPTER TWO

PROJECT DESCRIPTION

2.1 Location and accessibility

2.1.1 Location

The site for construction of proposed academic building at Singida Campus is administratively located at Unyankhae mtaa, Mandewa ward in Singida Municipality in Singida district, Singida region. It is located on Plot No. 1 Block 'Z' approximately 3 km from Singida municipality centre along Sepuka road. The site is located within the existing Singida Campus in the following central coordinates

- X Coordinate in Decimal Degree (DD) Format: -4.800888°
- Y Coordinate in Decimal Degree (DD) Format: 34.732727°

Singida Municipality is boarded by Singida District Council to the Eastern and Northern side and Ikungi District Council to the Western and South Western side. It is the hub (Central part) of the Region with roads leading to Dodoma, Manyara, Arusha, Tabora, Kigoma, Shinyanga and Mwanza Regions.

2.1.2 Accessibility

The site is easily accessed by the existing Sepuka tarmac road which junctioned off from Singida – Mwanza highway. The road network is necessary to cater for transportation of people, materials, tools and equipment during all phases of project implementation. Existing road networks in Singida district will be used.

2.1.3 Adjacent land uses

The site for proposed project is located within the existing TIA Singida Campus' plot. It is surrounded by other existing TIA education infrastructures including lectures theatres, classroom and office buildings. Thus the main adjacent land use is for education, research and consultancy purposes.

2.2 Availability of nearby sensitive ecosystem/areas

The proposed project is located within the existing TIA Singida Campus' plot. According to physical observation and consultation conducted with the stakeholders it was noted that there is no any sensitive ecological feature within the core project area and its proximity.

2.3 Proof of land ownership and planned land use

Land for proposed project is legally owned by Tanzania Institute of Accountancy (TIA) on Plot No, Block Z, with certificate of land occupancy number 20487 at Unyankhae village, Singida Municipal with total area of 16.23 Hectares. The land use of the area fall under use group K use class (b) for education buildings purpose only.

2.4 Design summary of the proposed project

The proposed project is about construction of academic building which is planned to be executed in the existing TIA Singida Campus' plot measures the land's size of 54.5 acres (220,227 m^2). Due to climatic and other environmental disaster such as heavy rain, high temperature, wind and others, buildings will be subjected by these environmental disasters. Hence during preparation of the proposed project disaster and risk assessment together with geotechnical investigation, topographical surveys were conducted according to ESS1: Assessment and Management of Environmental and Social Risks and Impacts. Design of the proposed project shows that plinth area (built-up area) of the proposed academic building and its associated infrastructures is 9,095 m^2. The proposed project scope involves design and construction of five storey single block coupled with support and ancillaries' infrastructures. Basically, construction works will involve medium to large scale engineering works mainly civil and building engineering works, electrical and mechanical engineering works and plumbing works. Various types and quantities of construction materials will be used. Sizeable quantities of wastes are expected to be generated during construction and operation phases of project.

2.4.2 Climate Change risks mitigation and adaptation in the Project Design

It expected to have climate change risk such as high temperature, heavy rain, drought, floods etc that will affect project. Hence in order to mitigate adapt to these impacts. The proposed project shall institute infrastructures that that enhance sustainability and low energy use, rainwater harvesting, storm water management systems, adequate natural ventilation and lighting, and maintaining a significant green space, by practices the following below.

- Enhance greenery walkways. The design shall ensure that pedestrian movement and minimizes motorized transport within the site to reduce air emissions (greenhouse gasses (GHGs)) and maximizing Carbon sequestration. Enhance trees planting programmes. Restriction of vegetation destruction and trees cuts to protect the land cover and increase carbon sequestration.
- Enhance building with low energy use: to encourage and promotions use of motion sensors in public areas to enable auto switch ON/OFF of lights; adequate openings for cross ventilation, provisions and maximize utilization of renewable energy options such as solar and wind; Utilization of biogas from the wastewater treatment plant for cooking; buildings to be oriented and constructed to take advantage of natural lighting and cross ventilation as a means of minimizing energy consumption during operation.
- The buildings with low footprint. This increases green spaces; and accommodation of rainwater harvesting, storm water and waste management systems and embracing water efficient processes.
- Enhance natural vegetation. In the open spaces, native plants have been recommended to add the benefit of being useful for storm water treatment and infiltration, which is in the

central part of the site. Moreover, natural trees canopy cover and shade provided by trees in the area and more provision of ecosystem services.

2.4.3 Disaster risk management

Due to the risk of disaster, the proposed project shall provide fire prevention and fire fighting facilities. Project shall institute wastes both solid and liquid waste management system for contamination and disease prevention. Institute road signs in access roads such as reduce speed and encourage walkability within the buildings area to reduce vehicle accidents.

2.5 Gender inclusiveness

Project understands the need of different gender groups such youth, women, elderly and people with special need. Hence, the proposed project design ensure programs and practices that accommodate the need of different groups such as developed of smart and friendly to gender, including considerations of persons with special needs (e.g. physical, learning impairment, emotional and behavioural). These include provisions of lamps, toilets, etc.

2.6 Occupational, Health and Safety (OHS)

The proposed project will ensure that the occupational health and safety is given highly priority throughout the project circles by execute project activities as per requirement of the OHS Act, 2003 and according to Environmental and Social Standards, ESS2 (Labor Working Conditions) and ESS4 (Community Health and Safety).

2.7 Components of the project

According to the design concept, the main project components include the following:

2.8 Construction of academic block

The project will involve construction of five storey single academic block which will include various facilities as described below:

Table 2.2: Scope of proposed academic block at Singida Campus

SN	Name of Facility	Number	Capacity each	No. of Person/students
1	Lecture theatre	2	500	1000
2	Classrooms	8	250	2000
3	Classrooms	6	200	1000
4	Classrooms	5	100	700

SN	Name of Facility	Number	Capacity each	No. of Person/students
6	Office	15	2	30
7	Conference room	2	150	300
8	Conference room	1	200	200
9	Studio	1	15	15
10	Other requirements and facilities: • Enough toilets as per the standard also include two toilet units for the special need students • Reception • Ramps • Roof structure to allow provisional for rain water harvesting • Utilization of natural lights • Provisional for installation of solar panels and utilities saving mechanisms			

2.9 Construction of storm water drainage system

Appropriate storm water drainage systems will be established at core project site. The system will include the following key components: erosion protection measures; collection and storage of run-off from roofs of academic block; collection and conveyance of increased run-off from hardened surface areas including access roads, parking slots, and pedestrians' ways; and construction of attenuation ponds which will minimize the peak flow across the property and from each of the buildings, hardened areas before its eventual discharge.

2.10 Construction of internal access roads

Private access roads that connect the ten block and other associated facilities will be constructed within the proposed project site. It will include construction of pedestrians and cyclist ways. Lengths of access roads are estimated to be 100 m. Roads will be made up of pavement blocks.

2.11 Construction of parking areas

Parking slots for residents and non-residents will be constructed within project site. Parking areas will be made of concrete and pavements. Parking areas will have capacity to accommodate about 40 vehicles at one time.

2.12 Construction of waste management facilities

Significant quantity of wastewater will be generated per day during operation phase. Wastewater collection facilities will be constructed at site preferably septic tank and soak away pit.

2.13 Project activities

Implementation of the proposed project will follow a conventional project cycle of scheduling, procedures and practices. It will involve five main phases; planning and design; mobilization; construction; operation and decommissioning phases. Each project phase is characterized by its unique and general project activities as described below.

2.14 Design phase

This is an on-going phase embracing project appraisal and design activities most of which have been completed. The phase constitutes the following design activities.

- Topographical and geotechnical surveys to collect data which informed the assessment of the technical feasibility of the project site – in progress
- Preliminary and detailed design of the proposed project – completed
- Acquiring building permit and OSHA certificate – in progress
- Obtaining other required permits from national and local authorities including ESIA Certificate from NEMC and fire certificate - ongoing.

2.15 Mobilization phase

Necessary safety measures will be put in place by the contractor, furthermore, securing the construction site will be done by putting iron sheets around the project site. Also, the contractor will establish a temporary site office for construction activities. The office will also include material store and pit latrines for both genders.

The phase involves the following main activities:

- Procurement of contractors and suppliers of various goods and services for project development – in progress;
- Deployment of necessary resources including the workforce (skilled and unskilled) for execution of various project activities, mobilization and transportation of construction machinery, working tools and equipment to the sites;
- Mobilization of construction materials to the site. This included gravel, sand, steel, timber, cement, reinforcement bars, casting of pre-cast materials such as concrete, etc.;
- Establishment of support facilities (i.e. site office, store, etc.).

2.16 Construction phase

Construction phase will about 2 years (24 months) and will involve physical execution activities necessary to realize the operation of the proposed project. During assessment of project site for

scoping study, it was observed that construction works have not started. Construction phase activities will include but not limited to the following key undertakings:

- Earthworks: This involved clearing of the site and excavation of buildings foundation to enable construction activities to take place;
- Continue mobilization of construction materials: Materials from various sources will be transported by trucks to the construction site;
- Actual construction works: This will involve masonry, concrete works, blocks walling, steel works, and related activities for construction of academic block;
- Installation works: This will involve installation of electro-mechanical, ICT gadgets and appliances and installation of water and sanitation facilities;
- Landscaping: This shall be done to match with the surrounding environment to improve the aesthetic value or Visual quality of the site;
- Construction of surface water drainage system: This shall involve excavation of trenches for construction of storm water management infrastructures;
- Construction of paved parking and driveways;
- Supervision for construction and installation works.

a) Construction site preparation activities

Construction site preparation activities will include general clearance of the site. Other activities will be earth works for the establishment of the subsurface structures (foundation) and stockpiling of cut materials for use in landscaping after construction activities. All wastes as a result of site clearance will be safely disposed-off at official dumping site.

b) Construction technology

Both, conventional and modern construction technologies and methods will be employed in the construction of proposed project. Construction methods will involve a collection of innovative tools, machinery and semi-automated and automated construction equipment. The project will employ value service techniques aimed at reducing costs for the project. It will use the primary tenet of value service so that basic functions of project components are preserved and not reduced as a consequence of pursuing value improvements. Other important factors of consideration will be environmental sustainability, social acceptability, institutional manageability as well as operation and maintenance requirement

c) Construction materials

Proposed project will require various standard construction materials including cement, gravel, aggregates, sand, steel rods, water, timbers etc. for construction works. Most of construction materials will be obtained locally within Singida District and Singida Region at large and others will be purchased from licensed local suppliers in Tanzania and others will be imported from

licensed suppliers. Table 2.2 below provides details of major construction material required for construction works.

Table 3.2: Materials requirement for construction works

SN	Materials	Sources	Quantity
1	Hardcore	To be procured from registered quarries including Ulemo and Mtipa quarries and in Singida district or elsewhere	80 m^3
2	Sand	To be procured from authorized areas in Singida district including Mungumaji area.	500 m^3
3	Aggregates	To be procured from registered quarries (such as Ulemo and Mtipa quarries) and suppliers in Singida district or elsewhere	400 m^3
4	Reinforcement bars	To be procured from registered suppliers in Singida district or elsewhere	200 tons
5	Timbers	To be procured from registered suppliers in Singida district or elsewhere	4,000 pcs
6	Blocks for walling	To be manufactured on site at project area	22,000 blocks
7	Cement	To be procured from registered suppliers in Singida	4,000 bags
8	Marine boards	To be procured from registered suppliers in Sikonge district or elsewhere	665 pcs
9	Water	To be supplied by SUWASA	

d) Equipment and machinery requirements

The proposed project will make use of various types of construction equipment and machineries. The list of machinery, equipment and vehicles that will be used during mobilization and construction phase will include but not limited to the following: excavators, grader, concrete mixer; concrete vibrator, plate compactor, welding machine, lifting machines, various hand tools, generator, dump trucks, heavy and light duty vehicles, water bowser, and supervision vehicles.

e) Human resources required

Proponent (TIA) will engage qualified contractor for construction works of the proposed project. Contractor will engage semi-skilled (e.g. drivers, equipment operators, technicians, craftsmen,) and unskilled labourers. A preliminary analysis of the project workforce requirement estimates that about 100 people will be engaged during the peak of construction phase who will be working for 10 hours per day. The duration for construction phase is estimated to be 24 months. Most of

the unskilled workforce will be drawn on from Singida Municipality in the spirit of embracing the local contents.

f) Transportation

Construction materials from the sources will be transported by Lorries/trucks during mobilization and construction phase. The main access road that will be used is Sepuka turmac road (Ndago road). Other existing roads in Singida District and Singida Region will also been used. Most of the construction equipment will be the property of suppliers to be engaged.

g) Storage

Temporary storage facilities will be established within the project site to cater for the storage of inputs materials. Particular attention will be paid to those which can easily be affected by weather conditions including cement, chemicals, fuel, lubricants, steel, timber, etc. Maintenance and repair of vehicles/trucks will be done in the existing garages in Sikonge. Filling of fuel for some equipment such as compactor and generator will be done on site whereas for vehicles and trucks may be done outside the project area in existing fuel filing stations in Singida.

h) Local supplies and services

Food supplies and medical facilities will be from the local suppliers and service providers in Mandewa Ward and Singida Municipality at large. However, the contractor will provide room for local food vendors and ensure availability of first aid medical services at the work place.

i) Construction supervision

Construction supervision of civil works shall be done by a Professional Engineer who is registered by Engineers Registration Board (ERB) of Tanzania. TIA will engage qualified Consultant(s) for for supervision of construction works.

2.17 Operation and maintenance phase

This phase will begin after construction works have been completed. Operation phase of constructed campus building will provide adequate and conducive learning and working environment for TIA – students and staffs. TIA will be responsible for overall management of all operational and maintenance activities for the built up of the proposed academic block and its associated infrastructures. Operation phase will be associated with waste generation that will require proper management.

a) Management and operation activities

TIA will be responsible for overall management of all operational and maintenance activities for the project. A dedicated operation and management unit will be established. This will ensure smooth operation of project and adherence to the environmental and social-economic standards.

TIA will also be responsible for implementation of environmental and social management and monitoring plans of proposed project.

b) Maintenance required

The built academic block with its associated facilities will be repaired and maintained regularly during the operational phase of the project. Such activities will include repair of building walls and floors, repairs and maintenance of electrical gadgets and equipment, repairs of leaking water pipes, painting and replacement of worn out materials among others. TIA will be responsible for maintenance of proposed project.

c) Utilities Required

Water Supply

During operation phase, significant quantity of water a will be required for domestic activities including drinking, washing and sanitation services. It is expected that main source of water will be supplied by SUWASA. Two elevated water storage tanks with capacity of 10 m^3 each and underground storage tank with capacity 50 m^3 will be installed as water reservoirs. An estimate of quantity of water required during operation phase will be based on the increased number of students to be enrolled and staff to be work at TIA. It is estimated that about 500 students will be enrolled per year and 50 staff will be employed. This will make a total of 550 people. It is also estimated that water requirement per capital per day is 20 litres. Therefore, total water requirement is estimated to be 110,000 litres/day (11 m^3/d).

Electricity Supply

Significant quantity of electric power will be required for office works training purposes during operation phase which will be supplied by TANESCO. Standby diesel-powered generators with capacity of 50 kVA will be installed to save in case of power outage. The quantity of electricity required is estimated to be 300 kWh per day.

d) Support facilities and services

TIA will hire cleaning and sanitation service providers for provision of cleaning and waste collection and safe disposal services. Also, TIA will engage reputable security company to provide security service for people and properties at project area during operation phase.

2.18 Decommissioning phase

Design lifespan of this proposed project is more than fifty years (50) years. The decommissioning phase will commence when operation of proposed project ceases due to various reasons. The main objectives of the decommissioning phase are to ensure environmental and public health and safety are adhered, and to rehabilitate the project area to a state which will be favourable to other development activities. It will involve the following activities:

- Preparation of detailed decommissioning plan;
- Mobilization of the workforce;
- Demolition of built building and its associated infrastructures;
- Rehabilitation of site.

2.19 Waste generation

2.19.1 Construction phase

Significant quantities of wastes are expected to be generated during construction phase of proposed project. Table 3 below provides a glimpse description of types, sources and quantity of waste to be generated.

Table 2.4: Description of waste to be generated during construction phase

Type of waste	Source and characteristics	estimated amount
Overburden	Will emanate from earth moving works for soil excavation for establishment of buildings foundations and site clearance.	80 m^3
Solid waste	These will be garbage and rubbish such food remains, papers, cardboards, plastic bottles, etc. This will be generated by about 100 construction crew (labourers) at generation rate of 0.25kg/day/person	25 kg/day
Wastewater	This will include wastewater/sewage to be generated from sanitation facilities (washing basins and toilets). It will be generated based on 100 people at site with estimated water consumption rate of 20L/capita/day and wastewater discharge factor of 80%.	1,600 litres/day
Waste oils/ Hazardous wastes	Waste oil will include leaking fuels and lubricants from poorly maintained trucks, vehicles and equipment Hazardous wastes will include scrap metals, paint containers, etc.	5 litre/day
Construction wastes	These are wastes generated as a result of construction works. It comprises surplus construction materials, woods, containers and packaging materials	20 kg/day
Emissions	These will include emissions from combustion of fossil fuels from stationary or mobile sources such as construction vehicles and machineries.	150 kg CO_2 per day

2.19.2 Operation phase

Significant quantities of wastes are expected to be generated during operation phase of proposed project. Table below provides a glimpse description of main types, sources and quantity of waste to be generated.

Table 2.5: Description of waste to be generated during operation phase

Type of waste	Source and Characteristics	Estimated amount
Solid waste	These will be garbage and rubbish such food remains, kitchen wastes, papers, cardboards, plastic bottles, and all general garbage generated from domestic activities. This will be generated by about 550 increased people including students and staffs at generation rate of 0.3kg/day/person	165 kg/day
Wastewater	This will include wastewater/sewage to be generated from domestic activities including cooking, washing and from sanitation facilities. It will be generated based on 550 people to with water consumption rate of 20L/capita/day and wastewater discharge factor of 80%	9,000 litres/day
Storm water runoff	This will be generated from the rainfall catchment areas in the core project area	
Waste oils/ Hazardous wastes	Waste oil shall include leaking fuels and lubricants from poorly maintained trucks, vehicles and equipment. This waste may also be generated from the workshops.	4 litre/day
Emissions	These will include emissions from combustion of fossil fuels from stationary or mobile sources such as vehicles and machineries. Various emission will also be generated from the training workshops.	100 kg CO_2 per day

2.20 Waste management

2.20.1 Construction phase

Appropriate measures for management of waste to be generated during construction phase are described in table below. Notably, wastes generated will be managed in accordance with the Environmental and Social Management Plan prepared this report.

Table 2.6: Waste management measures during construction phase

Type of waste	Management Measure
Overburden materials	• Unnecessary excavation of land thereby confining earth works to effective areas i.e. pipe laying and foundation works shall be avoided; • Most of overburden produced will be stockpiled for backfilling and site rehabilitation; • The rest of overburden materials (if any) will be used for land reclamation activities in the locality.
Solid waste	• Municipal waste management plan will be developed and implemented in order to prevent, minimize and control the disposal of such waste; • Wastes will be properly collected, segregated, transported for safe disposal at Mwankoko official crude dumping site in Singida municipality by registered service provider.
Wastewater	• Appropriate wastewater management plan will be developed and implemented to prevent, minimize and control the discharges during operation phase; • Onsite sanitary facilities will be established to include flush toilets and bathing facilities together with the septic tank and soak away pit; • When septic tank is full during operation phase will be emptied by registered emptier truck and disposed of to the existing authorized Mwankoko crude sludge dumping site in Singida municipality
Hazardous wastes	• Secondary containment measures in areas where fuels, oils and lubricants are stored and loaded or unloaded shall be installed; • All hazardous materials and chemicals will be handled in accordance with their Materials Safety Data Sheets held on site.
Construction wastes	• Appropriate waste management plan will be developed and implemented at the site to minimize environmental damage from construction activities. This will include the delivery awareness to construction workers and proper storage, handling, use, clean-up, and disposal solid wastes; • Useful wastes will be used for land rehabilitation on and off site; • Useful waste will be properly collected, stored and transported for safe disposal at Mwankoko official crude dumping site in Singida municipality • Metal waste will be sold/ provided to registered scrap metal dealers.
Emissions	• Drivers and operator will be train on measures to minimize emissions (e.g. shut off engines when vehicles not in use, etc.). • Efficient and well serviced vehicles and equipment will be used in order to minimize emissions.

2.20.2 Operation phase

Appropriate measures for management of waste to be generated during construction phase are described in below. Notably, wastes generated will be managed in accordance with the Environmental and Social Management Plan prepared in this report.

Table 2.7: Waste management measures during operation phase

Type of waste	Management Measure
Solid waste	• Appropriate waste management plan will be developed and implemented; • Appropriate waste collection bins/skip buckets will be put in places; • Wastes will be properly collected, segregated, transported for safe disposal at Mwankoko official crude dumping site in Singida municipality by registered service provider.
Wastewater	• Appropriate wastewater management plan will be developed and implemented; • Appropriate onsite sanitation facility preferably septic pit and soak away pit will be constructed. When septic tank is full during operation phase will be emptied by registered emptier truck and disposed of to the existing authorized Mwankoko crude sludge dumping site in Singida municipality
Storm water runoff	• Appropriate storm water drainage systems will be established at project site; • The design of the storm water system will make provision for erosion protection, as the transformed area, after construction will have a greater surface run-off that will contribute to higher flows • Rainwater harvesting will be used to minimise the generation of surface runoff
Waste oils/ Hazardous wastes	• Secondary containment measures in areas where fuels, oils and lubricants are stored and loaded or unloaded shall be installed; • All hazardous materials and chemicals will be handled in accordance with their Materials Safety Data Sheets held on site; • Service and maintenance of vehicles will be done at designated garages
Emissions	• Drivers and operator will be train on measures to minimize emissions (e.g. shut off engines when vehicles not in use, etc.). • Efficient and well serviced vehicles and equipment will be used in order to minimize emissions.

2.21 Project and ESIA Boundaries

2.21.1 Core area of project

This constitutes primary impact areas of the project where the proposed project will be constructed. Thus, the core project area is at Unyankhae Mtaa, Mandewa Ward in Singida Municipality, Singida Region.

2.21.2 Area of influence of project

This includes all areas extending beyond the immediate boundary of the project site and the wider area of project impacts. The size of the area of influence includes the entire Mandewa ward in Singida district, Singida Region.

2.21.3 Temporal boundaries

Temporal boundaries refer to the lifespan and reversibility of impacts. For example, the impact of construction work for the affordable housing project may be short-lived, but the presence of these buildings in the selected site may have implications that stretch far into the future until when decommissioning is undertaken. Also, consideration needs to be given to what happens when the project ends, where there is a need for site restoration and decommissioning of the water supply system. Therefore, some of the impacts that may occur during construction, e.g., noise caused by bulldozers will disappear as soon as the construction phase will be completed. The construction period will last for not more than sixty months while the operational phase is designed for more than 50 years unless unforeseen event occurs.

2.21.4 Spatial boundary

The spatial dimension encompasses the geographical spread of the impacts regardless of whether they are short term or long term. The spatial scale considers the receptor environmental component and can be local or broader. Two zones of impacts namely core impact zone and influence impact zone are considered.

1. The core Impact zone- The core impact zone includes the area immediately bordering the project (0-500m radial distance). In the case of this project, local impacts will include the site of the construction and the immediate surrounding areas.
2. The influence impact zone- includes the area beyond 500m from the proposed site. Most of impacts are expected to be within this boundary.

2.22 Project cost

The capital investment cost for development of the proposed academic building at Singida Campus is estimated at **TZS 13,633,600,000** covering the consultancy fees, land acquisition and construction materials, equipment and labour charges.

CHAPTER THREE
POLICY, LEGAL AND INSTITUTIONAL REQUIREMENTS

3.1 Introduction

A clean and safe environment is the constitutional right of every Tanzanian citizen (see article 12-28 of the Constitutional of the United Republic of Tanzania, 1977[1] as amended from time to time). The management of the environment in Tanzania is mainly vested on two public institutions, the National Environment Management Council (NEMC) and the Division of Environment (DoE) in the Vice President's Office (VPOs). The NEMC undertakes enforcement, compliance, and review of environmental impact statements whereas the DoE provides the policy formulations and technical back stopping and executes the overall mandate for environmental management in the country. The EIA certificate is issued by the minister responsible for environment. There are many policies and pieces of legislation on environmental management in Tanzania, the relevant ones and their applicability to the establishment of TIA Singida Campus; are hereinafter discussed;

3.2 Policies Relevant to the Project

There are number of sectoral policies that consider EIA as one of the planning tools for facilitating and promoting sustainable development. These policies foresee that it is possible to avoid/minimize impacts associated to project implementation and that may have negative effects to the environment by integrating environmental considerations in the decision-making process. Table 3.1 outlines the policies relevant to the project.

Table 3.1 Policies relevant to the project

	POLICY	DESCRIPTION	COMPLIANCE
1	**The National Environment Policy for Mainland (NEP 2021)**	The policy requires that implementation of development projects to be done in a way that does not compromise environmental integrity. It is mandatory to undertake EIA before any development project is authorized which is likely to have significant environmental impacts. The	*Through this ESIA, TIA is working to lessen the unfavorable environmental and social impacts of the policy as stated in its commitment.*

[1] Part III of the Constitution of the URT, 1977; contains articles on the Basic Rights and Duties (*The Right to Equality, The Right to Life, The Right to Freedom of Conscience, The Right to Work, Duties to the Society)*

	POLICY	DESCRIPTION	COMPLIANCE
		proposed project shall ensure mitigation of the adverse impacts during project implementation.	
2	**The National Land Policy (1997)**	The National Land Policy states that, "the overall aim of a National Land Policy is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad - based social and economic development without upsetting or endangering the ecological balance of the environment".	*This project complies with these criteria because it calls for the employment of cutting-edge technology both during construction and throughout operation.*
3	**The Construction Industry Policy (2003)**	This policy promotes among other things, application of the cost effective and innovative technologies and practices to support socio-economic development including utilities and ensure application practices, technologies and products which are not harmful to both the environment and human health.	*This EIA is undertaken to ensure that the project proponent uses technologies and products not harmful to both the environmental and human health by providing feasible alternatives and appropriate mitigation measure.*
4	**The National Gender Policy (2002)**	While the policy aims at establishing strategies to eradicate poverty, it is relevant to the project as it puts emphasis on gender quality and equal opportunity of both men and women to participate in development undertakings and to value the role-played by each member of society.	*At every stage of the project, from planning to execution, both genders will be adequately involved.*
5	**The Energy Policy (2015)**	The policy advocates the adoption of renewable energy options.	*This project shall intend to integrate renewable energy (solar power) and gas as part of the energy source were found feasible.*
6	**The National Water Policy (URT, 2002)**	Policy directs concerted efforts in the protection of water sources and catchments. The policy also advocates	*The proposed project is planned to utilize the least amount of water possible.*

	POLICY	DESCRIPTION	COMPLIANCE
		the conservation, wise-use and minimization of water uses.	*Additionally, during the phases of development and operation, pollution of water sources will be avoided or reduced.*
7	**The National Health Policy (URT, 2003)**	The policy encourages safe basic hygienic practices in workplaces, promotes sound use of water, promotes construction of latrines and their use, encourages maintenance of clean environment; working environment which is conducive to satisfactory work performance.	*By keeping the workers in clean conditions and continuing to provide them with the proper PPE based on their working sectors, the Contractor shall adhere to this policy.*
8	**Education Training Policy (2014)**	The education training policy, 2014 stressed that for improvement of the quality of education in Tanzania by modernizing education training and use of state-of-the-art equipment for training.	*TIA through HEET will increase accommodation, teaching and learning infrastructure and use of the state-of-the-art equipments.*
9	**National Mineral Policy (2009)**	The National Mineral Policy also addresses that the mining activities should be undertaken in a sustainable manner.	*The project proponent will not engage in any mining operations inside the project area. Fine and coarse aggregates for the proposed project will be strictly purchased from authorized vendors.*
10	**The National Employment Policy, 2008**	The policy stimulates national productivity to attain full, gainful and freely chosen productive employment, in order to reduce unemployment, underemployment rates and enhance labour productivity. Also, the government and employer will be responsible for providing special facilities and equipments to enhance the capacity of people with disabilities to enter the world of work as employees or self-employed.	*The project proponent will involve employees with special needs but who are capable by creating a friendly environment for them to work with quality like other people.*

	POLICY	DESCRIPTION	COMPLIANCE
11	**National HIV and AIDS Policy, 2001**	This policy identifies HIV/AIDS as a global disaster, hence requiring concerted and unprecedented initiatives at national and global levels. It recognizes HIV/AIDS as an impediment to development in all sectors, in terms of social and economic development, with serious and direct implications for social services and welfare.	*The project proponent and contractor will provide education to students and villagers on the effects of HIV/AIDS and how to protect themselves from infection, especially during the construction phase due to the presence and interaction of people from different areas.*

3.3 Legal Framework

This section addresses the legal conditions that are relevant to the proposed project. This ESIA has been prepared in general compliance with the legislations outlined in table 3.2.

Table 3.2: National legal frameworks relevant to the project

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
1	**Environmental Management Act (EMA), 2004**	Under this Act, NEMC is mandated to undertake enforcement, compliance, review and monitoring of environmental impact assessment and has a role of facilitating public participation in environmental decision making, exercise general supervision and coordinating over all matters relating to the environment.	*All sections shall continue to be observed by Proponent in order to protect the environment against any sort of pollution (refer to the Environmental and social Management Plan of this report).*
2	**The Land Act, 1999, CAP 113 R.E. 2019**	The law as amended in 2004 recognizes the role of land in economic and urban development. The law provides for technical procedures for preparing land use plans, detailed schemes and urban development conditions in conformity with land use plan and schemes.	*The proponent will adhere to the Act during project implementation. The project proponent has undertaken the ESIA as a first step to direct project operations.*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
3	**The Urban Planning Act (2007)**	The law provides for the orderly and sustainable development of land in urban areas, to preserve and improve amenities; to provide for the grant of consent to develop land and powers of control over the use of land and to provide for other related matters.	*The project will seek planning consent and building permits from relevant authorities.*
4	**Occupational Health and Safety Act (2003)**	The law requires employers to adhere to a legally acceptable working environment for workers in order to safeguard their health.	To comply with the legislation, the Proponent/ Contractor will get an OSHA certificate of registration of a workplace.
5	**Engineers Registration Act and its Amendments 1997 and 2007**	The Acts regulate the engineering practice in Tanzania by registering engineers and monitoring their conduct. Laws require any foreigner engineer to register with ERB before practicing in the country. Foreign engineers who will be involved in this TIA project shall abide by the law requirements.	*The project construction sites are required to implement registered engineers, regulations and precautions should be adhered to during the project phase.*
6	**The Contractors Registration Act (1997)**	The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in the practice. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. implementation.	*The proponent shall comply with the law requirements during the recruitment of contractors for TIA project*
7	**The Architects and Quantity Surveyors Act (1997)**	Similarly require architects and quantity surveyors (QS) to be registered with AQRB before practicing.	*Only registered architects and quantity surveyors shall be involved in the implementation of the proposed project.*
8	**Public Health Act 2009**	This Act is relevant to the project especial through Section 66 of the Act state that: *(1) A block or premises shall not be erected without first submitting the*	*The project proponent should ensure public health during the all the phases of the project.*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
		plans, sections and specifications of the block site for scrutiny on compliance with public health requirements and approval from the Authority.	
9	**Fire and Rescue Act (2015)**	The Act obliges the owners and managers of the structures to set aside places with free means of escape and install fire alarm and detection systems, fire hydrants or such other escape and rescue modalities in the event of fire.	*By requiring that the selected Contractor and its staff complete fire and rescue training and obtain a certificate of conformity, and making sure that the Fire and Rescue Force receives and approves all design structures and site layout plans The Proponent will comply with this Act.*
10	**Employment and Labor Relations Act (No.6), 2004**	The Act prohibits forced labor and discrimination of any kind in the workplace. It provides employment standards such as contracts with employees, hours of work, remuneration, leave, unfair termination of employment, and other incidents of termination. The Act strictly prohibits child labor and discrimination.	*The project operators shall ensure all labor discrimination at workplace will be prohibited during the all the phases of the project, which will bring economic justice to the employees and labor rights to be observed.*
11	**Workers Compensation Act (No.20), 2008**	The Act focuses on the provision for adequate and equitable compensation and rehabilitation for employees who suffer occupational injuries or contract occupational diseases arising out of, and in the course of their employment, and in the case of death to their dependents.	*The proposed TIA projects will operate within the requirements of this legislation and abide by all relevant sections provided by this Act.*
12	**The Law of the Child Act, 2019**	An act to provide for the reform and consolidation of laws pertaining to children, to specify children's rights, to advance, safeguard, and maintain a child's welfare in order to give effect to	*The contractor, in collaboration with TIA, will take measures to ensure that no child under the age of fourteen*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
		international and regional conventions on children's rights; to further regulate employment, apprenticeship; to make provisions with regard to a child in conflict with the law; and to provide for related matters.	*is engaged as an employee in any work throughout the project's execution.*
13	**Prevention and Control of HIV/AIDS Act (No.28), 2008**	The act among others provides details to promote public awareness on the cause, mode of transmission, consequences, prevention and controls of HIV and AIDS.	*The Proponent shall operate within the requirements of this legislation in addition to those of the HIV policy.*
14	**Standard Act of 2009**	National Environmental Standards Compendium (NESC) established by this Act comprises of standards that require compulsory compliance. It covers specific standard for Tolerance Limits of Emissions discharge including water quality, discharge of effluent into water, air quality, control of noise and vibration pollution, subsonic vibrations, soil quality, control of noxious smells among others.	*TIA shall observe this Act and regulatory requirements and apply the mitigation methods suggested in this document. The project must also follow all the guidelines established by environmental best practices.*
15	**Universities Act No. 7 of 2005**	Universities Act No. 7 of 2005 provides for the establishment of the Tanzania Commission for Universities (TCU) to provide the procedure for accreditation of institutions of higher learning and other related matters.	*The proposed TIA projects will be regulated by the Tanzania Commission for Universities (TCU) for ensuring that quality education is offered, which meets the needs of all the stakeholders in line with this Act.*

3.4 Relevant Regulations and Guidelines

This section addresses the National Regulations and Guidelines which are relevant to the proposed project. This ESIA has been conducted in general compliance with the outlined regulations and guidelines in table 3.3.

Table 3.3: National regulation and guidelines relevant to the project

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
1	**Environmental Impact Assessment and Audit (Amendment) Regulations (2018)**	These Regulations set out the EIA procedure and regulatory system for carrying out EIA in Tanzania that requires every Developer to follow. Part IV Regulation 13(1) requires the Project Proponent to conduct EIA in accordance with the general environmental impact assessment guidelines and in accordance with the steps outlined in the Fourth Schedule of the regulations.	*TIA has conducted the Environmental and Social Impact Assessment (ESIA), thus adhering to the stipulations outlined in these regulations.*
2	**Environmental Management (Air Quality Standards) Regulations, 2007**	The objective of this standard is to set baseline parameters for air quality and emissions within acceptable standards. It enforces minimum air quality standards prescribed by NEMC to industrialists.	*The proponent will ensure that all emissions will be within recommended standard level.*
3	**Environmental Management (Soil Quality Standards) Regulations, 2007**	The objective of this standard is to set limits for soil contaminants in agriculture and habitat. It enforces minimum soil quality standards prescribed by NEMC to maintain, restore and enhance the sustainable productivity of the soil.	*TIA will make sure that all vehicles and excavators used for loading and transporting raw materials are properly maintained. Additionally, make sure that wastewater is directed to the appropriate treatment.*
4	**Environmental Management (Water Quality Standards) Regulations, 2007**	The objective of this standard is to enforce minimum water quality standards prescribed by the NEMC. It ensures all discharges of pollutants take account the ability of the receiving waters to accommodate contaminants without	*By guaranteeing that all liquid waste produced by the planned project and existing infrastructures is disposed correctly through the appropriate*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
		detriment to the uses specified for the waters concerned, so as to protect human health and conservation of the environment.	*treatment without harming the environment, TIA will comply with this rule.*
5	**he Environmental Management (Standards for Control of Noise and Vibration Pollution) Regulations, 2015**	The regulation prohibits a person to make any loud, unreasonable, and unnecessary noise that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and of the environment. It describes the permissible noise levels from different facilities.	*TIA ensures that these regulations are adhered by ensuring noise and vibrations produced during construction period are within acceptable limit.*
6	**The Urban Planning (Application for Planning Consent) Regulations, 2018**	The regulation state that no person shall carry out any development within the Planning Area without a planning consent granted by the Planning Authority under section 32 of the Act and these Regulations. Also, these regulations declare that where the proposed development involves any building or engineering or mining work in, on, under or over any land or premise the site plans and building plans shall be submitted.	*TIA ensures that these regulations are adhered by seeking planning approval as per the regulations.*
7	**The Urban Planning Regulations (Space Standards), 2018**	The Urban Planning Space Standards provides guidance on space utilization in order to achieve harmony and sustainable development. Space standards provide suitable heights for buildings according to their use, guide space to be reserved between one building and another (setbacks), plot coverage and plot ratio. It also guides provision of space to accommodate both motorized and non-motorized transport systems such as roads, parking and footpaths / pedestrian walkways.	*The project at TIA has adopted adequate project area utilization during its implementation and has taken into account the needs of urban planning space standards from its conception and design of buildings to be developed.*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
8	**The Urban Planning (Zoning of Land Uses) Regulations, 2018**	The regulations were formulated under section 77(1)(d) of the Urban Planning Act (Cap. 355). For the purposes of these Regulations, uses of land that are permitted and those that may be permitted under special circumstances by the planning authority in different zones of the local planning area shall be as follows: Residential, Commercial, Industrial, Institutional, Public Utilities among others.	*The Proponent will abide to the requirement of the regulations during design and construction period.*
9	**The Urban Planning (Use Group and Use Classes) Regulations, 2018**	For the purposes of planning and the control of development, all uses of land and buildings are categorized in the use groups and use classes in the First Schedule of this regulation. The making of any change of use of any land or buildings from a purpose within any use class prescribed under Part I of the regulations to the use thereof for any other purpose within the same use class shall not be deemed to be "development".	*TIA ensures that these regulations are adhered by ensuring the purpose of the land and its use for college development as stated in the certificate of occupancy.*
10	**The Environmental (Solid Waste Management), 2009 Regulations as Amended in 2016**	This regulation provides the principle to every school, offices, hospitals, and other institutions that may be designated by local government authorities, shall strategically place waste storage receptacles at all points where people working or living in the institutions congregate and set aside for storage and collection solid wastes sorted according to categories prescribed by local government authority.	*In order to comply with this rule, Contractor and TIA will provide storage facilities for solid wastes at the site during construction and operation and must make a proper schedule for the removal of wastes from the site to the damping site.*
11	**The Environmental Management (Control and**	The Regulations apply to all categories of electrical and electronic equipment wastes with respect to generation, collection, storage, transportation,	*TIA shall ensure compliance with all these requirements during the*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
	Management of Electrical and Electronic Equipment Waste) Regulations, 2021	importation, exportation, distribution, selling, purchasing, recycling, refurbishing, assembling, dismantling and disposal of electrical and electronic equipment waste or components, and their movement into or outside Mainland Tanzania.	*implementation of the project.*

3.5 Relevant National Plans/Strategies

In order to guide national development more effectively and systematically, Tanzania has prepared a number of strategies aiming at operationalizing the various policies in key sectors. Some of the strategies that have a bearing on the proposed project are described in table 3.4.

Table 3.4: Relevant National plans/strategies

	PLAN/STRATEGY	DESCRIPTION	COMPLIANCE
1	**The Tanzania Development Vision 2025**	The Composite Development Goal for the Tanzania Development Vision 2025 foresees the alleviation of poverty through improved socio-economic opportunities, good governance, transparency, and improved public sector performance. These objectives not only deal with economic issues, but also include social challenges such as education, health, the environment and increasing involvement of the people in working for their own development.	*TIA project will contribute to the attainment of the 2025 Vision through improvement of education and provision of adequate skilled labor force for implementing various development plans.*
2	**The National Five-Year Development Plan (FYDP III) 2021/22-2025/26**	In implementing the Third Five Year National Development Plan the Government will focus on stimulating an inclusive and competitive economy, strengthening industrial production capabilities and service delivery, promoting investment and trade, bringing development to our citizens and building human resource capacity.	*TIA project will contribute to the attainment of the Five-Year development plan through provision of adequate skilled labor force for implementing various development plans.*

3.5 Relevant International Agreements, Conventions and Treaties

International agreements, convention and treaties which are relevant to this project include:

- United Nations Framework Convention on Climate Change (1992)
- Regional Agreements
- The Convention on Biological Diversity (CBD)

3.5.1 United Nations Framework Convention on Climate Change (1992)

The objective of the United Nations Framework Convention on Climatic Change (UNFCCC) is to stabilise the concentration of greenhouse gas (GHG) in the atmosphere, at a level that allows ecosystems to adapt naturally and protects food production and economic development. Article 4 commits parties to develop, periodically update, publish and make available national inventories of anthropogenic emissions of all GHGs not controlled by the Montreal Protocol (by source) and inventories of their removal by sinks, using agreed methodologies. It commits parties to mitigate GHG as far as practicable.

Since Tanzania is a Party to the Convention, she will have to account for all sources of GHG in her future National Communications. Undertaking of this ESIA study will enable the country to identify some of the GHG that will be emitted by the project activities. TIA project will abide with the requirements on control and prevention of greenhouse gases by emphasizing use of soft copies as opposed to hard copies in teaching and learning.

3.5.2 International Agreements

International Labour Organisation (ILO) Conventions ratified by Tanzania include: C138 Minimum Age Convention of 1973, which prohibits child labour, and C182 Worst Forms of Child Labour Convention of 1999. As the conventions have been adopted by the Tanzania Government, TIA project will abide by them and ensure that no child labour is practised throughout the project. Other relevant agreements include ILO Convention C148 Working Environment (Air Pollution, Noise and Vibration) Convention of 1977, which protects workers against occupational hazards in the working environment due to air pollution, noise and vibration. The proposed project will ensure workers work in safe environment.

3.6 Institutional Framework for the Management of the Environment

Tanzania is among countries in East Africa with an Act for environmental management legislation. The legislation, Environmental Management Act (EMA) (2004), provides a legal and institution framework that guides the implementation of environmental management activities. The framework provides a pre-requisite for effective implementation of Environment Policy at

all levels (National, Region, Council, and Village/Mtaa/Hamlet). According to the Environmental Management Act (EMA) (2004), there is the Environmental Management Committee established at the Hamlet/Village/Mtaa, Ward, and Council and at National level with the responsibility for the proper management of the environment in respect of the area in which they are established. The functions and responsibility of these committees are well explained in the Act. The proposed project will include all governance levels in the management of the environment during HEET execution as shown in Table 3.5.

Table 3.5: Key institutions of ESIA process during HEET Project Execution

Level	Institution	Role and responsibility
National level	Vice President's Office (Division of Environment,)	• Authorization of ESIA certificate
	Vice President's Office – NEMC	• Co-ordination of the ESIA process • Approve the ToR and review of ESIA reports • Issuing of ESIA certificate • Environmental auditing and monitoring
	Ministry of Education Science and Technology	• Issuing policy guidance • Providing legal frameworks • Project monitoring. • Capacity building to project implementers
	Tanzania Commission for Universities (TCU)	• Provide regulations which sets standards for academic buildings and learning environment
	Occupation Safety and Health Authority OSHA	• Review and Approval of building plans for the proposed project with regards to health and safety. • Audit and monitoring Health and Safety of workers in working premises
	Bank	• Project financing • Provide regulations and standards for environmental management • Provide capacity building to project implementers • Project monitoring
Regional level	Fire and Rescue Force	• Provide training to contractor and workers on fire and safety • Review and Approval of building plans for the proposed project with regards to fire and safety
Local Governments Authorities and Communities	Unyankhae Ward	• Oversee general development plans for the Ward. • Provide information on local situation and extension services • Technical support & advice • Project Monitoring
	Unyankhae Office	• Information on local social, economic and environnemental situation • View on socio-economic and cultural value of the sites and on proposed plant operations

Level	Institution	Role and responsibility
		• Rendering assistance and advice on the implementation of the project • Project Monitoring (watchdog for the environment, ensure well-being of residents and participate in project activities.
Institutional Level-TIA	TIA UPIU	**Environmental specialist** i. Advise HEET project on environmental approaches, policies, and technical issues during the preparation and implementation of the HEET project activities. ii. Under the supervision of the project coordinator, monitor compliance of HEET project activities on environmental safeguards. iii. Participate in conducting design reviews to meet environmental safeguards standards and supervisions of projects, preparing reports, and disseminating lessons learned. iv. To ensure all contractors/subcontractors and primary suppliers comply with all applicable provisions of ESSs and other relevant sections of the ESF and national law. v. Ensure contractor's compliance to the C-ESMP vi. Regular monitoring and reporting of the progress on the implementation of the ESMP. vii. Promptly notification of any significant environmental, health and safety incident related to the project, which has, or is likely to have, a significant adverse effect viii. To ensure the contractor has prepared C-ESMPs) ; Code of Ethical Conduct (CEC) ; Health and Safety Plans (HSE) ; and Emergency Response Plan (ERP) ; HIV/AIDS Management Plan and Traffic Management Plan **Social specialist** i. To ensure the contractor's employees and laborers have signed the Code of Ethical Conduct and have been trained on gender, SEA/SH and HIV/AIDS awareness. ii. Under the supervision of the project coordinator, monitor compliance of HEET project activities on social safeguards. iii. Participate in conducting design reviews to meet social safeguards standards and supervisions of projects, preparing reports, and disseminating lessons learned. iv. In collaboration with other specialists ensure labour and working conditions of labourers in the HEET project related activities follow the agreed national standards.

Level	Institution	Role and responsibility
		v. To prepare Grievance Redress Mechanism (GRM) and report progress on the grievances reported. vi. Promptly notification of any significant social incident related to the project, which has, or is likely to have, a significant adverse effect vii. To prepare and disclose the SEP, LMP and stakeholders' engagement reports.
	ESIA Consultant	**Environmental specialist** i. Assist the PIU in preparing documentation to obtain certification from NEMC for the ESIAs and ESMPs. ii. Propose capacity building plan for the implementation of the sub-projects for all actors involved with cost estimates and schedule iii. Prepare the ESIAs and ESMPs based on the procedures described in the ESMF including carrying out an alignment walk, alternatives analysis and baselines studies, identifying the Environmental risks and impacts, developing mitigation measures and monitorings plans iv. Conduct initial site visits with the UPIU to understand the sub-project environmental setting and site-specific requirements **Social specialist** i. Carry out public consultations and stakeholder consultations ii. Prepare the ESIAs and ESMPs based on the procedures described in the ESMF including carrying out social baselines studies, identifying the social risks and impacts, developing mitigation measures and monitorings plans. iii. Conduct initial site visits with the UPIU to understand the sub-project social setting and site-specific requirements **Health and Safety specialist** i. Carrying out health and safety baselines studies, identifying the health and safety risks and impacts, developing mitigation measures and monitorings plans.

Level	Institution	Role and responsibility
		ii. Propose health and safety alternatives to the HEET project activities iii. Conduct initial site visits with the UPIU to understand the site-specific requirements for health and safety
	Design Consultant	**Environmental specialist** i. Ensure compliance with the Environmental Impact Statement (EIS) and the Construction-Environmental and Social Management Plan (C-ESMP). ii. Ensure the design complies with the environmental safeguards requirement as per the ESMP and ESMF iii. Routine supervision of all environmental issues and compliances on site throughout the construction period **Social specialist** i. Ensure the design complies with the social safeguards requirement as per the ESMP and ESMF ii. Routine supervision of all social issues and compliances on site throughout the construction period iii. Prepare, review and approve Code of Conduct of the contractor. **Health and Safety specialist** i. Ensure the design complies with the health and safety requirement as per the ESMP ii. Ensure the contractor complies with the OHS plans iii. Routine supervision of all health and safety issues and compliances on site throughout the construction period iv. Ensure the labourers are provided with safety gears throughout the construction period
	Contractor	**Environmental specialist**

Level	Institution	Role and responsibility
		i. Ensure the project is in full compliance with the Environmental and Social Impact Assessment (ESIA) mitigation measures outlined in the Environmental and Social Management Plan (ESMP) ii. Prepare and submit a comprehensive work site plan that adheres to national environmental guidelines, along with C-ESMP tailored for various phases of the work. iii. Routine supervision of all environmental issues and compliances on site throughout the construction period iv. Regular reporting on the progress of the implementaion of the C-ESMP v. Report promptly any environmental risk or incident which has, or is likely to have, a significant adverse effect **Social specialist** i. Organize consultations with stakeholders at critical project stages, establish a liaison group at the project site, and monitor contractor compliance with the ESMP. ii. Organise and conduct awareness campains on HIV/AIDS, SEA/SH to the labourers and project affected persons. iii. Make sure the contractors labourers and employees signs the Code of Conduct. iv. Maintain regular communication and collaboration with the Sokoine University of Agriculture (TIA) Safeguard specialists to ensure the contractor's adherence to the ESMP throughout the contract duration. v. Report promptly any social incident which has, or is likely to have, a significant adverse effect **Health and Safety specialist** i. Prepare and submit a comprehensive C-OHS plan tailored for various phases of the work.

Level	Institution	Role and responsibility
		ii. Organise and conduct awareness campains on health and safety to the labourers and project affected persons. iii. Ensure the project complies with the OHS plans iv. Maintain regular communication and collaboration with the Sokoine University of Agriculture (TIA) Safeguard specialists to ensure the contractor's adherence to the ESMP throughout the contract duration. v. Report promptly any health and safety incident which has, or is likely to have, a significant adverse effect

3.7 Environmental and Social Management Framework (ESMF)

The World Bank Environmental and Social Management Framework for Investment Project Financing sets out the requirements that the Bank must follow regarding projects it supports through Investment Project Financing. The Environmental and Social Safeguards Standards define what is expected of Borrowers in terms of identifying, evaluating, and mitigating environmental and social risks, impacts, and measures in connection with projects that the Bank supports through Investment Project Financing. In that context, the World Bank has set out the E&S standards (Table 3.6) that must be complied with in the implementation of any project. These standards among others aim to;

- Support borrowers in achieving good international practice relating to environmental and social sustainability,
- Assist borrowers in fulfilling their national and international environmental and social obligations,
- Enhance non-discrimination, transparency, participation, accountability and governance; and
- Enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

Table 3.6: World Bank Environmental and Social Standard applicable to HEET project at TIA

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	o Identify project E&S risks and impacts o Improve performance through an Environmental and Social Management System (ESMS) o Engagement with Affected Communities, other stakeholders through project cycle, includes communication, grievance mechanisms.	YES	The project at TIA-EMC will use this requirement to strengthen the environmental and social framework for the assessment, development, and implementation of World Bank-financed projects where appropriate.
ESS2: Labor and Working Conditions	o Fair treatment, non-discrimination, equal opportunity o Good worker – management relationship o Comply with national employment and labor laws o Protect workers, in particular vulnerable categories o Promote safety and health o Avoid use of forced labor or child labor	YES	The guideline includes TIA-EMC to ensure that no child under fourteen years is involved as an employee in any kind of work during the project implementation. Additionally, it demands equal opportunity, non-discrimination, and fair terms and conditions of employment, as well as worker groups. Provisions relating to forced labor and child labor. Requirements on occupational health and safety, in keeping with the World Bank Group's Environmental, Health, and Safety Guidelines (EHSG).
ESS3: Resource Efficiency and Pollution Prevention and Management	o Avoid, minimize, and reduce project-related pollution o More sustainable use of resources, including energy and water	YES	Requires an estimate of gross greenhouse gas emissions resulting from projects (unless minor), where technically and financially feasible. Requirements on management of wastes, chemical and hazardous

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
	○ Reduced project-related Greenhouse Gas (GHG) emissions		materials, and contains provisions to address historical pollution.
ESS4: Community Health and Safety	○ To anticipate and avoid adverse impacts on the health and safety of the Affected Community ○ To safeguard personnel and property in accordance with relevant human rights principles.	YES	Requires infrastructure to take into account safety and climate change and apply the concept of universal access which is technically and financially feasible. It necessitates additional traffic and road safety measures, such as road safety monitoring and assessments. Measures to reduce the risk of water-related diseases, both communicable and non-communicable. Requirements to assess risks associated with security personnel, and review and report unlawful and abusive acts to relevant authorities. The project operators should ensure HIV&AIDS education is provided to the people related on the project to avoid high transmission of the disease.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	○ Improve or restore livelihoods and standards of living ○ Improve living conditions among displaced persons ○ Adequate housing and Security of tenure	NO	This standard is not applicable in this proposed project because land is legally owned by TIA (Appendix 2)
ESS6: Biodiversity Conservation and Sustainable Management of		NO	This standard is not applicable in this project because there is not any requirement related to ESS6.

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
Living Natural Resources			
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities		NO	This standard is not applicable in this project because there is not any requirement related to ESS7.
ESS8: Cultural Heritage		YES	The requirements of this ESS8 will apply to all projects that are likely to have risks or impacts on cultural heritage. This will include a project which involves excavations, demolition, movement of earth, flooding, or other changes in the physical environment. This standard is applicable in this project because there are excavations for the new buildings which might impact cultural heritage through chance find.
ESS9: Financial Intermediaries (FIs)		NO	This standard is not applicable in this project because there is not any requirement related to ESS9.
ESS10: Stakeholder Engagement and Information Disclosure	o Ensuring understanding o Building relationships o Ensuring Compliance o Engaging vulnerable groups o Managing stakeholder expectations	YES	The standard calls for stakeholder engagement throughout the project life cycle, and preparation and implementation of a Stakeholder Engagement Plan (SEP). It requires early identification of stakeholders, both project-affected parties and other interested parties, and clarification on how effective engagement takes place. Stakeholder engagement from the project area

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
			was conducted in a manner proportionate to the nature, scale, risks and impacts of the project, and appropriate to stakeholders' interests.

3.8 Environmental, Health and Safety General Guidelines

The World Bank Groups Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). EHS Guidelines are applied as required by their respective policies and standards. These industry sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for the project in accordance with the proposed project activities. The circumstances that skilled and experienced professionals may find when evaluating the range of pollution prevention and control techniques available to a project may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity as well as varying levels of technical feasibility. The applicability of specific technical recommendations should be based on the professional opinion of qualified and experienced persons. Other World Banks instruments applicable to this Project are the following:

- Community Health and Safety: http://documents.worldbank.org/curated/en/290471530216994899/ESF-Guidance-Note-4-Community-Health-and-Safety-English.pdf
- Gender based violence: http://documents.worldbank.org/curated/en/399881538336159607/Environment-and-Social-Framework-ESF-Good-Practice-Note-on-Gender-based-Violence-English.pd

3.8 Other Ministry of Education, Science Technology related manuals and guidelines

Various tools were developed to guide the smooth and effective implementation of WB project to ensure their environmental sustainability and social acceptance. These documents have been jointly prepared by MoEST and WB. TIA will male an attempt to align to these tools to implement the project in their life cycle. These tools are briefly described in the sections below;

3.8.1 Project Operational Manual (POM)

The Project Operational Manual (POM) sets out all the operational and procedural steps which will guide the implementation of the Higher Education for Economic Transformation Project (HEET) in Tanzania. The Operational Manual offers a brief description of the components, details the results expected to be achieved through HEET and outlines the operational and financial reporting arrangements, procurement and disbursement processes, standard formats for biannual and annual reporting and amendment procedures. It is supported and - complimented by a series of technical documents which will provide further guidance on key project components. It should be used in conjunction with the recent versions of the Project Appraisal Document (PAD), Legal Agreement, and Environmental and Social Management

Framework (ESMF). The primary users of the POM will be the technical, financial, operational and administrative staff from the Ministry of Education, Science and Technology (MoEST) and its associated agencies tasked with implementing and monitoring any part of HEET, including TCU, HESLB and COSTECH; as well as by participating Higher Education Institutions (HEIs). It may also be of use by technical and development partners involved in the education sector to ensure greater coherence in development of education project designs. This POM will be updated as needed to reflect any changes made during project implementation. Any changes to the POM will require clearance by MoEST, as recommended by the National Project Steering Committee (NPSC). All revised versions of the POM will be submitted to the World Bank for non-objection. In the event of a conflict between the provisions laid out in the POM and the Project's Financing Agreement, the Financing Agreement shall govern. Key risks and mitigation measures have been presented. TIA project will be implemented to comply with POM.

3.8.2 Project Appraisal Document (PAD)

This document provides the project formulation underpinning. It describes the strategic context, project description including its project development objectives, project components, beneficiaries and rationale for the World Bank involvement and role of partners. Further, the document outlines the implementation arrangements. Grievances redress services as well as the key risks and results framework and monitoring have also been presented in PAD. The projects under TIA will be implemented in line with the requirements by PAD.

3.8.3 Environmental and Social Commitment Plan (ESCP)

The Environmental and Social Commitment Plan (ESCP) sets out a summary of the material measures and actions. Where the ESCP refers to specific plans or other documents, whether they have already been prepared or are to be developed, the ESCP requires compliance with all provisions of such plans or other documents. In particular, the ESCP requires compliance with the provisions set out in the Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Stakeholder Engagement Plan (SEP) that have been developed for the Project, as well as other specific instrument as needed, such as Labor Management Procedures. The table has been presented that summarizes the material measures and actions that are required as well as the timing of the material measures and actions. The Recipient is responsible for compliance with all requirements of the ESCP even when implementation of specific measures and actions is conducted by the MoEST (referred in this ESCP as NPIU) other agencies (referred as APIU) or universities (referred as UPIU) which in their totality are termed as Project Implementation Units (PIUs). NPIU will be overall in charge of the project and will coordinate activities conducted by the UPIU and APIU.

3.8.4 Environmental and Social Management Framework (ESMF)

This ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts. The objective is to have in place a practical ESMF to enable early screening for potential impacts and select appropriate instruments to prevent, minimize,

mitigate or compensate adverse environmental and social impacts and to enhance beneficial impacts.

The ESMF identifies the potential impacts and mitigation measures of the proposed activities under the project including increasing enrolment in priority disciplines; improving relevance and quality of programs at universities; ensuring quantity, quality and relevance of higher education; and increasing the rate and extent of graduate employability. The ESMF outlines the approach to screening subprojects; guidance for the preparation of ESIAs for subprojects once they are identified. The ESMF includes a practical set of operational guidelines and procedures that will be used by the PIUs to guide future ESIA and ESMP preparation. This ESMF is specifically designed to guide the preparation and implementation phase of the proposed project activities and investments. This document draws from the WB Environmental and Social Framework (ESF) and the National Standards and Guidelines on Environmental, Social and Resettlement Management. Specifically, the ESMF contains subproject screening guidelines, guidelines for impacts identification, evaluation and mitigation. It also stipulates guidelines and best practices for mitigation implementation, supervision, monitoring and consultation processes. Furthermore, it describes the grievance redress mechanism of the project. As the ESMF acts as the overarching instrument for the Project it may be updated if additional information becomes available, notably the development of supporting documents including the labour management procedures, GBV Action Plan and findings of the Social Impact Assessment.

3.8.5 Resettlement Policy Framework (RPF)

The RPF clarifies the resettlement principles, organizational arrangements, and design criteria to be applied to sub-projects or project components to be prepared during project implementation (see ESS5, para. 25). Once the sub-project or individual project components are defined and the necessary information becomes available, such a framework will be expanded into specific RAPs proportionate to potential risks and impacts. Project activities that will cause physical and/or economic displacement will not commence until the RAPs have been developed, cleared by the World Bank and implemented accordingly. This RPF (i) Establishes the resettlement and compensation principles and implementation arrangements in HEET Project; (ii) Describes the legal and institutional framework underlying Tanzanian approaches for resettlement, compensation and rehabilitation and The World Bank's ESS5 (iii)Defines the eligibility criteria for identification of project affected persons (PAPs) and entitlements; (iv) Describes the consultation procedures and participatory approaches involving PAPs and other key stakeholders with relevant reference to the Stakeholder Engagement Plan (SEP); (v) Provides procedures for addressing grievances and resolving disputes and. (vi) Provides a framework for supervision, monitoring and evaluation of resettlement implementation.

In line with the requirements of WB ESS5 in a situation where land acquisition /restrictions on land use cannot be avoided, eligible PAPs will be compensated at full replacement cost, and other assistance to help them improve or at least restore their standards of living or livelihoods.

The eligible individual(s) are those who are directly affected economically and socially by sub-projects activities that might cause loss of land rights, loss of crops or livelihoods.

3.8.6 Stakeholders Engagement Plan (SEP)

The SEP seeks to define a technically and culturally appropriate approach to consultation and disclosure. The goal of this SEP is to improve and facilitate decision making and create an atmosphere of understanding that actively involves project-affected people (PAP) and other stakeholders in a timely manner, and that these groups are provided sufficient opportunity to voice their opinions and concerns that may influence Program decisions. The SEP is a useful tool for managing communications between HEET and its stakeholders.

The key objectives of the SEP are to:

- Provide guidance for stakeholder engagement in line with ESS10 and national requirements;
- Identify key stakeholders;
- To enable stakeholders' views to be considered in the project design and environmental and social management, reporting, supervision, monitoring and final delivery of project activities;
- Identify the most effective methods and structures through which to maintain communication with the beneficiaries and affected people during project implementation;
- Define the channels to disseminate project information, and to ensure regular, accessible, transparent and appropriate consultation with beneficiaries, affected people and relevant stakeholders to the project,

CHAPTER FOUR

BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1. Introduction

This chapter provides a description of relevant environmental, economic and social characteristics of the proposed project core area within Unyankhae mtaa and areas in the immediate vicinity (Mandewa Ward) wherein the project area is located), as well as a broad description of the area of influence in Singida District in Singida Region at large. The level of detail in the various sections depends on the interactions between the project activities and the particular environmental or socio-economic aspects. Information provided in this chapter will be superimposed onto the project concept and components for impact identification, evaluation and development of mitigation measures.

4.2. Site Description

Site is located within built up area within existing TIA Singida Campus. It is a home to some vegetation in the form of short grasses, flowers and scattered planted trees. The major part of the land holds an intact soil. It has a relatively flat land with good soil for drainage issues. Thus, the site is proximity (not more than 30 m) to other existing TIA education infrastructures including lecture theatres, classroom and office buildings.

4.3. Soil and Topography

4.3.1 Soil

Most of the parts in Singida Municipal where the proposed project is characterized with Sandy loamy soil, loamy silt soil and clay silt soil which are under depressions.

4.3.2 Topography

Proposed project is located in Singida Municipality which is at an altitude of 600 – 1200 m above sea level. In the North-eastern part of the Municipal there is escarpment of rift valley, as well as isolated hills and rocks. Other parts of the Municipal are more or less flatland with undulating hills. Topography of the proposed project area is a relatively flat land.

4.4. Hydrology

The proposed project area is located in Singida Municipality in Singida Region falls within the Internal Drainage Basin. The hydrology of the municipality is mainly characterized by the presence of two permanent lakes namely Kindai and Singidani. There are also few seasonal dams/ponds, providing water for livestock and sometimes water for irrigation for horticultural crops. Much of the plateau has internal drainage producing saline and alkaline lakes such as Singidani, Kindai. Rivers in the area are seasonal pouring their water into Lake Kindai and Singidani.

4.5. Climatic Conditions

A large part of Singida Municipal is semi-arid, and the average annual rainfall ranges between 650-800 mm annually. The area is dominated by dry season from June to October including March for the last year in normal circumstance, Maximum rainfall usually take place from January and April and minimum rainfall take place in February, May, November and December. Rainfall is very unreliable Temperature in the area ranges from 11°C and 28.2°C, with warmest months being October and November, while the coldest months being June to August. The wind spread is usually high in dry season, specifically in months of May to October. A large part of Singida Municipal is semi-arid characterized by low rainfall with few days for rain. On average the area get 32 days of rain per year with a maximum of 43 days. Rainfall usually starts from mid-November and ending up in April or early May. The area experience dry season from June to October

4.5.1 Air Quality

(a) Dust Level Measurements

The baseline concentrations of measured TSP, PM10 and PM2.5 using Dust Monitor were well below the TBS limits and/or WHO guideline criteria.

(b) Ambient Pollutant Gases

The measured carbon monoxide (CO), Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Hydrogen sulphide (H2S) and Volatile Organic Compounds (VOCs) concentrations were found to be lower than the prescribed TBS and WHO/IFC limits at all stations**.**

(c) Noise Levels

The day time average noise levels recorded are acoustically safe for people residing nearby the project site as the measured noise levels were found to be lower, than the prescribed TBS Limits and WHO/IFC Guidelines for institutional areas**.**

(d) Ground Vibrations

The recorded vibration levels are considered insignificant as the measured levels were found to be lower than 0.15 mm/sec PPV criteria established to evaluate the extent that can easily be detected by human beings, Therefore, the ground vibration levels around the project site are not likely to create significant impacts on adjacent sensitive receptors.

4.6. Biological Conditions (Flora and Fauna)

4.6.1 Flora

Floristically, the land cover comprised by planted and natural trees, flowers, shrubs and grassland. The notable vegetation within the proje site include *Bauhinia variegate*, *Terminalia mentally*, *Senna spectabilis, Callistemon citrinus, Duranta erecta, croton megalocarpus, jacaranda mimisofolia, Auraucaria species, Ficus benjamina, Croton megalocarpus, Jacaranda mimisofolia, Auraucaria species* and *Persia americana*. However, some of vegetation will be cleared based on approved project design to allow construction activities of the proposed expansion project.

4.6.2 Fauna

There is no endangered or rare species of fauna in the project area. Given the human presence and their activities, fauna on the area include a variety of reptiles (various snakes and lizard species), amphibians, avifauna (bird species), butterflies, insects and other dwelling invertebrates.

4.7. Unique and endangered species

As far as the ESIA study has managed to determine, there are no unique or particularly endangered species (animals, reptiles, amphibia and bird species) present in the near vicinity of the project area.

4.8. Planned Future Developments

The area has been planned for development of educational buildings for TIA. During EIA study, no any development project was reported by to be implemented in proposed project area or in conjunction with the proposed project.

4.9. Socio-economic conditions

4.9.1 Local Administration and Governance

Local Administration

The proposed project will be implemented at Unyankhae mtaa (sub-ward) which is one of mtaa in Mandewa Ward. Thus, administratively the proposed project will be under administration of Unyankhae Mtaa in Mandewa Ward, Singida Municipal Council in Singida Region, Tanzania.

Governance

The Mtaa is the lowest level in governance system. A number of Mtaa form the ward whereas a number of wards form district or municipal council. Singida Municipal Council is divided into 18 wards 53 mitaa and 19 villages. One of the wards is Mandewa where the proposed project is located. The Municipal also has 1 electoral constituency. The Municipal governing body is the Full Council which comprises 26 Councillors who are elected from each Ward, Members of Parliament elected from constituency representatives (MPs), women special seats and Presidential Appointees. The Municipality executes its administrative duties through:

- The Municipal Council,
- Ward Development Committees under the Chairmanship of the Councillor and Ward Executive Officer; and
- Sub-Ward (Mtaa) Development Committees.

4.9.2 Demographic Profile

Population

Population and housing census of 2022 shows that the population of Singida Municipality is 232.459 of whom 113,358 are male and 119,101 females. Mandewa Ward where the proposed project is located had a total population of 41,507 people of which 19,860were males and 21,647 were females with sex ratio of 92. The number of households were 10,191 and the average household size was 4.1 person per household (NBS, 2022)

Types and Pattern of Housing

The building structures in the project area have walls made of different materials ranging from blocks and bricks made with cement, stones and cement – sand blocks. The type of mortar used for blocks and bricks is mainly sand cement mortar. Typical roofing structures are made up of corrugated iron sheets placed on timber. A number of storey buildings are existing within Mandewa Ward. It was observed that, the houses and other buildings are well planned as part of the built-up environment.

Ethnicity

There are more than ten tribes in Singida municipal. However, the dominant ethnic groups are Nyaturu and Nyiramba which comprises about 80% of the total population. There are also minor tribes such as Kimbu, Gogo, Isanzu, Tuturu, Sukuma, Mang‟ati, Nyamwezi, Luo, Barbaig and Hardzebe believed to migrate from other areas for business. The rest of the populations comprise migrant people from other areas. Furthermore, there are some few Arabs and Asians resides in the Municipality.

Gender Aspects

Though women have equal legal rights, they are often hindered by education disparities based on gender (resulting in higher rate of illiteracy than men), less involvement in the formal commercial sector and less access to productive assets such as land. In some cases, gender-based discrimination influences control and ownership. During baseline study in Mandewa Ward it was observed that both men and women participate in productive activities mainly in office works, and various commercial activities. It is expected both men and women will be engaged during implementation of proposed project in all phases.

4.9.3 Main Economic Activities

The main economic activities in Singida Municipality include office works, small to large business, financial services transportation, industries, rental houses, hotels and bar. Horticultural crops are practiced mainly at Kindai Ward. Cattle, goats, sheep, chicken, and guinea fowls. Livestock are mostly kept under zero grazing. Fishing is also an important activity at Lake Kindai and Singidani.

4.9.4 Economic Infrastructure

(a) Transportation Infrastructures

Road transportation

Singida Municipality, like other urban councils in the country, is well endowed with road network with all classifications, including trunk road, regional road, district or urban roads and feeder roads. The roads that are maintained by the central government are classified as trunk or regional roads, while those that are maintained by the councils are called district or urban roads and feeder roads.

Generally, all ward in Singida Municipal Council are connected by road in 95%, most roads in the Municipality are in good condition and are passable throughout the year especially tarmac

and gravel roads. With respect to roads status/condition the Municipal has 606.2km of road networks in different condition and status where by 11.5km of tarmac road is in good condition, 63.7km of gravel roads is in good condition and 531km of Earth roads is in good nd fair conditions. Moreover, the Municipality has a number of trunk roads that connect SMC to the neighbouring regions including Arusha, Dodoma and Tabora.

The internal movements of goods and services are essential for the development of the Municipality. The road has tremendously stimulated socio–economic opportunities and population influx to seek opportunities in areas of transport, trade, communication, marketing and construction industries. The site for proposed project is accessed by existing Sepuka tarmac road which junctioned off from Singida – Mwanza highway.

Air Transport Services

Singida Municipality is enjoying the services of nearby Dodomal Airport and it is the main entrance of incoming and outgoing passengers and goods through air. The airport is managed by Tanzania Airport Authority. Singida Airstrip is an airstrip also serving the municipality of Singida. It is 3 kilometres west of the town.

Railway Transport Services

The railways transport is important for transportation of passengers and goods. Singida Region is accessed by the Tanzania Railways Corporation (TRC) which start from Dar es Salaam to Tabora- Kigoma and the other line is to Tabora – Mwanza. The standard gauge railway (SGR) from Dar es Salaam to upcountry is in advanced stage of its construction phase. Manyoni Railway Station is the nearby by station for the Singida Municipality which is located about 120 km from the municipality.

(b) Energy Sources and Use

Electricity is the main power source for domestic, commercial premises, institutions and industries. Singida Municipality is connected to the National grid. TANESCO has continued to be the sole supplier of electricity in the Municipality. Electricity is available in Unyankhae Mtaa where the proposed project will be implemented. The project site has been connected with electricity by TANESCO.

Petroleum products are the most important source of lighting energy in rural areas and even in urban areas. Fossil fuels also do energize transport, industries and various commercial establishments. The Municipality is supplied with petroleum products from private companies. Solar energy is also available to few individuals with the financial ability to install. With regard to cooking energies, charcoal and LPG are the most important form of energy used for domestic purposes such as cooking in Unyankhae Mtaa and Mandewa Ward

(c) Communication network

Communication network in the Municipality is attributed by big companies which not only Influence Social development, but also economic development. Main communication companies operating in Unyankhae Mtaa, Mandewa Ward and in the Singida Municipality at

large are: AIRTELL, VODACOM, ZANTEL, TIGO, TTCL and HALOTEL. Almost all the newspapers and magazines are made available in the Municipality. Television and radio services are easily accessible in the Municipality. Tanzania Telecommunication Company Limited (TTCL) still provides services in land-based telephone services. Postal services are available throughout the Municipality.

4.9.5 Social Infrastructure and Services

(a) Health Services and Facilities

Singida Municipality health delivery system follows the national pyramid system. The Municipality has three levels of healthcare service delivery. Hospital, Health centers, dispensaries and affiliated clinics deliver first line promotive, preventive, and curative health services. Singida Municipal Council (SMC) is responsible for providing health services to its people in collaboration with private sector service providers. There are more than 30 health facilities including Singida reginal referral hospital in Singida Municipality. Mandwa Ward where the proposed project is located is endowed with all three levels of healthcare service delivery. The ward has of 1 hospital namely Mandewa hospital and 2 dispensaries. There are also a number of specialized health clinics owned by private sector in Singida Municipality.

SMC through Health department is working towards achieving its National and Local strategies of which mostly aims in disease prevention through provision of health education to the community, reduction of maternal mortality under five mortality rate, prevention of new HIV infection and caring the infected one, providing quality care to general outpatients and in patients attending at health facilities, reaching community in hard to reach areas through mobile and outreach services and ensuring adequate availability of medicines, medical supplies and medical equipment's at facility level at all times for sustainability and continuum of quality health care.

(b) Education Services and Facilities

- Singida Municipal Council (SMC) is responsible for providing education services to its people in collaboration with private sector service providers. Municipality is endowed in education sector in different levels which are pre-primary, primary, secondary and vocational training colleges, and university. Primary school education is a basic right of every Tanzanian child of school going age (7-13). SMC has more than 50 pre -primary schools and primary schools. Singida Municipal Council has a total of 23 secondary schools out of which 17 are owned by the government and 6 are private schools. There are 11 primary schools and 2 secondary schools in Mandewa Ward where the proposed project will be implemented. Singida Municipality is also the educational Centre of Singida Region, with a number of colleges and other high learning institutions. One of the high learning institutions found in Singida Municipality is Tanzania Institute of Accountancy (TIA) – Singida Campus.

(c) Water Supply

The National Water Policy of 2002 requires access to adequate and potable water for all to be within 400 meters from homestead. Life without water is impossible. Water needs to be safe to sustain life without causing problems to human health. A water supply service in Singida

Municipality is under responsibility of Singida Urban Water Supply and Sanitation Authority (SUWASA). The main source of water supply at Unyankhae Mtaa, Mandewa Ward where the proposed project is located is piped water supply by SUUWASA. Other sources of water municipality include: shallow well, deep well, rain water harvest and hand pumps. During stakeholder consultation with SUWASA Office, it was noted that there is reliable supply of water from SUWASA in the Municipality that the proposed project will not disturb/affect availability water supply to the existing water users within Mandawe Ward. Water supply will mainly be required during all phases of project implementation to cater for activities such as construction, installations and operational undertakings. Currently proposed project area si supplied water by SUWASA which will be used during construction and operation phase.

(d) Solid Waste Management

SingidaMunicipal Council plays an important role in the financing, planning and providing waste collection and disposal services. Under the Municipal Council, waste management belongs to the structure of the department of environment and solid waste management, but other departments such as Works, Health and urban planning carry out part of its operation. The solid-waste generated in Singida Municipality mainly consists of food waste, paper, polyethylene, cloth, garden trimmings, construction debris (brick, concrete, sand, and dirt), wood, leaves and branches, metal, glass, skins and leather, animal waste, industrial waste, old appliances, and miscellaneous waste. Some of the waste disposed like plastic materials, iron bars are collected back by scavengers‟ and sold to the people in need where the goods are transported to other regions for recycling

Solid waste collection in Unyankhae Mtaa, Mandewa Ward and Singida Municipality at large is carried out by both the Municipal, some private companies, community-based organizations and informal sectors. Status of solid waste collection and management in the Municipality is currently estimated at 60%. There are more than 15 transfer sites in urban wards including Mandewa Ward. The remaining waste placed on the streets in town some are buried and other are incinerated. In rural wards most of solid waste are garbage and are disposed through buried.

Apart from collection activities, SMC is also responsible for supervising the franchisees involved in solid waste management (SWM). Transportation of solid waste is done by both the Municipal council and the private sectors. *C*urrently, there is no sanitary landfill in the Municipality. The method used to dispose solid waste is crude dumping at an authorized open area located in Mwankoko ward which is located about 15 km from proposed project area. This current waste desposal practice create nuisance to the neighbour community due to waste dumping; foul odours and air pollution are dangerously affecting the surroundings, rodents spread germs and pathogens in the area and community nearby dumpsite are regularly exposed to hazardous diseases.

(e) Wastewater Management

Wastewater management in Singida Municipality and Dar es Salaam at large is mandated to SUWASA. Wastewater including faecal sludge in Singida Municipality is currently not properly and adequately managed. Currently there is near sewerage system nor proper

engineered faecal sludge treatment facility in Singida Municipality. They thus depend on onsite sanitation technologies for containment of excreta, which includes flush toilet, pour-flush toilet, ventilated improved pit latrine, improved pit latrine, and composting toilet. The emptying and transportation service of faecal sludge in the Municipality is provided by SMC owned emptier truck and registered private service provider with emptier trucks. Disposal of emptied faecal sludge is carried out at authorized existing crude wastewater/faecal sludge disposal site located in Mwankoko ward.

CHAPTER FIVE
STAKEHOLDERS' ENGAGEMENT

5.1. Consulted stakeholders

This chapter presents description of the engagement activities undertaken as well as future engagement activities planned as part of the EIA process for the proposed project. Moreover the World Bank's Environmental and Social Framework (ESF) includes the Environmental and Social Standard (ESS) 10, "Stakeholder Engagement and Information Disclosure", which recognizes "the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice". ESS10 emphasizes that effective stakeholder engagement can significantly improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Stakeholders engagement is the requirements of the Environmental Management Act cap 191 and Environmental Management (EIA and Audit) (Amendment) Regulations, 2018, both documents provided procedures for the involvement of stakeholders and the public in the environmental assessment process The consultation process gives stakeholders an opportunity to comment on the proposed project as well as on the reports that are produced during each phase of the EIA. This enables the affected communities to actually be a part of the solutions when it comes to mitigating impacts or implementing management measures.

5.2. Involving all affected stakeholders

The EIA stakeholder engagement activities were conducted in May 2023 based on a Stakeholders Engagement Plan (SEP) developed for the EIA process. The consultant ensured that all the concerned parties were given adequate opportunity to participate in the EIA exercise. The consultation approaches were based on the stakeholder being engaged and the specific objective of that engagement. In order to seek their views, concerns, emerging issues regarding the project activities different participatory methods were used. These included (i) one to one meeting and discussions; (ii) smaller focus group meeting; and, (iii) Key informant interviews.

Stakeholders are people, groups, or institutions which are likely to be affected by a proposed intervention (either negatively or positively), or those which can affect the outcome of the intervention as well as those who may have interest in a project or the ability to influence the project outcome either positively or negatively. They range from national or local government authorities, local affected communities or individuals and groups with special interests.

The identification of stakeholders was based on the following:

- Level of impact the project has on stakeholders
- Stakeholders roles and responsibilities
- Interest and Influence on the project implementation

Stakeholder engagement is an ongoing process that may involve, in varying degrees, the following elements: stakeholder analysis and planning, disclosure and dissemination of

information, consultation and participation, grievance mechanism. The EIA team involved stakeholders categorized in the following:

a) Stakeholders who will directly or indirectly and positively or negatively be affected:
People in Unyankhae Mtaa in Mandewa Ward, Singida Municipal council in Singida region; are stakeholder groups who are considered to be directly affected by the project.

b) Stakeholders whose influence would be helpful to the success of the project
These are government officials including agencies, local government authorities (Regional and District) up to the lower level (ward and village) and private companies that are likely to be involved in implementation or regulation concerns by the project because of their knowledge and experience they provide valuable inputs to the proposed project. These include different expertise in charge of environment, education, water resources management, and Community Development. The local government authorities) were consulted during the scoping phase through Municipal management team and individual meetings were conducted. Details of list of Stakeholders Consulted, their interest and method used are provided in Table 10 below. Particulars and signatures of consulted stakeholders are provided in Appendix 4.

5.3. Objective of stakeholder engagement

Objectives of the stakeholder engagement at this stage of the EIA process were to:

- To introduce and provide a brief overview of the process of identifying impacts and issues of concern;
- To introduce this engagement as part of on-going EIA study;
- To inform the authorities and project affected communities about the field work to collect baseline data information and identify concerns;
- To request stakeholders support and input into the identification of impacts and mitigation measures;
- Listen to questions and concerns from stakeholders and ensure these are addressed in EIA.

Table 8: List of sstakeholders views and Concerns

Stakeholders	Stakeholders' Views and Concerns	Responses
Mandewa Ward and Unyankhae Mtaa	• TIA should raise awareness on the issues related to HIV/AIDS should be encouraged so as to minimize the spread of HIV/AIDS to students and community at large. • There should be campaigns that strongly discourage risk sexual behaviours during and after project implementation.. • The project will attract employment to local people and rise their income • Main contractor and subcontractor have to ensure public health is a priority during project implementation. • Local community and leaders should be engaged • During project implementation there should be first aid kits and one health practitioner who will be responsible for any emergence regarding health of the persons during project implementation • The project will change socio-economic status of the local community through expansion of the employment opportunities and culture during and after the implementation of the project	• Institute HIV/AIDS programs and campaigns for safe sex • Institute and comply with Stakeholders Engagement plan • Education on GBV and provide policy on GBV management • Sexual exploitation and abuse Action Plan that ensures a project awareness-raising strategy will be prepared; • Sexual exploitation and abuse and sexual harassment awareness will be provided before working on project; • Helpdesk and mechanism to report on issues related to Sexual exploitation and abuse and sexual harassment will be established.
Singida Municipality	• Acquisition of NEMC certificate is crucial before starting construction; • Environmental protection and waste management regulations should be followed; • To avoid injuries, contractor will be advised to ensure safety of the workers by supplying all necessary protective gears like safety boots. • Consultation with the municipality for solid waste management permits is necessary; • Sufficient sanitation facilities should be provided for workers; • Safe drinking water supply for workers should be provided;	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida region • Restrict activities in sensitive areas: Limit clearance, trampling, and digging activities to the

	• Perimeter fencing of the construction site should be implemented for safety; • Visible signposts and precautions should be provided throughout the project; • Appropriate PPEs should be provided to all construction workers; • Solid waste should be properly collected for disposal at the designated open dumping area located in Mwankoko • Public health awareness should be provided to address various health issues and concerns in the community and at the Institute. • Safe sanitation services should be maintained during construction works; • Wastewater should be properly emptied for disposal at designated crude wastewater disposal site located in Mwankoko. • The project should discourage GBV through education and policies that strongly insist on gender equality. • There should be campaign for minimizing spread of HIV/STIs in the during implementation of the project • Workers in the project have to be aware of Singida municipality. The place is attractive to transits and prostitution is high, hence education is highly needed during and after project implementation.	necessary areas required for investigation and survey works, thereby minimizing disturbances. • Restore dug holes and pits: After completing field investigation or survey works, ensure that all dug holes and pits are promptly rehabilitated to their original intact state, minimizing any lasting impacts. •
OSHA-Central zone	• Proponent should register the project to OSHA through online system; • OSHA will conduct site assessment/inspection after receiving detailed of project from TIA; • Appropriate PPEs should be provided to all workers; • First aid kit should be available at the construction site;	

	• Qualified First Aider should be available all the time at site; • Qualified Safety Representative (trained by OSHA) should be available at site; • Baseline risk assessment should be prepared at each stage of construction works; • Health and Safety Policy for proposed project should be prepared and implemented at the site; • Proponent should submit to OSHA all project technical drawings for assessment and recommendations; • Clean and safe drinking water should be available for all workers at the site; • Appropriate number of sanitation facilities separately for men and women should be available at site; • At the site there should be separate changing rooms with lockers for both males and females; • There should be an emergency assembly point at the project site; • There should be a number of toilets should be promotional to the number of users as required; • Site Emergency Preparedness Plan should be prepared; • All permanent staff at site should undergo proper occupational medical examination by OSHA; • OSHA will visit site after completion of construction phase for assessment prior to start of operation phase; • Proponent should ensure the buildings and all associated facilities are in good order for use	
TANROAD - Singida	• Project is accepted; • Strict adherence to road safety procedures during transportation of materials should be followed; • Overloading should be avoided, and advice can be sought if needed.	• Establish speed restraining humps, signs and symbols at all potential black spots on the access roads; • Provide awareness and education to project driver;

		staff, patients and visitors of the health facilities • Establish appropriate and understandable signage; • Erect and control safe points for pedestrian and vehicular crossing at designated points; • Provide for safety fencing in order to indicate to pedestrians about the construction work area; • Avoid interference of movements along roads. • All vehicles, machines and equipment drivers have valid licenses • Institute regular maintenances of all vehicles, machines and equipment
SUWASA	• Current water supply coverage in Singida Municipality is at 67%; • Authority produce about 10,000,000 liters of water per day while requirement is about 15,000,000 liters per day; • Water quality analysis is conducted for water supplied; • Sustainable Water Supply Projects in 28 Towns will be implemented in Singida Municipality; • It is expected that 28 Towns water project will boost water supply in the Municipality. About 34,000,000 liters will be generated by this project; • There is on-going construction of appropriate wastewater treatment facility in Manga area within the municipality.	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment

TARURA	• Compliance with all required permits is advised; • Licensed borrow pits should be considered for sourcing materials.	• Minimize clearing of natural vegetation disturbance of steep slopes, • promptly re-vegetate cleared land with native species; • Restrict activities in sensitive areas: Limit clearance, trampling, and digging activities to the necessary areas required for investigation and survey works, thereby minimizing disturbances. • Restore dug holes and pits: After completing field investigation or survey works, ensure that all dug holes and pits are promptly rehabilitated to their original intact state, minimizing any lasting impacts. • Implement erosion control measures: Implement soil erosion control measures and land rehabilitation techniques at all project sites that have been disturbed, safeguarding against soil erosion and promoting the restoration of the affected areas

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CHAPTER SIX

ASSESSMENT OF IMPACTS AND IDENTIFICATION OF ALTERNATIVES

6.1 Introduction

This section outlines the process of impact identification and assessment of the impacts in each phase of the proposed project. The proposed mitigation measures are outlined in chapter seven of which MoEST through TIA is committed to undertake so as to prevent or reduce the identified adverse impacts. This study is conducted for envisaging a road map to ensure the investments to be financed under this project are designed and implemented in an environmentally sound and socially acceptable manner that meets both requirements of World Bank Environmental Standards (ESS) and the Government of Tanzania (GoT) legislations.

- Environmental risks and impacts assessment done included: (i) those defined by the WB Environmental Health and Safety Guidelines, EHSGs; (ii) those related to community safety; (iii) those related to climate change (iv) any material threat to the protection, conservation, maintenance and restoration of natural habitats and biodiversity; and (v) those related to ecosystem services and the use of living natural resources;
- Social risks and impacts assessment done included: (i) threats to human security through crime or violence; (ii) risks that project impacts fall disproportionately on individuals and groups who, because of their particular circumstances, may be disadvantaged or vulnerable; and (iii) negative economic and social impacts relating to the involuntary taking of land or restrictions on land use.

Further, the chapter provides description of identification and evaluation of environmental and social impacts and risks regarding the proposed project. The assessment will include the following key issues: details on impact zones; list of activities likely to cause impacts and risks; identification as well as classification and significance of impacts; and evaluation significance of impacts.

6.2 Impact zones

The geographical spread of the impacts (positive, adverse, short term, long term) is likely to encompass the areas described in the subsequent paragraphs. The actual spatial dimension will vary with the nature of the impact and environmental and social components of the receptor.

6.2.1. Primary impact area

The designated core impact zone for the proposed project will serve as the central area where all activities will take place. This zone encompasses the specific land within TIA Singida Campus, located on Unyankai Street in Mandewa Ward, Singida Municipality. The focal point of the project will be the construction of the TIA building and its accompanying infrastructure within this area. Additionally, the primary impact area extends to the immediate vicinity surrounding the project's footprint, covering a radius of 500 meters within Mandewa Ward.

6.2.2. Secondary impact area

These off-site locations are essential components linked to the proposed project, encompassing various sources of construction materials, water supply, and waste disposal sites. Depending on the final decision, potential sources of construction materials may include borrow pits containing sand and fill materials, as well as authorized quarry sites for natural stones, gravel, and aggregates within the Singida region. The project may draw water from Singida Urban Water and Sanitation Authority (SUWASA) as well as a borehole situated within the existing Singida TIA campus. For waste disposal, the current solid waste disposal site is a designated area within the Municipality, known as an open dumping site. However, there are plans in progress to construct a sanitary landfill in Mwankoko, Singida Municipality. As a result, secondary impact areas will encompass specific point locations spread throughout the Municipal Council and potentially beyond its borders.

6.2.3. General project area of influence

The scope of impact extends beyond the immediate footprint of the project site, encompassing a wider area that experiences the effects of the project. This includes transportation routes and potential recipients of project impacts, such as benefits, noise, air emissions, and discharges. The area of influence may extend to cover regions within Singida Municipality and potentially even beyond, considering the magnitude of the project's reach.

6.3 Causes of impacts and risks

The identification of impacts for the proposed construction of an academic block at TIA - Singida Campus has been conducted by analysing the cause-effect interactions between project activities and existing relevant baseline receptors. These receptors encompass various aspects, including physical, chemical, biological, built, and human factors. The impact assessment extends throughout the entire project cycle, starting from site selection, planning, and design, to mobilization, construction, demobilization, operation and maintenance, and finally decommissioning stages.

Given the diverse nature of the project components, construction activities and the level of civil works will vary accordingly. It is anticipated that these activities will have an impact on natural features, and the influence area will extend to include project-related offsite locations. To ensure a comprehensive assessment, the impacts associated with the construction phase are presented separately from those associated with the operation stage, as well as the potential impacts from the decommissioning activities of the project.

Table 6.1: Summary of causes of impacts and risks

Activity	Source of Environmental and Social-economic Foot Prints
Feasibility and design phase	
Technical, feasibility and socio-economic studies	- Soil investigative activities - Land surveying activities - Experts movements
Mobilization and Construction Phase	
Extraction / procurement of construction materials, inputs and staff,	- Extraction /sourcing of construction materials - Employment of skilled, semi-skilled staff & casual laborers - Procurement of Contractors and Services Providers
Transportation/delivery of input materials, machinery and equipment and crew;	- Procurement of domestic and industrial supplies and services - Conveyance of construction and project equipment to the project site through main highway roads and on community earth roads
Site clearance and early works	- Operation of machinery - Disposal of cleared wastes
Earth works: excavation, filling, grading and compaction	- Soil movements: removal of top soils, excavation - Compacting - Piling of spoil materials - Operation of fuel powered equipment and vehicles
Civil works, erection and installation of structures	- Movements of soils and construction materials - Handling and mixing of materials - Compacting - Piling of excess materials - Pipe laying - Operation of fuel powered equipment and vehicles, - Piling and disposal of construction wastes
Construction activities	**Working conditions (occupation health & safety risks)** - Lack of /inadequacies in use of Personal Protective Equipment (PPE) - Use of hazardous practices e.g. motored / sharp edged equipment, noise / emissions emitting - Exposure to hazardous substances, chemicals (paints, adhesives, cement dust etc.), gases, dust, corrosive substances, disease agents, - Practices exposing workers to extreme / risky working conditions: low/high temperatures, lack of ventilation for hazardous fumes, drinking water - Exposure to disease agents / vectors - Risk of dangerous animals (i.e. snakes) - Negligence at work i.e. understaffing and long working hours, employing wrong people on particular jobs, low morale, etc.
	Public Health and safety hazards

	- Construction site hazards: falling in open pits, excavations accidents, - Social interactions among newcomers and local communities - Transport hazards: vehicles causing accidents, congested traffic, material spillage - Creation of new water bodies (pits) as breeding habitats for agents/vectors of water-borne diseases (malaria, etc)
	Pressure on natural resources - During the construction phase of a project, there can be several pressures on natural resources. The pressure on natural resources resulting from various project phases can have significant environmental and socioeconomic consequences.
	Potential GBV/SEA/SH related incidences The projects acknowledge the occurrence of potential GBV as the one of the social issue such GBV includes denial of resources, opportunities or services; physical assault; requests for sexual favours'; psychological and physical abuse; exploitation of vulnerable position, differential power or trust for sexual purposes; actual or threatened physical intrusion; unwanted sexual advances; and sexual physical contact. TIA formed Grievance Readiness Mechanism (GRM) committee to deal and resolve emerging GBV cases. It expected a number of workers during construction hence will interaction. - Gender discrimination may hinder women to access resources opportunities, and public services necessary to improve the standard of living for themselves and their families.
Demobilization	- Collection and disposal of demolition waste; - Termination of contracts / employment
Operation Phase	
Procurement of teaching and research materials, inputs and staff,	- Employment of skilled, semi-skilled staff & casual labourers - Procurement of contractors and services providers - Procurement of domestic and industrial supplies and services - Conveyance of operation and project equipment to the project site through main highway roads and on community earth roads
Delivery of input materials, machinery and equipment	
TIA Singida campus's operational activities	**General activities** - Teaching and learning - Research and consultancy services - Operation of fuel powered equipment and vehicles - Waste generations and disposal **Working conditions (occupation health & safety risks)**

	- Lack of /inadequacies in use of Personal Protective Equipment (PPE) - Use of hazardous practices e.g. motored / sharp edged equipment, noise / emissions emitting - Exposure to hazardous substances, chemicals (paints, adhesives, cement dust etc.), gases, dust, corrosive substances, disease agents, - Practices exposing workers to extreme / risky working conditions: low/high temperatures, lack of ventilation for hazardous fumes, drinking water - Exposure to disease agents / vectors - Risk of dangerous animals (i.e. snakes) - Negligence at work i.e. understaffing and long working hours, employing wrong people on particular jobs, low morale, etc **Public Health and safety hazards** - Social interactions among newcomers and local communities - Transport hazards: vehicles causing accidents, congested traffic, material spillage - Creation of new water bodies (pits) as breeding habitats for agents/vectors of water-borne diseases (malaria, etc)
Decommissioning Phase	- Dismantling of structures, machinery and equipment - Operation of fuel powered equipment and vehicles, - Collection and disposal of demolition waste; - Site rehabilitation activities - Termination of contracts / employment

6.4 Identification of impacts

Environmental impacts refer to the alterations, whether positive or negative, to the natural surroundings resulting from human activities. Within the scope of this study, an assessment was conducted using a standardized matrix approach to identify potential impacts. This approach scrutinized the effects of significant project activities on both the physical environment, including aspects like air quality and land, and the socio-economic environment of the core areas and surrounding regions influenced by the proposed project.

6.5 Classification and significance of impacts

The identified potential environmental impacts have been categorized based on the activities that cause them. To determine their significance, certain criteria were considered. The impacts were deemed significant if they met the following conditions:

- Extensive over time and space: The impacts have a wide-ranging and long-lasting effect.
- Intensive in consideration or proportion to assimilative capacity: The impacts are substantial in relation to the capacity of the environment to absorb or mitigate them.

- Exceed environmental standards or thresholds: The impacts surpass established standards or limits set to safeguard the environment.
- Non-compliance with environmental policies, land use plans, and sustainability strategies: The impacts do not align with established policies and plans for environmental conservation and sustainable development.
- Adversely and seriously affect ecological sensitive areas: The impacts have a detrimental and severe effect on areas that are ecologically sensitive and require special protection.
- Adversely and seriously affect heritage resources, other land uses, communities, or indigenous people's traditions and values: The impacts have a negative and significant influence on cultural heritage, land utilization, communities, and the traditional practices and values of indigenous populations.

The significance criteria are based on the assessment of the impact's magnitude, duration, exposure, probability, and consequences. This assessment is carried out using a scoring or scaling system, and the results are represented through colour codes. Detailed descriptions of the significance criteria assigned to the various impacts of the project can be found in Table 13, Table 14, and Table 15.

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Table **6.2**: Assessment of significance in terms of impact's magnitude, scale and duration

Criterion	Description	Possible Results		
		Term	**Description**	**Score**
Magnitude of the Impact	An indication of the severity of the impact, either positive or negative.	Very High	Extreme effect – where natural, cultural or social functions or processes permanently cease	5
		High	Severe effect – where natural, cultural or social functions are altered to the extent that they temporarily cease	4
		Moderate	Moderate effect – the affected environment is altered but natural, cultural or social functions continue, albeit in a modified way	3
		Low	Minimal effect – affects the environment in such way that natural, cultural or social functions and processes are not affected	2
		Very Low	Minimal or negligible effect	1
		Unknown	Magnitude of the impact unknown	5
Scale of the impact	An indication of geographical extent of the Impact	National	Affects the resources of the country	5
		Regional	Affects the resources of the region	4
		District	Affects the resources of the district	3
		Local	Affects the project area and surrounding villages	2
		Site – specific	Localized, confined within the license area	1
		Unknown	Extent of the impact unknown	5
		Permanent	Will remain permanently	5

Duration of the impact	An indication of duration or time over which the impact will be experienced.	Long term	Extends into the post-closure phase, but not Permanently	4
		Medium term	During the operational life of the project	3
		Short term	Shorter than the operational life of the project	2
		Transient	Very short duration	1
		Unknown	Duration of the impact is unknown	5

Table 6.3: Assessment of significance in terms of eexposure and pprobability

Criterion	**Description**	**Possible results**			
		Term	**Description**		**Score**
			Discrete event	**Prolonged exposure**	
Exposure to Impact	An indication of the frequency of the activity that may cause the impact, or the continuity of the exposure	Very High	Daily or continuous	Exposure in perpetuity	**5**
		High	Weekly	Continuous exposure into closure or post-closure phases	**4**
		Moderate	Monthly	Continuous exposure during construction and operations phases	**3**
		Low	Bi-annually	Continuous exposure throughout one phase	**2**
		Very low	Annually or less Frequently	Prolonged exposure yet finishes before end of a phase	**1**
		Unknown	Frequently of activity unknown	Continuity of exposure unknown	**5**
		Highly likely	Very likely or certain to occur		**5**

Probability of the occurrence	An assessment of the degree of certainty associated with a potential impact	Likely	Likely to occur	**4**
		Possible	May possibly occur	**3**
		Unlikely	Unlikely to occur	**2**
		Highly Unlikely	Very unlikely to occur, or almost impossible	**1**
		Unknown	Probability of the occurrence unknown	**5**

Table 9: Consequence assessment according to score/scale

Consequence	**Magnitude + Scale + Duration**	**3-4**	**5-7**	**8-11**	**12-14**	**15**
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Likelihood	Exposure + Probability	2-3	4-5	6-7	8-9	10
		Very Low	Low	Moderate	High	Very High

To assess the overall significance of the impacts, a matrix was utilized, combining scores from the "Consequence" and "Likelihood" factors. This matrix is illustrated in Figure 7. The significance of each impact is represented by colour codes, which have the following interpretations:

- White colour indicates "Very Low Significance."
- Green colour indicates "Low Significance."
- Orange colour indicates "Moderate Significance."
- Red colour indicates "High Significance."
- Black colour indicates "Very High Significance."

The implications of these significance levels are further explained in Table 15. These descriptions guide the development of mitigation measures, which are outlined in the Environmental Management Plan (EMaP).

		Consequence of Impact (Aggregate: Magnitude + Duration + Scale)				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Livelihood of Impact (Compound: Exposure x Probability)	**Very Low**	**VL**	**VL**	**L**	**L**	**M**
	Low	**VL**	**L**	**L**	**M**	**H**
	Moderate	**L**	**L**	**M**	**H**	**H**
	High	**L**	**M**	**H**	**H**	
	Very High	**M**	**H**	**H**		

Figure 6.1: Color codes for the iimpact ssignificance

Table 6.5: Color code iimplications

Colour Code	Significance of the Residual Impact	Implications for Project	
		Positive Impacts	**Negative Impacts**
White	Very low significance	Negligible effects	Negligible effects
Green	Low significance	Some Benefits	Acceptable effect
Orange	Moderate Significance	Appreciable improvements to, or will sustain, existing resources	Effect is serious enough to cause concern. Changes to project design should be considered.
Red	High Significance	Very substantial improvement to existing resources	Unacceptable effect. The project should not proceed unless the design is changed so that the significance of this impact is reduced to acceptable levels
Black	Very high significance	Extremely beneficial and enduring effect	An automatic fatal flaw. The project should not proceed unless the design is changed so that this impact is eliminated or its significance is reduced to acceptable levels.

6.6 Impacts Evaluation

The evaluation of impact significance in this study considers the magnitude, extent, and duration of each impact. Additionally, the assessment considers the likelihood of these impacts occurring, considering the implementation of avoidance and minimization strategies, as well as the incorporation of best technologies and practices in the project's designs. To provide a comprehensive analysis, the impacts associated with different phases, such as construction, installation, and operation, were analysed and presented separately. Furthermore, the impacts were categorized into two main groups: environmental impacts and socio-economic impacts, allowing for a thorough examination of the project's effects on both the natural environment and the surrounding communities.

6.7 SIGNIFICANT ENVIRONMENTAL IMPACTS

6.7.1. Feasibility and Design Phase

Impact 1: Soil disturbances and soil erosion

During the feasibility and design phase of the project, various activities such as topographical surveys, geo-technical investigations, groundwater investigations, and environmental studies are necessary to assess the project's feasibility and inform the design of its components. However, some of these survey elements may have intrusive effects on the environment. These intrusive activities include clearing vegetation, trampling on vegetation and the ground, digging pits, and core drilling to obtain soil surface and sub-surface data. These actions can result in the loss and disturbance of trees, grasses, and overall land and soil disruption. It is

important to note that the project area primarily consists of sandy soils, which are susceptible to accelerated gully formation and soil erosion when disturbed. The cumulative effect of land and soil disturbances has the potential to contribute to increased gully formation and soil erosion, leading to land degradation in the project area. It is crucial to consider appropriate mitigation measures to minimize the negative impacts on the soil and prevent further degradation during this phase of the project.

Impact 2: Disturbance to fauna species due to noise and vibration

In the feasibility and design phase of the project, certain activities associated with planning and feasibility studies, such as geotechnical investigations, topographical surveys, and groundwater assessments, involve the presence of people, vehicles, machinery, and equipment. These activities can generate noise and vibrations that may disturb the fauna species, particularly avifauna. The noise and vibrations produced during these activities have the potential to cause disturbances to the local fauna. Avifauna, in particular, can be sensitive to such disruptions, which may affect their natural behaviours, breeding patterns, and overall well-being.

Impact 3: Water and land quality impairment due to improper waste management

In the planning and design phase of the project, waste generation is expected to occur, primarily from the technical teams involved. This waste can take the form of overburden materials from ground investigations, as well as papers, plastic materials, and food-related items. If these wastes are not properly managed, they can have significant impacts on the surrounding environment, particularly on water and land quality. Improper waste management practices, such as discharging materials and wastes directly onto the land, can result in the impairment of the receiving mediums, including water resources and land. When discharged into water habitats, the effects can spread further due to dispersion, potentially affecting a larger area. On the other hand, when the discharge occurs on land, the impacts tend to be more concentrated and localized, without the natural dispersion or dilution that may occur in water environments, unless rainfall occurs.

6.7.2. Mobilization Phase

Impact 4: Disruption of fauna due to noise emission and vibrations

During the mobilization phase of the project, the use of heavy machinery, equipment, and vehicles/trucks is necessary for various works. However, these activities can have adverse effects on the local fauna, particularly in terms of noise emission and vibrations. The operation of heavy machinery, equipment, and vehicles/trucks is associated with the generation of significant noise levels. The noise produced can disrupt the natural habitats of fauna species, causing disturbance and potential displacement. The sensitive fauna present along the materials routes and within the project area may be particularly vulnerable to the impacts of noise emission. In addition to noise, the operation of heavy machinery and vehicles can also generate vibrations. These vibrations can further contribute to the disruption of fauna species, affecting their behaviours, movement patterns, and overall well-being.

Impact 5: Land degradation/ Soil erosion due to extraction of resources

The mobilization phase of the project involves various activities such as vegetation clearance, levelling, trenching, and excavation for foundations. These activities, if not properly managed, can have direct effects on the land and contribute to soil erosion and land degradation. Vegetation clearance, when done without proper measures, can result in the removal of important vegetation cover that helps to prevent soil erosion. The exposed soil becomes more susceptible to erosion by wind and water, leading to the loss of topsoil and nutrients essential for healthy vegetation growth. During trenching and excavation for foundations, the soil structure is disturbed and loosened. If proper backfilling and resurfacing techniques are not employed, the loosened soil can be easily eroded by rainfall or runoff, further exacerbating soil erosion and contributing to land degradation.

Impact 6: Impairment of air quality and climate change

During the mobilization phase of the project, several activities can contribute to the impairment of air quality and contribute to climate change effects. The production of fumes from fuel-powered transportation, construction equipment, machinery, and vehicles' engines is a significant source of air pollution. Exhaust emissions containing pollutants such as carbon dioxide (CO_2), nitrogen oxides (NOx), sulphur dioxide (SOx), hydrocarbons, and particulate matter (PM) are released into the atmosphere during the operation of these vehicles and equipment. These pollutants can have adverse effects on air quality, leading to the deterioration of the ambient air in the project area. In addition to exhaust emissions, dust emissions from various sources further contribute to the degradation of local air quality during the mobilization phase. Activities such as land clearance, transportation of construction materials in uncovered trucks, stockpiling, and off-loading of materials at the site, as well as vehicles running on loose earth roads, can generate significant amounts of dust particles. Furthermore, the putrefaction of organic matter can result in the release of odorous compounds that contribute to the reduction of air quality in the surrounding environment. It is important to note that the release of greenhouse gases (GHGs) such as carbon dioxide (CO_2) during the mobilization phase can have long-term implications for climate change. GHGs trap heat in the atmosphere, leading to changes in temperature patterns and climate effects.

Impact 7: Water and land quality impairment due to improper waste management

During the mobilization phase of the project, various activities lead to the generation of waste. These wastes originate from the mobilization crew, materials extraction, and supplies. The generated waste can be in the form of solid waste, liquid waste, and waste oils. Improper management of these wastes poses a significant risk to water and land quality in the surrounding environment. If materials and wastes are discharged directly into the surrounding land without proper containment and treatment measures, it can result in the contamination of water resources and land. Further, he land earmarked for the proposed project currently accommodating some dilapidated building that had been used for various office and academic purposes. The existing buildings will be demolished to pave way for construction of proposed academic building. Demolition of existing old buildings may cause negative environment impacts due to improper handling of demolition waste if appropriate measures are not put in place.

6.7.3. Construction Phase

Impact 8: Land disturbances / soil erosion

During the construction phase of the project, several activities such as site preparation and earthworks are necessary. These activities involve various processes, including vegetation removal, drilling or digging of pits, trampling, grading, trimming, and compaction of land surfaces. However, if these activities are not carefully planned and executed, they can result in land disturbances and soil erosion. The removal of vegetation cover can leave the soil exposed, making it susceptible to erosion. Without the protective cover of vegetation, rainfall and runoff can easily displace the topsoil, leading to soil erosion. Additionally, the drilling and excavation of pits can further disrupt the stability of the land, potentially causing soil movement and erosion. In areas with rolling topography or steeper slopes, special attention should be given to ensure that construction activities do not destabilize the land. If not carefully designed and implemented, the construction works may contribute to the formation of gullies along ditches and channels, exacerbating soil erosion and land degradation.

Impact 9: Depletion at points of source of construction materials

During the construction phase of the proposed TIA Singida campus project, various construction materials such as water, soils, sand, aggregates, and stones are required. These materials can be sourced from within the project area or from locations within approximately 60 kilometers, specifically in an area called Ulemo in Singida Municipality, Singida region. Local suppliers extract these materials from authorized sources, although there are also unregistered sources on private properties. It is worth noting that while most of the authorized sources adhere to local regulations, some of the extraction sites are not well-managed. This lack of proper management practices has resulted in land degradation, characterized by disorderly vegetation clearance and eroded soils. Furthermore, these sources are accessible to all contractors and users, further exacerbating the situation.

If TIA and the contractor decide to utilize these local sources for the construction of the TIA Singida campus, it is anticipated that the project will contribute to the ongoing issue of resource depletion and degradation at the points of source. This cumulative effect poses significant environmental concerns. To address this potential environmental impact, close consultation with environmental officers is essential. These officers can help identify licensed sources of construction materials and provide guidance on the proper procedures to follow in order to safeguard the environment during extraction activities. By seeking their expertise, the project can ensure responsible sourcing and minimize the negative environmental consequences associated with material depletion and degradation.

Impact 10: Impairment of air quality and climate changes

During the construction phase of the project, a significant potential environmental impact is the impairment of air quality and its contribution to climate change. The primary source of atmospheric pollutants is the exhaust emitted by engines used in construction equipment, trucks/tippers, excavators, forklifts, and other machinery. These internal combustion engines release greenhouse gases (GHGs), including carbon dioxide (CO2), as well as noxious gases

such as nitrogen oxides (NOx), sulfur oxides (SOx), hydrocarbons, and particulate matter (PM). These emissions have effects on air quality and are known to interfere with the temperature balance, leading to climate change effects. The release of CO2 and other GHGs contributes to the greenhouse effect, trapping heat in the atmosphere and causing global warming. NOx and SOx contribute to air pollution and can react with other compounds to form smog and acid rain. Hydrocarbons and PM can cause respiratory issues and other health problems when inhaled.

Impact 11: Reduced vegetation cover and abundance of some valuable plants

During the construction phase of the project, a significant potential environmental impact is the loss of vegetation and the reduction in the abundance of valuable plant species. This impact arises from the general land clearance and removal of vegetation, including the cutting of trees and the removal of grasses in areas where structures will be erected. The flora component of the project area will be particularly affected, leading to several consequences: i) Reduced Vegetation Cover: The removal of vegetation will result in a decrease in overall vegetation cover, altering the landscape and reducing the aesthetic value of the area. Ii) Decline in Grassland Cover: Grasslands, an important habitat for many species, will experience a decline in coverage, potentially impacting the ecological balance and biodiversity. Iii) Reduction in plant species: The construction activities will lead to a general decline in the number of plant species present at the project site. This loss of biodiversity can have long-term ecological implications. Iv) Decrease in woody plant abundance: The removal of trees and other woody plants will result in a reduction in their abundance. This can have adverse effects on wildlife habitats, nesting sites, and food sources for various organisms. V) Reduction in Plants with Medicinal Value: Valuable plant species with medicinal properties may be affected by the clearance activities, potentially leading to a decline in their availability for traditional medicine or pharmaceutical purposes. vi) Decreased Availability of Edible Fruits: Plants that produce edible fruits may also be impacted, reducing the availability of these food resources for both wildlife and local communities.

Moreover, the clearance of vegetation will contribute to the reduction of carbon sinks, as plants play a crucial role in absorbing carbon dioxide (CO_2) through photosynthesis. This reduction in vegetation cover and associated decrease in carbon sequestration capacity can contribute to climate change effects, as CO^2 is a greenhouse gas that contributes to global warming.

Impact 12: Disturbance and temporary flight of fauna species

During the construction phase of the project, there is a significant potential environmental impact associated with the disturbance and temporary flight of fauna species. This impact arises from the loss of vegetation and trees, which leads to the disturbance, loss, and degradation of habitats for fauna species within the core project area and surrounding areas. The consequences of this impact include; Reduced Population Numbers: The loss of habitats due to vegetation clearance can result in a reduced population of fauna species within the affected area. This can have implications for the long-term survival and viability of these populations; Decreased Recruitment Rate: With the disturbance and loss of habitats, the ability of fauna species to reproduce and recruit new individuals may be compromised. This can further impact

population dynamics and biodiversity; and Blocked Migratory Routes: Construction activities may obstruct or impede the natural movement patterns and migratory routes of fauna species. This can disrupt their normal behaviour, migration, and ecological connectivity.

The impact on fauna species encompasses various categories, including mammals, birds, reptiles, amphibians, fish, and invertebrates. Both terrestrial and aquatic fauna residing in the project area are likely to be affected. Additionally, noise and vibrations generated by transportation, working equipment, machinery, and human activities pose direct disturbances to fauna, especially sensitive avifauna. The increased noise levels during the peak of mobilization, construction, and demobilization are expected to exceed the existing noise levels from vehicular traffic, further exacerbating the disturbance.

Impact 13: Water and land quality impairment due to improper waste management

The construction phase of the project presents a significant potential environmental impact concerning the impairment of water and land quality due to improper waste management practices. Throughout this phase, various materials and wastes can be generated, resulting in unplanned or accidental discharges that pose risks to the surrounding environment. The potential sources of materials and wastes include; Discharge of Eroded Soils: Earthmoving activities and disturbed areas may lead to the erosion of soils, which can result in the discharge of sediments and eroded soils into water bodies and nearby land. This can have detrimental effects on water quality and contribute to land degradation; Solid Waste and Littering: The construction crew may generate domestic solid waste, including packaging materials, food waste, and other non-hazardous waste. Improper disposal and littering can lead to the contamination of land and water resources, affecting their quality and integrity; Fuel, Oil, and Lubricant Spillage/Leakages: Equipment and vehicle repairs, as well as refuelling operations, can be potential sources of spillage or leakages of fuel, oil, and lubricants. These hazardous substances can contaminate the soil and potentially infiltrate into groundwater or nearby water bodies, causing pollution and adverse ecological effects; and Storm water Contamination: During construction, storm water runoff can become loaded with various pollutants, such as sediments, oils, and other contaminants. If not properly managed, this storm water runoff can carry these pollutants into existing water resources, including ponds and streams within the project area.

The improper management of these materials and wastes can lead to the impairment of water and land quality. The consequences include; Water Pollution: Discharges of sediment, contaminants, and pollutants into water bodies can degrade water quality, impacting aquatic ecosystems, aquatic species, and potentially compromising the usability of water resources; and Soil Contamination: Improper waste management practices can result in the contamination of soils, affecting soil fertility, nutrient balance, and potentially impacting the growth of vegetation in the area.

Impact 13: Potential GBV/SEA/SH related incidences

The projects acknowledge the occurrence of potential GBV as the one of the social issue such GBV includes denial of resources, opportunities or services; physical assault; requests for

sexual favours'; psychological and physical abuse; exploitation of vulnerable position, differential power or trust for sexual purposes; actual or threatened physical intrusion; unwanted sexual advances; and sexual physical contact. TIA formed Grievance Readiness Mechanism (GRM) committee to deal and resolve emerging GBV cases. It expected a number of workers during construction hence will interaction. Gender discrimination may hinder women to access resources opportunities, and public services necessary to improve the standard of living for themselves and their families

6.7.4. Operation Phase

Impact 15: Disturbance to fauna and species of concern due to noise and vibration

The operation phase of the project will result in increased human activity, including the presence of students, lecturers, visitors, and vehicles. This heightened activity, along with the use of equipment and machinery, will contribute to noise pollution that can negatively affect local animal species. The potential impacts include a reduction in fauna population numbers within the affected area, decreased recruitment rates, and disruption of migratory routes in the locality.

Impact 16: Water and land quality impairment due to improper waste management

Improper waste management during the operation phase poses risks to water and land quality. Oils and fuels used for transportation, equipment, and the diesel generator may accidentally leak or be improperly disposed of, leading to soil pollution. Additionally, ecological impacts may arise from the discharge of untreated wastewater from sanitary facilities, laboratory works, and cleaning chemicals. If wastewater systems malfunction or become overloaded, they may release pollutants onto the land or into water bodies, including natural wetlands and Lake Victoria, which borders the project site to the southwest.

Impact 17: Disruption of surface water flow regime

The project area is characterized by a generally flat terrain, except for a hilly location with slopes towards the west of Lake Singida (1.14 kilometers) and north of Lake Kindai (2.6 kilometers). This terrain plays a crucial role in defining the surface water drainage pattern in the locality. The existing drainage pattern at the project area has ecological interconnectivity with the two prominent lakes in Singida. However, the development of the TIA Singida campus and associated academic building block in this area is likely to alter the terrain and lead to an increase in paved surfaces. Consequently, this can disrupt the natural flow of surface water in the locality.

Impact 18: Pollution from electronic waste

The operation of the TIA Singida campus will involve the use of various electronic equipment, such as mobile phones, computers, photocopying and printing facilities, among others. Over time, these devices will become electronic waste (e-waste). Improper disposal and management of e-waste can pose a significant risk of environmental pollution, particularly due to the presence of heavy metals in these gadgets. If electronic waste is haphazardly discarded or not managed properly, it can release harmful substances into the environment, including heavy metals like lead, mercury, cadmium, and arsenic. These pollutants can leach into the soil and

water bodies, including Lake Singida and Lake Kindai, posing threats to the local ecosystems and potentially impacting human health.

Impact 19: Degradation of local air quality and contribution to climate change
During the operation phase, the TIA Singida campus will utilize various vehicles, machinery, and equipment, which can have potential interactions that affect the ambient air quality. These emissions are primarily attributed to the combustion of fuels and result in the release of gaseous pollutants such as carbon monoxide (CO), carbon dioxide (CO2), and unburned hydrocarbons. The continuous use of vehicles, machinery, and equipment on campus can contribute to air pollution, leading to the degradation of local air quality. These emissions may accumulate in the immediate surroundings, potentially affecting the health and well-being of individuals within the vicinity. Moreover, the release of greenhouse gases, particularly carbon dioxide, from the combustion process adds to the overall greenhouse gas emissions. These emissions have long-term implications, as they contribute to climate change and its associated effects, such as rising temperatures and altered weather patterns.

6.7.5. Decommissioning Phase

The impacts are similar to the mobilization and construction phase and will be dealt with in a similar manner. The impacts include:

Impact 20: Land disturbances / soil erosion
Similar to those under Impact 8

Impact 21: Contamination of water and land due to improper waste management
Similar to those under Impact10

Impact 22: Impairment of air quality & climate change
Similar to those under Impact 11

Table 10: Potential Environmental Impacts

Phase	Impact	Nature
Feasibility and Design Phase	Impact 1: Soil disturbances and soil erosion	Negative
	Impact 2: Disturbance to fauna and species of concern due to noise and vibration	Negative
	Impact 3: Water and land quality impairment due to improper waste management	Negative
Mobilization Phase	Impact 4: Disruption of fauna due to noise emission and vibration	Negative
	Impact 5: Land degradation/ Soil erosion due to extraction of resources	Negative
	Impact 6: Impact 6: Impairment of air quality & climate change	Negative
	Impact 7: Water and land quality impairment due to improper waste management	Negative

Construction Phase	Impact 8: Land disturbances / soil erosion	Negative
	Impact 9: Depletion at points of source of construction materials	Negative
	Impact 10: Impairment of air quality & climate change	Negative
	Impact 11: Reduced vegetation cover and abundance of some valuable plants	Negative
	Impact 12: Disturbance and temporary flight of fauna species	Negative
	Impact 13: Water and land quality impairment due to improper waste management	Negative
Operation Phase	Impact 14: Loss of Aesthetic Values	Negative
	Impact 15: Disturbance to fauna and species of concern due to noise and vibration	Negative
	Impact 16: Water and land quality impairment due to improper waste management	Negative
	Impact 17: Disruption of surface water flow regime	Negative
	Impact 18: Pollution from Electronic waste	Negative
	Impact 19: Degradation of local air quality and contribution to climate change	Negative
Decommissioning Phase	Impact 20: Land disturbances / soil erosion	Negative
	Impact 21: Contamination of water and land due to improper waste management	Negative
	Impact 22: Impairment of air quality & climate change	Negative

6.8 Significant Social Impacts

6.8.1 Feasibility and Design Phase

Impact 23: Economic gains

Feasibility and design teams are likely to contribute to economic gains in communities around the project area through local content procurement of foods and drinks, accommodation services and casual labourers for tasks such as excavation, drilling, etc. Stakeholders were thankful with the TIA project. They raised their concern that the project will have positive outcomes to the local community in Mandewa ward. They are expecting that the project will change socio-economic status of the local community through emerging of the employment opportunities during and after the implementation of the project. Moreover, it will facilitate movement of goods and services in Misungwi due to increasing of purchasing power.

Impact 24: Community safety and cultural integrity

Development of proposed project will attract many people from different places who will interact with local people in the project area. People were concerned about the possibility of newcomers disrupting locally valued cultural practices, spread of communicable diseases and unplanned practices if appropriate measures will not be put in place.

6.8.2 Mobilization and Construction Phase

Impact 25: Income to local suppliers of natural and industrial construction materials
Procurement of local natural and industrial materials and supplies for various project purposes will increase income of local suppliers and boost local economy. Infrastructure development require input materials such as sand, stones, gravel and aggregates; cement, wood, metal, chemicals and equipment for construction purpose; fuel, oils and lubricant for operation of construction machinery and transportation vehicles; and food and domestic consumables, accommodation and other sources of livelihood for construction crew.

Impact 26: Employment opportunities and income
The project will create direct and indirect employment opportunities to the people within the locality as well as well as from other places in Singida District, Singida Region at large. Direct employment will be in the form of unskilled (excavations, consignments, cleaning, etc.), semi-skilled (driving, masonry works, equipment and machinery operations) and skilled (engineers, accountants, administrators, etc.) personnel. Indirect employment will include people who will be providing various services such as provision of water, food and fuel to the Contractor during construction phase. Creation of employment chances will bring both economic and social benefits.

Impact 27: Increased traffic and road accidents from construction activities
During mobilization and construction phases, the area will experience increased traffic to and from the site that are bringing construction equipment and other resources. Due to increased number of vehicles in the area, there is a potential for increased number of accidents in the area.

Impact 28: Public health and accidents
During project implementation, number of populations will increase due to attraction of employment opportunities in Unyankhae Mtaa, Mandewa Ward. A stakeholder recommends that, public health should be taken in to consideration and persons in the project have to conduct medical examination before, during and after project implementation. Main contractor and subcontractor have to ensure public health is a priority during project implementation. Stakeholders further advocated that; there should be regular follow up of this during project implementation. Moreover, to avoid injuries, stakeholders recommended that workers' safety should be considered by supplying all necessary protective gears like safety boots.

During project implementation there should be first aid kits and health practitioner who will be responsible for any emergence regarding health of the persons during project implementation. On the other hand, stake holders noted that, the project will have large number of workers, so they advocated that constructor must have enough toilets to serve persons in the construction site.

Impact 29: Community cultural integrity
Development of proposed project will attract many people from different places who will interact with local people in the project area. People were concerned about the possibility of

newcomers disrupting locally valued cultural practices, spread of communicable diseases and unplanned practices.

Impact 30: Spread and prevalence of HIV/AIDS

The pandemic is prevalent in Singida Municipal and the spread is high. Stakeholders advocated that, TIA should encourage safe sex during and after implementation of the students' hostels, and insists on policies related to HIV/AIDS to minimize the spread of HIV/AIDS to students and community at large. It was argued that, there should be campaigns that strongly discourage risk sexual behaviours during and after project implementation. Most important stakeholders proposed that TIA and contractor should have condom dispensers installed in the site during and after project implementation.

Impact 31: GBV at the area

Prevalence of GBV is rarely in Singida district. However, there are cases of unintended pregnancies and unexpected children from young females in Singida resulted from males working in construction sites. Stakeholders were concern with the problem of street children and/family problems as young females are abandoned by their men working in construction sites. Stakeholders affirm that male workers in the construction site should be given education to mitigate the problem completely. It was further advocated that, there should be thorough follow-up workers and during project implementation. Community was advised to report cases of GBV.

Impact 32: Sexual exploitation and abuse and sexual harassment

The proposed project will attract labour into the project area. Like any other project with significant recruitment, the influx of labour heightens the risks associated with sexual exploitation and abuse of students, TIA staffs and community members by project workers and sexual harassment between project workers and students. In addition, labour influx into this project area could be source of conflict between workers and the local population. Women, girls, boys and men including students can experience sexual exploitation and abuse by either among of construction crew/workers or from local host community. This represents a risk, especially when construction crew/workers, students, TIA staff and community members are not clear about prohibitions against sexual exploitation and abuse and sexual harassment in the project.

Impact 33: Nuisance and loss of aesthetics due to improper waste management

Mobilization and construction activities will generate significant quantity of waste of which if not correctly handled, could cause noxious odours, attracts pests and scavengers and generate germs and could present an eyesore to the receiving environment and consequent loss of visual quality and/or aesthetic value. Poor waste management may also cause nuisance to students during studies, staffs, visitors and nearby community. Nuisance may also be caused by noise and vibrations generated by transportation vehicles and trucks as well as working equipment and machinery during mobilization and construction phases vibrations if appropriate measures are not observed.

6.8.3 Operation and Maintenance Phase

6.8.4 Impact 34: Modification of the visual quality of local landscape features

Construction of new modern buildings contrary to the present buildings is going to modify the landscape to give visuall improment of the project area.and Singida Municipality at large.

Impact 35: Disruption of local values moral standards following the presence of people from other parts of Tanzania

Every community has their moral standards on the basis of which they decide acceptable and non-acceptable thoughts and practices, for instance relating to sexuality, marriage, respect for others, dressing codes, etc. The presence of people of people of different sociocultural backgrounds will introduce new moral values and or disrupt the existing ones.

Impact 36: Employment opportunities

Proposed project will increase number of employment opportunity including academic staff being, cleaners and securities staff. Other employment will be in the form of unskilled (cleaning, etc.) and semi-skilled (driving, etc.) personnel. Indirect employment will include people who will be providing various services such as provision of water, food vendors, etc. Creation of employment chances will bring both economic and social benefits.

Impact 37: Stimulation of socio-economic activities and inducement of rapid economic growth

Operation of proposed project is expected to increase students' enrolment to TIA which will have a multiplier effects on socio economic performance of Singida Municipality. People who will be attracted by the high potential in business and economic opportunities brought about by the Institute will provide a ready market for goods and services in project area as they will need a place to stay and foods to eat as well as other necessities. Other benefits that accrue will be Induced development in other sectors particularly water, energy, transport, security, etc.

Impact 38: Community cultural integrity

The proposed is expected to enrol a number of young people as students and adults either as students or academician or as administrators / technical staff. These people will be hailing from different places within and outside Tanzania. They will have different history and culture. As a result, there is a possibility of newcomers to disrupt locally valued cultural practices, spread of communicable diseases and unplanned practices.

Impact 39: Increased knowledgeable human resource base in Tanzania

Increase of the number of students who will be enrolled to join the TIA Singida Campus to attain higher learning studies will increase a crew of knowledgeable human resource in the country. It will also increase the uptake of scientific approach to address existing community problems and challenges through teaching and learning, research and knowledge exchange which is the mission of the Institution. Eventually, this impact will have multiplier positive outcomes to the socio-economic development at local, regional and national level.

Impact #40: Increased students admission capacity and increased revenue to TIA

Under HEET Project TIA shall explore opportunities for income generation by increasing students' enrolment through making use of the ICT equipment purchased by the project, construction of academic building and digitalising teaching and learning environment. Also, TIA will strengthen the existing sources of incomes by capacitating its staff on consultancy skills to expand business horizons, marketing of Institute's services offered, facilities and equipment.

Impact #41: Health and safety risks due to fire outbreak

Proposed academic building will have combustible substances, and gases, heat dissipating equipment, and electrical wiring, which can lead to a serious fire accident if appropriate safety measures are not observed. Reasons for high fire risks may including faulty appliances and leads, misuse of equipment or appliances non-functioning firefighting facilities installed in buildings, lack of familiarity with firefighting equipment operations, unawareness of fire escape routes, poor communication links that delay fire brigade assistance, inadequate means and facilities for fire fighting, insufficient water to run firefighting equipment and a lack of community knowledge and awareness on extent of fire risks. Fire outbreak nay occur at the proposed project if appropriate measures are not put in place.

Impact #42: Disruption of public health, safety and gender issues

Operation of proposed project is expected to enrol significant number of young people as students and adults either as students or teaching staff or as administrators. These people will be hailing from different places within Tanzania with different sociocultural backgrounds. Social interactions including sexual relationships are expected among students, staff, service providers and local community who are unfaithful and doing without preventive measures. This massive influx of people into the area would result in increase in the incidence of diseases including STDs, and HIV/AIDS if appropriate measures are not put in place. Influx of people may also increase level of crimes.

6.8.5 Decommissioning Phase

Impact 43: Noise and air pollution nuisance from dust and smoke from demolition equipment

At the end of the facility lifespan, the TIA will transfer all the components and all immovable infrastructures to local government authority for other uses or may decide to demolish or abandon the structures. Dust and noise are expected from demolition works of the structures and their impacts are considered pollution and nuisance to the environment and social setting respectively.

Impact 44: Pollution and nuisance due to haphazard disposal of waste / abandoned structures

Pollution and loss of aesthetics may result from the demolished waste remaining on site for a long time to the extent of becoming an eyesore. Also, abandonment of the structures may lead to loss of aesthetic value in the area.

Impact 45: loss of employment due to closure of the project

If for whatever reason the project is closed down, the people employed by the project will lose their jobs. This will have significant impacts to the employees and their families.

Table 6.7: Summary of Social Impacts

Project Phase	Impact	Nature
Design and feasibility	Impact 23: Economic gains	Positive
	Impact 24: Community safety and cultural integrity	Negative
Mobilization and Construction	Impact 25: Income to local suppliers of natural and industrial construction materials and other supplies required by project	Positive
	Impact 26: Employment opportunities and income	Positive
	Impact 27: Increased Traffic and road accidents from construction activities	Negative
	Impact 28: Public health and accidents	Negative
	Impact 29: Community cultural integrity	Negative
	Impact 30: Spread and Prevalence of HIV/AIDS	Negative
	Impact 31: GBV at the area	Negative
	Impact 32: Sexual exploitation and abuse and sexual harassment	Negative
	Impact 33: Nuisance and loss of aesthetics due to improper waste management	Negative
	Impact 34: Modification of the visual quality of local landscape features due new modern infrastructure such as buildings, recreational and sports facilities	Negative
	Impact 35: Disruption of local values moral standards following the presence of people from other parts of Tanzania	Negative
	Impact 36: Employment Opportunities	Positive
	Impact 37: Stimulation of socio-economic activities and inducement of rapid economic growth	Positive
	Impact 38: Community cultural integrity	Negative or positive
	Impact 39: Increased knowledgeable human resource base in Tanzania	Positive
	Impact 40: Increased students admission capacity and increased revenue to TIA	Positive
	Impact 41: Health and safety risks due to fire outbreak	Negative
	Impact 42: Disruption of public health, safety and gender issues	Negative
Decommissioning	Impact 43: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment	Negative
	Impact 44: Pollution and nuisance due to Haphazard Disposal of Waste / Abandoned Structures	Negative
	Impact 45: Loss of Employment due to Closure of the Project	Negative

6.9 Other Environmental Issues

6.9.1. Potential Significant Risks and Hazards Associated with the Proposed Project

(a) Mobilization Phase

While public health and safety of all people living in, close or transient to the project area, occupational health and safety is about the welfare of the project staff. During the mobilization phase of the proposed project, it is crucial to consider the potential risks and hazards that can impact both public health and safety and the welfare of the project staff. There are specific sources of concern related to mobilization activities. These include:

- Cuts/wounds due mishandling of equipment
- Bites by insects or poisonous reptiles such as snakes
- Burns due to direct exposure to sun shine
- Fatigue due to overwork
- Nuisance to both project workers and the public due to vibration and noise by the equipment/ machinery especially when they exceed acceptable levels.

(b) Construction Phase

During the construction phase, various environmental issues can arise, impacting both health and safety. These include:

- Site Hazards: Construction sites present potential hazards such as open pits, excavations, confined spaces, falling objects, and trip and slip hazards.
- open pits and holes, excavations, confined spaces, falling objects, trips and slips;
- Serious injuries / fatalities due to lack of / inadequate emergency response
- Noise from operating equipment especially machines, air emissions, dust and odours /fumes which cause nuisance;
- Contamination of local water resources by eroded soils and waste (spillage of fuels);
- Social disruption resulting from newcomer and local community interactions and the possibility of spread of communicable diseases such as HIV/AIDS due to interactions between community members and project personnel
- Creation of water bodies (pits) as breeding habitats for agents/vectors of water-borne diseases (malaria, etc.).
- The consequences of exposure of public to hazards related to mobilization and construction activities may include, among others, disturbances / nuisance and discomfort, injuries, ill-health and complains from the public.
- Accidents arising from misuse / handling of equipment or tools due to mishandling or other accidental events could be a source of injuries and related hazards to personnel especially the construction crew.
- Structural Instability: Construction activities involve the assembly and erection of structures, which can pose risks if not done properly. Structural instability or collapse can lead to severe injuries or fatalities.

(c) Operation Phase

The operation phase of the scheme presents potential risks to environmental health and safety. These risks include;

- Disturbances and Nuisance: The presence of site hazards, such as open pits and excavations, can pose a risk of accidents, particularly for vulnerable individuals such as children and the elderly. Falls into open pits can result in injuries and even fatalities.
- Human-Transmitted Diseases: Social interactions between newcomers and local communities during the operation phase may increase the risk of human-human transmission of diseases, including sexually transmitted diseases (STDs) and HIV.
- Infections from Putrescible Wastes: Improper disposal of putrescible wastes, including organic waste and chemicals, can lead to the contamination of water sources. This contamination may harbour disease pathogens and pose a risk to public health.
- Water-Borne Diseases: The expansion of the Singida TIA campus and the subsequent increase in population can create challenges related to hygiene and sanitation. Inadequate provision of toilet facilities, improper drainage systems, and lack of effective mosquito control strategies can contribute to the spread of water-borne diseases. Stagnant water in the surroundings, coupled with poor sanitation practices, can provide breeding grounds for disease-carrying vectors, leading to an increased risk of water-borne illnesses like malaria and bilharzia.

(d) Decommissioning

During the decommissioning phase, there are several environmental issues that can arise, including:

- Nuisance and discomfort for both project workers and the public due to excessive vibrations, emission of fumes, and noise generated by demolition equipment and machinery. It is important to ensure that these levels do not exceed acceptable limits to minimize the impact on the surrounding environment and communities.
- Improper disposal of demolished waste can lead to the impairment of water quality. It is crucial to implement proper waste management practices to prevent the contamination of water sources. This includes appropriate handling and disposal of demolished materials, ensuring that hazardous substances are appropriately treated or removed to avoid any negative impacts on water resources.

6.9.2. Emergence preparedness and response plan

To mitigate these risks, the project proponent shall implement the following measures as part of its emergency preparedness and response plan

- Ensure that all personnel are provided with appropriate protective gear. All works shall be planned and conducted in accordance with relevant occupational health and safety guidelines,
- Provide adequate resources (human, financial) to operate and maintain construction camp support facilities – cleaners, waste management facilities etc.

- Provide and maintain a First Aid Kit so as to be easily accessible during working hours.
- Use of equipment which is in good condition
- Cooperate with local public health offices to undertake awareness / education programmes to workers and the public on communicable diseases and STDs including HIV / AIDS.
- The contractor will establish a contractor's camp that includes an office space, sufficient toilets facilities and appropriate hygiene equipment and water supply during construction phase to ensure sanitation and hygiene are observed.
- Ensure that all workers receive first aid training
- All workers involved in the project will receive comprehensive first aid training to enhance their preparedness and response capabilities during emergencies.
- In the event of accidental oil spills or equipment leakages, immediate clean-up procedures will be implemented to prevent environmental contamination. Contaminated soil will be excavated and disposed of in accordance with applicable regulations, including proper incineration methods.

6.10 Analysis of project alternatives

6.10.1 Introduction

This section presents project alternatives that were obtained through consultation with the project development team. The potential alternatives have been assessed through the assessment of potential impacts to the environment and the overall project viability. As such, recommendations on the best alternative for the project development have been given after a detailed analysis of the various design parameters and environmental considerations that were undertaken during detailed EIA study.

6.10.2 No project alternative

Tanzania Institute of Accountancy has received financial support from the WB through HEET Project The project's objective is to strengthen the learning environment and labour market alignment of priority programs at TIA. This will lead to reduced skills gaps and increased economic productivity in priority discipline. Therefore, under HEET Project the Institute shall explore opportunities for income generation by increasing enrolment through making use of the ICT equipment purchased by the project, construction of academic block and digitalising teaching and learning environment.

Under this zero-scenario alternative, consideration was given to a case where no proposed project is put in place. This case would be feasible if all conditions for development of the proposed academic building at Singida Campus would have significant negative impacts that could not justify the investment of the project. The effects of not proceeding with the project were assessed to describe the most likely environmental and socio-economic conditions expected to exist should the project not proceed and to compare these with the expected residual impacts of the project.

6.10.3 Alternative site for the project

The site for proposed project is located within the existing TIA Singida Campus' plot measures the land's size of 16.23 (162,300 m^2) which is legally owned by TIA. The area has been surveyed and the Institute possesses the certificate of occupancy. It is surrounded by other existing TIA education infrastructures including lecture theatres, classroom and office buildings. Thus, the main adjacent land use is for education, research and consultancy purposes.

Site selection was based on the land owned by government under the Tanzania Institute of Accountancy (TIA), land use compatibility and the aligned with the Institute Master Plan, size of land required, physical suitability of the site, geotechnical / soil suitability for civil structures, accessibility and functionality of the proposed project. After analysis of alternative site locations, the present site was found to be more suitable and fits well all criteria mentioned above. Therefore, no alternative site for the project is required.

6.10.4 Alternative access route

Existing road networks in Singida district will be used. The site is easily accessed by the existing Sepuka tarmac road which junction off from Singida – Mwanza highway.. Generally, the existing access roads are in good condition and can successful be used for transportation of workers, construction materials, tools and equipment during project implementation phase. As such there was no consideration of alternative access route to the project site.

6.10.5 Design alternatives

Several alternative designs for proposed project were reviewed by the proponent team to find out the best alternative which has more positive social economic impacts with less negative environmental and social impacts. The alternative designs have considered low environmental footprint and high efficiency and low utilization of natural resources.

6.10.6 Alternatives construction technology

Project considered both conventional and modern construction technologies in the development of proposed project. The construction methods will involve a collection of innovative tools, machinery and software's including semi-automated and automated construction equipment. The project will employ value service techniques aimed at reducing costs for the project. It will use the primary tenet of value service so that basic functions of project components are preserved and not reduced as a consequence of pursuing value improvements. Other important factors have considered environmental sustainability, social acceptability, institutional manageability as well as operation and maintenance requirement.

6.10.7 Alternative source of the construction materials

Developing the proposed project will require construction materials. Some of potential sources of construction materials have been identified in consultation with stakeholders. Potential source for sand is located in Mungumaji area about 10 km from project site. Potential sources for aggregates are located in Ulemo area which is located about 60 km from project site and Mtipa area which is located about 20 km from project site. The selection considerations for

such materials have based on their easy availability, cost effectiveness, reliability, and accessibility, environmental and social concerns. Other authorized alternative sources for construction materials will be established by the Contractor to be engaged for construction of proposed project.

6.10.8 Alternative for power supply

Typically, the total energy demand of the proposed project is divided into electricity and fuel consumption. Electricity is largely made available from the national grid operator (TANESCO) and used for various undertaking during both construction and operation phase of the project. Already, TANESCO electric supply infrastructures are available at the project site. Nevertheless, it has been established and explored more alternatives for electric power supply and evaluate for their feasibility. The evaluation was based on adequacy, reliability, accessibility, affordability and the environmental and social issues and concerns.
Other alternatives

Alternative 1: diesel generator this alternative is not environmental friend as it has significant environmental drawbacks as a fossil fuel that emits greenhouse gases. Hence this is not recommended alternative.

Alternative 2: Solar photovoltaic power: Solar energy harnesses abundant local solar resources with zero emissions. Solar panels could provide lighting and supplementary power. Hence, this method enhanced as the backup to national grid to be used during electricity shortage.

6.10.9 Alternative liquid and solid waste management

Significant quantities of wastes are expected to be generated during all phases of proposed project. Solid waste will include garbage and rubbish such food remains, kitchen wastes, papers, cardboards, plastic bottles, and all general garbage generated from domestic activities. Construction waste will be generated as a result of construction works. It comprises surplus construction materials, woods, containers and packaging materials. Wastewater/sewage to be generated from domestic activities will be generated from cooking, washing and from sanitation facilities. Project promotes wastes minimization by the approaches of reduces, reuse and recycle to reduce amount of wastes to the landfill. Moreover, Wastes will be properly collected, segregated, transported for safe disposal at Mwankoko official solid waste crude dumping site in Singida Municipality by registered service provider.

Alternatives for liquid wastes management

Alternative 1. Currently, there is no sewerage system in Singida Municipality.
Alternative 2: Up-flow anaerobic sludge blanket (UASB)
UASB would treat wastewater using anaerobic digestion to break down organic matter and produce biogas and nutrient-rich effluent as it enhance resource recovery. But this method requires high investment cost interns of maintenance.

Alternative 3: Septic tank and soak away pits

The project will use septic tank and soak away pits to manage wastewater to be generated. When septic tanks are full will be emptied by registered emptier truck and disposed of to the existing authorized Mwankoko crude sludge dumping site in Singida municipality.

6.10.10 Alternative labor force source

The project will create direct and indirect employment opportunities. Direct employment will be in the form of unskilled (excavations, consignments, cleaning, etc.), semi-skilled (driving, masonry works, equipment and machinery operations) and skilled (engineers, accountants, administrators, etc.) personnel. Indirect employment will include people who will be providing various services such as provision of foods and to the Contractor during construction phase. Creation of employment chances will bring both economic and social benefits. Labour forces will be sourced from the people within the locality as well as well as from other places in Singida District, Singida Region at large. Priority for employment opportunities should be given to the local labour forces.

6.10.11 Alternative project funding/financing sources

Tanzania Institute of Accountancy has received financial support from the World Bank (WB) for proposed project on construction of academic building. The capital investment cost for the project is estimated at TZS 13,633,600,000 covering the consultancy fees, land acquisition and construction materials, equipment and labour charges. The funds have been borrowed from the WB through HEET Project. As such there will be no alternative project funding/financing sources.

CHAPTER SEVEN
ENVIRONMENTAL AND SOCIAL IMPACTS MITIGATION MEASURES

In this chapter, we present a comprehensive overview of mitigation measures aimed at addressing the potential impacts that have been identified. By assessing their significance, we ensure a suitable alignment between predicted impacts and the appropriate preventive, avoidance, and corrective measures. The primary objective of these mitigation measures is to minimize any adverse (negative) effects, or alternatively, to avoid or compensate for any negative impacts that cannot be fully mitigated by the project.

7.1. Environmental Impacts – mitigation measures

Environmental Impact mitigation measures have been presented according to the phases of the project implementation. Table below provides the mitigation measures for the environmental impacts

Table 7.1: Mitigation measures for the Environmental Impacts

Phase	Impact	Mitigation / Enhancement Measure
Feasibility and Design Phase	Impact # 1: Soil disturbances and erosion	• Minimize vegetation removal: During the project appraisal phase, unnecessary removal of vegetation cover, such as trees and grasses, should be avoided. • Restrict activities in sensitive areas: Limit clearance, trampling, and digging activities to the necessary areas required for investigation and survey works, thereby minimizing disturbances. • Restore dug holes and pits: After completing field investigation or survey works, ensure that all dug holes and pits are promptly rehabilitated to their original intact state, minimizing any lasting impacts. • Implement erosion control measures: Implement soil erosion control measures and land rehabilitation techniques at all project sites that have been disturbed, safeguarding against soil erosion and promoting the restoration of the affected areas.
	Impact #2: Disturbance to fauna species due to noise and vibration	• Make use of low noise equipment and machinery (i.e. vans/vehicles and drilling equipment designed with noise control elements) • Make use of trucks, vehicles and equipment which are well serviced and have properly functioning mufflers,

Phase	Impact	Mitigation / Enhancement Measure
		• Optimize mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible. • Avoid the use of transportation routes that traverse near areas with sensitive fauna receptors • Train drivers to be aware of protecting wild animals that pass across the highway and other access roads • Train drivers and transportation crew not to habituate wild animals by forbidding littering of especially organic wastes i.e. garbage and fruits.
	Impact #3: Water and land quality impairment due to improper waste management	• Minimize excavations works during feasibility and design phase; • Provide for free to the local communities all recyclable/usable materials (i.e. plastic containers, etc.) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida region
Mobilisation Phase	Impact #4: Disruption of fauna due to noise emission and vibration	• Make use of low noise equipment and machinery (i.e. vans/vehicles and drilling equipment designed with noise control elements) • Make use of trucks, vehicles and equipment which are well serviced and have properly functioning mufflers, • Optimize mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible. • Avoid the use of transportation routes that traverse near areas with sensitive fauna receptors • Train drivers to be aware of protecting wild animals that pass across the highway and other access roads • Train drivers and transportation crew not to habituate wild animals (i.e. monkeys, Vervet – Monkey, Hare and Mongoose) by forbidding littering of especially organic wastes i.e. garbage and fruits.
	Impact # 5 Land degradation/ Soil erosion	• Implement soil erosion control and land rehabilitation measures at all disturbed sites • Limit excavations area needed for soil investigation works

Phase	Impact	Mitigation / Enhancement Measure
	due to extraction of resources	• Compact the disturbed areas soon after investigation works • Whenever possible development activities shall be implemented when the agents of erosion (i.e. rain and wind) are not active.
	Impact # 6: Impairment of air quality & climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities i.e. trucks and vehicles • Provide for regular servicing of engines of transportation facilities to improve efficiency
	Impact # 7: Water and land quality impairment due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district, Singida region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management
Construction Phase	Impact # 8: Land	• Implement mitigation measures under Impact 5

Phase	Impact	Mitigation / Enhancement Measure
	disturbances / soil erosion	• Whenever possible avoid construction activities on hilly and steep slope areas • Provide for good drainage, appropriate gradients and restoration through re-grassing of cleared areas after construction works
	Impact # 9: Depletion at points of source of construction materials	• Engage registered and licensed mining firms for supply of construction materials • Source construction materials from authorized and/or registered burrow and quarry sites; • Order only require quantities of construction materials (i.e. according to Bill of Quantities); • Undertake restoration of disturbed sites to original state (where applicable); • Make use of Best Practice Management Techniques during handling of materials.
	Impact #10: Potential risks and hazards associated with child labour and labour conditions	• Institute and adhere to labour Management Plan
	Impact #11: Impairment of air quality and climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities i.e. trucks and vehicles • Provide for regular servicing of engines of transportation facilities to improve efficiency

Phase	Impact	Mitigation / Enhancement Measure
	Impact #12: Reduced vegetation cover and abundance of some valuable plants	• Provide for an environmentally friendly plan and proper design that will accommodate and enable most of the species remain within and around the project area. • Avoid placement of structures (i.e. building and access roads) on vegetation rich areas and other sensitive areas i.e. water pond and streams • Avoid indiscriminate clearance and damage of vegetation due to any use of woody vegetation resources • For unused areas grasses should be allowed to regenerate and people should avoid tramping on the same • Avoid unnecessary removal of the vegetation cover i.e. trees and grasses • Limit clearance, trampling and digging activities within the areas needed for construction works. • Provide training to the construction crew to be able to identify the trees of concern in order to proactively avoid loss of such trees. • Compensate for the lost indigenous trees by planting trees and rehabilitating the disturbed areas after during project implementation
	Impact #13: Disturbance and temporary flight of fauna species	• Make use of low noise equipment and machinery (i.e. vans/vehicles and drilling equipment designed with noise control elements) • Make use of trucks, vehicles and equipment which are well serviced and have properly functioning mufflers, • Optimize mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible. • Avoid the use of transportation routes that traverse near areas with sensitive fauna receptors • Train drivers to be aware of protecting wild animals that pass across the highway and other access roads • Train drivers and transportation crew not to habituate wild animals (i.e. monkeys, Vervet – Monkey, Hare and Mongoose) by forbidding littering of especially organic wastes i.e. garbage and fruits.

Phase	Impact	Mitigation / Enhancement Measure
	Impact # 14: Water and land quality impairment due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district and Singida region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with materials safety data sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management
Operation Phase	Impact #15: Loss of aesthetic values	• Paint structures uniformly with matt non-reflective and non-shiny colours; light grey colour are preferred, • Create aesthetic balance in the design • Ensure that lights flash slowly to minimize the amount of light and flash white during the day and red at night thereby observing Tanzania regulations • Repair damaged structures as quickly as possible
	Impact #16: Disturbance to fauna and species of concern due to noise and vibration	• Make use of low noise equipment and machinery • Make use of vehicles and equipment which are well serviced and have properly functioning mufflers, • Train drivers to be aware of protecting wild animals that pass across the access roads

Phase	Impact	Mitigation / Enhancement Measure
		• Train drivers and transportation crew not to habituate wild animals by forbidding littering of especially organic wastes i.e. garbage and fruits.
	Impact #17: Water and land quality impairment due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district and Singida region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management
	Impact #18: Disruption of surface water flow regime	• Develop drainage crossings, control structures and culverts to transmit a specific storm event that will consider consequences of failure; • Locate cross-drainage structures so that backwater conditions during flooding will reduce the potential for impacts on any infrastructures • Design embankments and cross-drainage arrangements to retain seasonal drainage pathways and water level profiles that are of significant ecological value • Provide for regular maintenance of the drainage infrastructure by de-silting and clearing debris

Phase	Impact	Mitigation / Enhancement Measure
		• Provide for periodic structural inspections and perform the appropriate corrective actions and defects
	Impact #19: Pollution from electronic waste	• Contract the designated company for collecting e-waste for recycling and reusable • Provide protective gear for e-waste handlers • Training and awareness to the e-waste handlers and other staffs
	Impact #20: Degradation of local air quality and contribution to climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities • Provide for regular servicing of engines of transportation facilities to improve efficiency
Decommissioning Phase	Impact #21: Land disturbances / soil erosion	• Implement soil erosion control and land rehabilitation measures at all disturbed sites • Limit excavations area needed for soil investigation works • Compact the disturbed areas soon after investigation works • Whenever possible development activities shall be implemented when the agents of erosion (i.e. rain and wind) are not active.
	Impact #22: Contamination of water and land due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use

Phase	Impact	Mitigation / Enhancement Measure
		• Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district and Singida region • Treat contaminated land by direct removal & safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management
	Impact #23: Impairment of air quality and climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities i.e. trucks and vehicles • Provide for regular servicing of engines of transportation facilities to improve efficiency

7.2. Social impacts – mitigation measures

Social Impact mitigation measures are also presented according to the phases of the project implementation. Table below provides the mitigation measures for the social impacts identified in chapter 6.

Table 11: Mitigation measures for the Social Impacts

Phase	Impact	Mitigation/Enhancement Measure
Feasibility and Design	Impact 23: Economic gains	• Maximize procurement of supplies from locals e.g. food, drinks, water, construction materials, consumables, etc., • Prioritizing local markets in Singida Municipality
	Impact 24: Community safety and cultural integrity	• Orient project workers about the valued traditional practices in Singida. They should respect each other's culture.
Mobilization and Construction Phase	Impact 25: Income to local suppliers of natural and industrial construction materials and other	• Maximize procurement of supplies from locals e.g. industrial and construction materials, consumables, etc., by prioritizing local markets within the project area in Singida

Phase	Impact	Mitigation/Enhancement Measure
	supplies required by project	
	Impact 26: Employment opportunities and increased income	Positive impact and shall be enhanced by: • Publication of local employment opportunities • Optimise employment by offering skills & trainings to locals particularly youth • Observe the national labour standards. • Allocate job fairly among villagers (women and men) by working with local governments in Singida
	Impact 27: Increased Traffic and road accidents from construction activities	• Establish speed restraining humps, signs and symbols at all potential black spots on the access roads; • Provide awareness and education to project driver; staff, patients and visitors of the health facilities • Establish appropriate and understandable signage; • Erect and control safe points for pedestrian and vehicular crossing at designated points; • Provide for safety fencing in order to indicate to pedestrians about the construction work area; • Avoid interference of movements along roads. • All vehicles, machines and equipment drivers have valid licenses • Institute regular maintenances of all vehicles, machines and equipment
	Impact 28: Public health and accidents	• Provide appropriate sanitation facilities during all phases of the project • Provide and enforce use of PPEs
	Impact 29: Community cultural integrity	• Implement mitigation measures on impact #24
	Impact 30: Spread and Prevalence of HIV/AIDS	• Awareness rising campaign
	Impact 31: GBV at the area	• Education on GBV and provide policy on GBV management
	Impact 32: Sexual exploitation and abuse and sexual harassment	• Sexual exploitation and abuse Action Plan that ensures a project awareness-raising strategy will be prepared;

Phase	Impact	Mitigation/Enhancement Measure
		• Sexual exploitation and abuse and sexual harassment awareness will be provided before working on project; • Helpdesk and mechanism to report on issues related to Sexual exploitation and abuse and sexual harassment will be established.
	Impact 33: Nuisance and loss of aesthetics due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management
Operation and Maintenance Phase	Impact 34: Modification of the visual quality of local landscape features due new modern infrastructure such as buildings, recreational and sports facilities	The designer shall: • Minimize clearing of natural vegetation disturbance of steep slopes, • promptly re-vegetate cleared land with native species; • Maintain uniform size and design of structures (e.g. direction, type and height of structures) TIA shall • Repair damaged structures as quickly as possible
	Impact 35: Disruption of local values moral standards following the presence of people from other parts of Tanzania	• SMC-Community development Department should sensitize communities on the likely impacts of the increase of people in their communities • TIA should sensitize students of living in accordance with the laws of the land and respecting the local values of local communities • Tanzania Police Force should establish a police post in or around the centre to ensure law and order

Phase	Impact	Mitigation/Enhancement Measure
	Impact 36: Employment Opportunities	• Maximize procurement of supplies from local markets in Singida • Publication of local employment opportunities; • Optimize local employment by offering skills and trainings to locals particularly youth; • Allocate job fairly among local people (women and men) by working with local leaders; • Provide awareness and education to project staff, and communities around on regular basis
	Impact 37: Stimulation of socio-economic activities and inducement of rapid economic growth	• Enhance the Institute operation to generate more revenues; • Provide business opportunities to local communities.
	Impact 38: Disruption of Community cultural integrity	• Municipal, ward development officers sensitize the local community to cautiously interact with new values and practices brought in TIA campus community.
	Impact 39: Increased knowledgeable human resource base in Tanzania	• All relevant requirement of the TCU will be observed • Qualified staffs will be employed • All necessary required resources for operation and management of campus will be provided • Resources for proper implementation of prepared environmental and social management and monitoring plan will be provided
	Impact 40: Increased students admission capacity and increased revenue to TIA	• All relevant requirement of the TCU will be observed • Qualified staffs will be employed • All necessary required resources for operation and management of campus will be provided • Resources for proper implementation of prepared environmental and social management and monitoring plan will be provided
	Impact 41: Health and safety risks due to fire outbreak	• Fire detection equipment such as fire alarm, heat detector, smoke detector, etc will be installed; • Regular maintenance of electrical wiring and equipment will be carried out;

Phase	Impact	Mitigation/Enhancement Measure
		• Well-maintained fire fighting equipment such as potable fire extinguishers and hydrants will be put in appropriate places; • Staffs and students will be sensitized on fire safety and use of fire fighting equipment; • Good housekeeping of flammable substances will be put in place; • Exit ways and assembly point will be provided; • Fire safety signs such as "NO SMOKING" must be prominently displayed in strategic places
	Impact 42: Disruption of public health, safety and gender issues	• Safety, health and environment induction awareness will be conducted to all students and teaching staffs; • The cooperation of local people shall be instilled to lessen criminal incidents and maintain the security of people and their properties.
Decommissioning	Impact 43: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment	• Implement measures under impact # 22
	Impact 44: Pollution and nuisance due to Haphazard Disposal of Waste / Abandoned Structures	• Implement mitigation measures as identified under Impact # 21
	Impact 45: Loss of Employment due to Closure of the Project	• Provide prior information about the likely impacts on employment • Advise those likely to lose jobs to find alternative opportunities • Transfer employees to other areas of operation

CHAPTER EIGHT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Introduction

The Environmental and Social Management Plan (ESMP), presented in Section in this chapter outlines the strategy for implementing the identified mitigation and enhancement measures outlined in Chapter 7. The implementation responsibilities are divided between TIA and the designer/consultant for design and operations of the proposed construction of academic building, while the engaged contractor will be responsible for mobilization, construction, installations, and demobilization. TIA, as the project proponent, holds the overall responsibility for the implementation of the ESMP during the construction and operation phases. The TIA Estate Manager or Environmental Management Officers will carry out day-to-day follow-ups, including supervision and liaising with stakeholders. The estimated costs provided for implementing the mitigation and enhancement measures are indicative and should be accurately reflected in the appropriate bills of quantities. The consultant exercises informed judgment to determine these figures.

8.2 Institutional capacity and responsibilities

8.2.1 Project proponent: TIA

TIA as the main implementer of this project, is represented by the Chief Executive Officer (CEO) and supported by key staff members, including project managers, an Environmental Officer, and an Estate Manager. The TIA as PIU has a capacity to ensure that EHS is completely followed because of the its past experience track record in similar assignment. The specific responsibilities of TIA which have been assessed to warrant the experience and capacity to effectively handle EHS during project implementation include are as follows:

- Overall management of project activities throughout all phases;
- Overall management of project activities during the operation phase;
- Coordination of stakeholders and project development activities;
- Supervision and monitoring of the work carried out by consultants and contractors during the planning, design, mobilization, and construction phases.
- Financing the construction activities, including the services provided by consultants and contractors during the planning, design, mobilization, and construction phases.
- Financing the Environmental and Social Management and Monitoring Plans during the planning, design, mobilization, and construction phases.

In executing this project, the TIA Office is also leveraging the technical expertise of the Singida Municipal Council and other entities such as SUWASA and TARURA. On the other hand, the Singida Municipal Council and the local communities in project area, have the following responsibilities:

- Acting as the host/owner of the project at the Singida Municipal Council.
- Coordinating project stakeholders and development activities at Mandewa Ward.

8.2.2 Project consultant

The project consultant refers to the company or individual responsible for the design and construction supervision of the proposed TIA Singida campus. Their role encompasses various tasks, including conducting feasibility studies, preparing preliminary designs, conducting detailed baseline studies, and creating engineering drawings and cost estimates. During the construction phase, the consultant is entitled to carry out the following responsibilities:

- Supervising the works contract to ensure that the construction aligns with the approved design, drawings, specifications, conditions of the contract, and sound engineering practices.
- Reviewing and approving the contractor's working drawings.
- Ensuring that the construction works comply with the provisions of the Environmental and Social Management Plan (ESMP) and adhere to all safety requirements, especially regarding the protection of workers and the public.
- Ensuring accurate measurement, certification, and payment to the contractor in accordance with the works contract, including the valuation of any variation orders.
- Preparing various reports, including inception reports, monthly progress reports, detailed progress reports, and the final completion report. Additionally, the consultant is responsible for creating as-built drawings for all completed works.
- Compiling the construction completion report to summarize the overall project completion.

The project consultant plays a crucial role in overseeing the construction process, ensuring compliance with design specifications, contractual obligations, safety standards, and environmental and social management requirements.

8.2.3 Project contractor

TIA will procure contractor(s) to carry out construction activities in accordance with requirements of the Government of Tanzania (GOT). The contractor(s) will be responsible for the following tasks:

- Mobilizing and supplying construction materials as specified in the Bill of Quantities (BOQ) and engineering drawings for the construction of the proposed project;
- Mobilizing and providing a skilled labor force, along with the necessary working tools and equipment, to execute the construction works;
- Deploying qualified experts to supervise construction activities, ensuring that built facilities comply with approved design, drawings, specifications, and sound engineering practices;
- Implementing the mitigation and enhancement measures outlined in the Environmental and Social Management Plan (ESMP) and complying with all safety requirements to safeguard the well-being of workers and the general public during the mobilization and construction phases;
- Carrying out the construction work in compliance with the defined scope, quality standards, project timeframes, and cost estimates stated in the BOQ, engineering drawings, specifications, and costing documents;

- The project contractor(s) plays a vital role in executing the construction activities, ensuring adherence to technical specifications, quality standards, environmental and social safeguards, and project timelines.

8.2.4 Local government authority

Singida Municipal Council is the local government authority of concerns. Specific departments that will interact with the project include Environmental Management, Planning, Engineering, Education, Health and Community Development Officers. Their roles in implementation of the ESMP include but not limited to: Community mobilization and awareness; and Environmental monitoring and audits

8.2.5 Local leaders

Mandewa Ward Executive leaders and Unyankhae Mtaa local leaders are the key entities in this regard. Their engagement in the implementation of the ESMP includes but not limited to:

- Involving various Mtaa leaders and committees (security, environment)
- Community mobilization, training and awareness

8.3 Permits and notifications

Permits required before and during project implementation will be obtained by TIA, its Consultant and engaged contractor(s) from the appropriate regulatory authorities of Tanzania. They include environmental clearance certificate, building permit as well as the permits to connection to local water supply as provided in Table below.

Table 12: Permitting requirement for the project

Type of Permit	Permitting Authority	Remarks / Status
Environmental Clearance Certificate	NEMC	This EIA Report after review and approval by NEMC will facilitate the attainment of environmental clearance certificate
Building Permits	LGAs (i.e. Singida Municipal Council)	To be processed from the Singida Municipal council in Singida region. In addition, the project will engage licensed Consultant (registered by ERB) and Contractor(s) (registered by CRB).
Extraction of construction materials	LGAs (Singida Municipal Council)	Construction materials (i.e. aggregates, sand, etc.) will be sourced from licensed suppliers with required permits in Singida Region during mobilization and construction phases
Connections to public water supply services	SUWASA, Singida Municipality	The project plans will acquire water supply from SUWASA during construction and operation phases

Connection to TANESCO services	TANESCO Singida Municipality/region	For the energy needs, the project will be connected to TANESCO
Solid and liquid waste disposal	LGAs (Singida Municipal Council)	To be liaised with Singida Municipality during construction and operation phases

8.4 Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (ESMP) serves as a comprehensive framework that provides guidelines for the project proponent (TIA design engineers and technical services units), contractors, and various stakeholders at different levels to implement a set of prescribed mitigation measures for the identified impacts throughout the project's design, siting, mobilization, construction, and operation phases. The ESMP outlines the measures to be implemented, when and where they should be implemented, the techniques/methods to be employed, the associated costs, and the responsible parties involved.

- The overall responsibility for the implementation of the ESMP lies with the project proponent, TIA, through a dedicated full-time Environmental Control Officer (ECO) who is selected from their staff and equipped to fulfil a supervisory and coordination role. The ECO ensures that environmental mitigation measures are effectively implemented throughout the entire project duration.
- The contractor, on the other hand, appoints an Environmental Liaison Officer (ELO) who is responsible for overseeing the implementation of environmental and social management mitigation measures during the mobilization and construction phase.

The Environmental and Social Management Plan (ESMP) for the development of the proposed project on construction of academic building at TIA Singida Campus is presented in Table 22 below. It is divided into two parts: a) Environmental management plan and b) Social management plan

The ESMP serves as a crucial tool to guide the project stakeholders in effectively addressing environmental and social concerns, ensuring the proper implementation of mitigation measures, and promoting sustainable development practices. Hence, the estimated total cost for implementing the Environmental and Social Management Plan (ESMaP) for the proposed development of TIA Singida Campus is TZS 236,000,000/= throughout the entire project implementation cycle. It is important to recognize that these cost estimates for implementing the mitigation and enhancement measures serve as indicators and are subject to change. Accurate figures will be provided in the appropriate bills of quantities, reflecting the actual costs involved. The consultant exercises informed judgment to determine these figures, considering various factors and considerations to ensure their accuracy.

Table 8.2: Environmental and Social Management Plan for the proposed Academy Building at TIA Singida Campus

(a) Environmental Management Plan

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
Feasibility and Design Phase	Impact # 1: Soil disturbances and erosion	• Avoid unnecessary removal of the vegetation cover i.e. trees and grasses during project appraisal • Limit clearance, trampling and digging activities within the areas needed for investigation and survey works. • Rehabilitate all dug holes and pits to the original intact state soon after the field investigation/survey works • Implement soil erosion control and land rehabilitation • measures at all disturbed project sites	TIA	1,500,000/=
	Impact #2: Disturbance to fauna species due to noise and vibration	• Make use of low noise equipment and machinery (i.e. vans/vehicles and drilling equipment designed with noise control elements) • Make use of trucks, vehicles and equipment which are well serviced and have properly functioning mufflers, • Optimize the mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible. • Avoid the use of transportation routes that traverse near areas with sensitive fauna receptors • Train drivers to be aware of protecting wild animals that pass across the highway and other access roads • Train drivers and transportation crew not to habituate wild animals by forbidding littering of especially organic wastes i.e. garbage and fruits.	TIA	1,000,000=
	Impact #3: Water and land	• Minimize excavations works during feasibility and design phase;	TIA	1,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
	quality impairment due to improper waste management	• Provide for free to the local communities all recyclable/usable materials (i.e. plastic containers, etc.) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida region		
Mobilisation Phase	Impact #4: Disruption of fauna due to noise generation and vibration	• Make use of low noise equipment and machinery (i.e. vans/vehicles and drilling equipment designed with noise control elements) • Make use of trucks, vehicles and equipment which are well serviced and have properly functioning mufflers, • Optimize the mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible. • Avoid the use of transportation routes that traverse near areas with sensitive fauna receptors • Train drivers to be aware of protecting wild animals that pass across the highway and other access roads • Train drivers and transportation crew not to habituate wild animals (i.e. monkeys, Vervet –Monkey, Hare and Mongoose) by forbidding littering of especially organic wastes i.e. garbage and fruits.	TIA	1,000,000/=
	Impact # 5 Land degradation/ Soil erosion due to	• Implement soil erosion control and land rehabilitation measures at all disturbed sites • Limit excavations area needed for soil investigation works • Compact the disturbed areas soon after investigation works • Whenever possible development activities shall be implemented when the agents of erosion (i.e. rain and wind) are not active.	TIA	2,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
	extraction of resources			
	Impact # 6: Impairment of air quality & climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities i.e. trucks and vehicles • Provide for regular servicing of engines of transportation facilities to improve efficiency	TIA	3,000,000/=
	Impact # 7: Water and land quality impairment due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district, Singida region • Treat contaminated land occurred by direct removal and safe disposal	TIA	5,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
		• Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management		
Construction Phase	Impact # 8: Land disturbances / soil erosion	• Implement mitigation measures under Impact 5 • Whenever possible avoid construction activities on hilly and steep slope areas • Provide for good drainage, appropriate gradients and restoration through re-grassing of cleared areas after construction works	TIA	12,000,000/=
	Impact # 9: Depletion at points of source of construction materials	• Engage registered and licensed mining firms for supply of construction materials • Source construction materials from authorized and/or registered burrow and quarry sites; • Order only require quantities of construction materials (i.e. according to Bill of Quantities); • Undertake restoration of disturbed sites to original state (where applicable); • Make use of Best Practice Management Techniques during handling of materials.	TIA	15,000,000/=
	Impact #10: Impairment of air quality (dust, pollutant	• Conduct monthly air quality, noise and vibration measurements • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities i.e. trucks and vehicles	TIA	95,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
	gases, noise and vibrations) & climate change	• Provide for regular servicing of engines of transportation facilities to improve efficiency		
	Impact #11: Reduced vegetation cover and abundance of some valuable plants	• Provide for an environmentally friendly plan and proper design that will accommodate and enable most of the species remain within and around the project area. • Avoid placement of structures (i.e. building and access roads) on vegetation rich areas and other sensitive areas i.e. water pond and streams • Avoid indiscriminate clearance and damage of vegetation due to any use of woody vegetation resources • For unused areas grasses should be allowed to regenerate and people should avoid tramping on the same • Avoid unnecessary removal of the vegetation cover i.e. trees and grasses • Limit clearance, trampling and digging activities within the areas needed for construction works. • Provide training to the construction crew to be able to identify the trees of concern in order to proactively avoid loss of such trees. • Compensate for the lost indigenous trees by planting trees and rehabilitating the disturbed areas after during project implementation	TIA	2,000,000/=
	Impact #12: Disturbance and temporary	• Make use of low noise equipment and machinery (i.e. vans/vehicles and drilling equipment designed with noise control elements)	TIA	3,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
	flight of fauna species	• Make use of trucks, vehicles and equipment which are well serviced and have properly functioning mufflers, • Optimize the mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible. • Avoid the use of transportation routes that traverse near areas with sensitive fauna receptors • Train drivers to be aware of protecting wild animals that pass across the highway and other access roads • Train drivers and transportation crew not to habituate wild animals (i.e. monkeys, Vervet –Monkey, Hare and Mongoose) by forbidding littering of especially organic wastes i.e. garbage and fruits.		
	Impact # 13: Water and land quality impairment due to improper waste management	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district and Singida region	TIA	2,500,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
		• Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management		
Operation Phase	Impact #14: Loss of Aesthetic Values	• Paint structures uniformly with matt non-reflective and non-shiny colours; light grey colour are preferred, • Create aesthetic balance in the design • Ensure that lights flash slowly to minimize the amount of light and flash white during the day and red at night thereby observing Tanzania regulations • Repair damaged structures as quickly as possible	TIA	5,000,000/=
	Impact #15: Disturbance to fauna and species of concern due to noise and vibration	• Make use of low noise equipment and machinery • Make use of vehicles and equipment which are well serviced and have properly functioning mufflers, • Train drivers to be aware of protecting wild animals that pass across the access roads • Train drivers and transportation crew not to habituate wild animals by forbidding littering of especially organic wastes i.e. garbage and fruits.	TIA	6,000,000/=
	Impact #16: Water and land quality impairment	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase;	TIA	5,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
	due to improper waste management	• Maximize the use of non-hazardous materials; • Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district and Singida region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management		
	Impact #17: Disruption of surface water flow regime	• Develop drainage crossings, control structures and culverts to transmit a specific storm event that will consider consequences of failure; • Located cross-drainage structures so that backwater conditions during flooding will reduce the potential for impacts on any infrastructures • Design embankments and cross-drainage arrangements to retain seasonal drainage pathways and water level profiles that are of significant ecological value	TIA	5,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
		• Provide for regular maintenance of the drainage infrastructure by de-silting and clearing debris • Provide for periodic structural inspections and perform the appropriate corrective actions and defects		
	Impact #18: Pollution from Electronic waste	• Contract the designated company for collecting e-waste for recycling and reusable • Provide protective gear for e-waste handlers • Training and awareness to the e-waste handles and other staffs	TIA	10,000,000/=
	Impact #19: Degradation of local air quality and contribution to climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities • Provide for regular servicing of engines of transportation facilities to improve efficiency	TIA	5,000.000/=
Decommissioning Phase	Impact #20: Land disturbances / soil erosion	• Implement soil erosion control and land rehabilitation measures at all disturbed sites • Limit excavations area needed for soil investigation works • Compact the disturbed areas soon after investigation works • Whenever possible development activities shall be implemented when the agents of erosion (i.e. rain and wind) are not active.	TIA	20,000,000/=
	Impact #21: Contamination of water and land due to improper	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges • Minimize excavations works during this phase; • Maximize the use of non-hazardous materials;	TIA	10,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In TZS
	waste management	• Provide for free to the local communities through their local governments all recyclable/usable materials (i.e. metal components, plastics, cut trees, etc.) • Provide for proper storage of potential polluting materials (e.g. fuels, oils, lubricants) • Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Singida district and Singida region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets • Provide waste management facilities for the temporary working and accommodation facilities • Provide periodical awareness, education and training to key / relevant personnel on key aspects waste management		
	Impact #22: Impairment of air quality & climate change	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles • Conduct periodical education/training sessions to drivers • Make use of efficient and well serviced transportation facilities i.e. trucks and vehicles • Provide for regular servicing of engines of transportation facilities to improve efficiency	TIA	5,000,000/=

(b) Social Management Plan

Phase	Impact	Mitigation/Enhancement Measure	Resposnibility	Cost Estimate in TZS
Feasibility and Design	Impact 23: Economic gains	• Maximize procurement of supplies from locals e.g. food, drinks, water, construction materials, consumables, etc., • Prioritizing local markets at Singida Region.	TIA	Management measures
	Impact 24: Community safety hazards and disruption of cultural integrity	• Orient project workers about the valued traditional practices in Singida district	TIA	8,000,000/=
Mobilization and Construction Phase	Impact 25: Income to local suppliers of natural and industrial construction materials and other supplies required by project	• Maximize procurement of supplies from locals e.g. industrial and construction materials, consumables, etc., by prioritizing local markets within the project area, at Singida region.	TIA	BOQ
	Impact 26: Employment opportunities and increased income	Positive impact and shall be enhanced by: • Publication of local employment opportunities • Optimise employment by offering skills & trainings to locals particularly youth • Observe the national labour standards. • Allocate job fairly among villagers (women and men) by working with local village governments, ward government and Singida District Council	TIA	BOQ
	Impact 27: Loss of income and food security due to	TIA and Singida MC shall • Give ample time to affected farmers to harvest their crops. • Compensate the lost crops according to national laws	TIA	Part of project capital investment cost

Phase	Impact	Mitigation/Enhancement Measure	Resposnibility	Cost Estimate in TZS
	clearance of productive crops & trees			
	Impact 28: Increased Traffic and road accidents from construction activities	• Establish speed restraining humps, signs and symbols at all potential black spots on the access roads; • Provide awareness and education to project driver; staff, patients and visitors of the health facilities • Establish appropriate and understandable signage; • Erect and control safe points for pedestrian and vehicular crossing at designated points; • Provide for safety fencing in order to indicate to pedestrians about the construction work area; • Avoid interference of movements along roads. • All vehicles, machines and equipment drivers have valid licenses • Institute regular maintenances of all vehicles, machines and equipment	TIA	8,000,000/= for signs, symbols, temporary walk ways, capacity building, etc.
	Impact 29: Community cultural integrity	• Implement mitigation measures on impact #25	TIA	5,000,000/=
Operation and Maintenance Phase	Impact 30: Rapid urbanization of the area of Kamala Village and Mgonya ward following the increase of people (students, staff, visiting researchers, etc.)	Singida District Council shall: • Prepare land use plan for the areas around the project area • In collaboration with Kamala Village government guide community members to realize business opportunities availed by the centre • Design engineer should make business outlets for the local people part of the main design	TIA	TBD by Management measures

Phase	Impact	Mitigation/Enhancement Measure	Resposnibility	Cost Estimate in TZS
	Impact 31: Modification of the visual quality of local landscape features due new modern infrastructure such as buildings, recreational and sports facilities	The designer shall: • Minimize clearing of natural vegetation disturbance of steep slopes, • promptly re-vegetate cleared land with native species; • Maintain uniform size and design of structures (e.g. direction, type and height of structures) The developer shall • Repair damaged structures as quickly as possible	TIA	Repair costs are part of the operation costs
	Impact 32: Disruption of local values moral standards following the presence of people from other parts of Tanzania	• Singida MC-Community development Department should sensitize communities on the likely impacts of the increase of people in their communities • TIA should sensitize students of living in accordance with the laws of the land and respecting the local values of local communities • Tanzania Police Force should work closely with the campus manager to ensure all is order in terms of adherence to laws.	TIA	Management measure
	Impact 33: Employment Opportunities	• Maximize procurement of supplies from local markets in Singida region. • Publication of local employment opportunities; • Optimize local employment by offering skills and trainings to locals particularly youth; • Allocate job fairly among local people (women and men) by working with local leaders; • Provide awareness and education to project staff, and communities around on regular basis	TIA	They are all management aspects

Phase	Impact	Mitigation/Enhancement Measure	Resposnibility	Cost Estimate in TZS
	Impact 34: Increased Traffic and associated road accidents in the project area	• Implement mitigation measures on impact 31	TIA	8,500,000/=
	Impact 35: Stimulation of socio-economic activities and inducement of rapid economic growth	• Enhance the university operation to generate more revenues	TIA	Management measures
	Impact 36: Community cultural integrity	• Sensitize the local community to cautiously interact with new values and practices.	TIA	1,500,000/=
	Impact 37: Increased Knowledgeable Human Resource Base in Tanzania	• Enhance the university operation to generate more revenues	TIA	Management measures
Decommissioning Phase	Impact 38: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment	• Implement measures under impact # 22	TIA	10,000,000/=
	Impact 39: Pollution and nuisance due to Haphazard Disposal of Waste / Abandoned Structures	• Implement mitigation measures as identified under Impact # 21	TIA	
	Impact 40: Loss of Employment due to Closure of the Project	• Provide prior information about the likely impacts on employment	TIA	Management aspect

Phase	Impact	Mitigation/Enhancement Measure	Resposnibility	Cost Estimate in TZS
		• Advise those likely to lose jobs to find alternative opportunities • Transfer employees to other areas of operation		

CHAPTER NINE

ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Introduction

The Environmental and Social Monitoring Plan (ESMoP) is a systematic and ongoing process of observing and assessing environmental and social changes associated with the proposed project. It aims to ensure that mitigation measures are implemented in compliance with relevant regulations and standards. The ESMoP is designed based on monitoring indicators, which will be compared against established targets to evaluate the effectiveness of the mitigation plans. Furthermore, the baseline data will be compared with targets and the post-construction situation. This chapter provides a detailed description of the ESMoP specifically developed for construction of academic building at TIA Singida Campus.

9.2 Environmental Monitoring Plan

TIA is dedicated to establishing and executing a robust Environmental and Social Monitoring Program (ESMoP) as a fundamental aspect of the proposed academic building at TIA Singida Campus project. The design of monitoring activities, targets, and responsibilities aims to achieve specific objectives, including verifying the proper implementation of the proposed mitigation measures outlined in the preceding chapters of this Scoping Study Report and making necessary adjustments to accommodate any changes.

9.3 Monitoring Responsibility

TIA will implement the ESMoP, supervise and monitor all components of the plan and maintain detailed records of monitoring outcomes. TIA has technical, human resource and financial abilities to successfully conduct supervisory oversight of ESMoP implementation.

Environmental and Social Monitoring Plan (ESMoP presented in Table 23 below. The total costs for implementation of ESMoP for the proposed project during the development phase is TZS 155,000,000/=. The cost for implementation of ESMoP during operation and maintenance phase is TZS 19,000,000/= per year. Likewise, the estimated costs for implementing the mitigation and enhancement measures are just indicative. Appropriate bills of quantities should clearly give the actual figures. The consultant uses informed judgement to determine these figures.

Table 9.1: Environmental and Social Monitoring Plan for the proposed development of academic building at TIA Singida Campus

10.1 Environmental Monitoring Plan

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
MONITORING PLAN FOR ENVIRONMENTAL IMPACTS							
Feasibility and Design Phase							
Impact # 1: Soil disturbances and soil erosion	Soil erosion tendencies	Once per consultancy visit	Within project site	Ha	Zero or as minimum as possible	• Consultant • TIA • Contractor • Singida MEMO	1,000,000/=
Impact # 2: Disturbance to fauna and species of concern due to noise and vibration	Noise levels	Once during feasibility and design phase	Materials extraction area and material transportation routes	Complaints from affected community groups dB(A)	Environmental Management (Standards for the Control of Noise and Vibrations Pollution) Regulations, 2014 45dB during daytime; 35dB during night	• Consultant • TIA • Singida MEMO	1,000,000/=
Impact # 3: Water and land quality impairment due to improper waste management	Waste handling practices (collection, storage, transportation, treatment and disposal means)	Continuous during design phase	Within project site and surrounding areas	None	Zero or as minimum as possible Tanzania "Solid Waste Regulations of 2009"	• Consultant • TIA • Singida MEMO	2,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
					Tanzania "EMA (Water Quality Standards) Regulations of 2007"		
Mobilization Phase							
Impact # 4: Disruption of fauna due to noise emission and vibration	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke Noise levels	Twice during mobilization	Materials transportation routes Infrastructure sites within project site	Concentrations Complaints from affected community groups dB(A)	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh NO_x≤1.1g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m Environmental Management (Standards for the Control of Noise and Vibrations Pollution) Regulations, 2014 70dB during daytime; 60dB during night	• Consultant • TIA • Singida MEO	2,000,000/=
Impact # 5: Land degradation/ Soil erosion due to	Soil erosion tendencies	Twice during mobilization	Project site premises	Ha	As minimum as possible	• Consultant • TIA • Singida MEO	1,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
extraction of resources							
Impact # 6: Impairment of air quality & climate change	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Once during mobilization	Materials transportation routes Infrastructure sites within project premises	Concentrations Complaints from affected community groups	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh NO_x≤1.1g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m	• Consultant • TIA • Singida MEO	2,000,000/=
Impact # 7: Water and land quality impairment due to improper waste management	Waste handling practices (collection, storage, transportation, treatment and disposal mean)	Continuous during design phase	Within project site and surrounding areas	None	Zero or as minimum as possible Solid Waste Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• Consultant • TIA • Singida MEO	5,000,000/=
Construction Phase							
Impact # 8: Land disturbances / soil erosion	Soil erosion tendencies	Monthly during construction phase	Project premises	Ha	As minimum as possible	• Consultant • TIA • Singida MEO	2,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
Impact # 9: Depletion at points of source of construction materials	Source and amount of materials	Monthly during construction phase	Procurement records and reports	None	None	• Consultant • TIA • Singida MEO	Part of operational cost
Impact # 10: Impairment of air quality (dust, pollutant gases, noise and vibrations) & climate change	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Quarterly during construction phase	Materials transportation routes Project premises	Concentrations Complaints	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh NO_x≤1.1g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m	• TIA • Singida MEO	95,000,000/=
Impact # 11: Reduced vegetation cover	• Soil erosion tendency • Physical observation of the monitored plants	Continuous during construction phase	Construction sites within project premises	Complaints	As minimum as possible	• TIA • Singida MEO	Part of Operation cost
Impact # 12: Disturbance and temporary flight of fauna species	Noise levels	Continuous during construction phase	Materials extraction area, transportation routes	Complaints from affected community dB(A)	Environmental Management (Standards for the Control of Noise and Vibrations Pollution) Regulations, 2014 70dB during daytime; 60dB during night	• Consultant • TIA • Singida MEO	1,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
			Construction sites				
Impact # 13: Water and land quality impairment due to improper waste management	Waste handling practices (collection, storage, transportation, treatment and disposal means)	Continuous during construction phase	Construction sites within project premises	None	Tanzania "Solid Waste Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• Consultant • TIA • Singida MEO	2,000,000/=
Operation Phase							
Impact # 14: Loss of Aesthetic Values	Emerging social complains	Continuous during operation phase	Core project area and surrounding villages	None	As minimum as possible	• Consultant • TIA • Singida MEO	None
Impact # 15: Disturbance to fauna and species of concern due to noise and vibration	Noise levels	Annually	Materials extraction area and material transportation routes Construction sites	Complaints from affected community groups dB(A)	Environmental Management (Standards for the Control of Noise and Vibrations Pollution) Regulations, 2014 70dB during daytime; 60dB during night	• TIA • Singida DEMO	2,500,000/= per year
Impact # 16: Water and land	Waste handling practices	Continuous during	Singida TIA Campus	None	Tanzania "Solid Waste Regulations of 2009"	• TIA	5,000,000/= per year

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
quality impairment due to improper waste management	(collection, storage, transportation, treatment and disposal means)	operation phase			Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• Singida MEO	
Impact # 17: Disruption of surface water flow regime	Storm water runoff	During rainy season	Singida TIA Campus and surrounding areas	None	As minimum as possible	• TIA • Singida MEO	2,500,000 /= per year
Impact # 18: Pollution from Electronic waste	Registered service providers for collection of E-waste Type and amount of E waste collected	Quarterly	Procurements, records and operational reports	None	None	• TIA • Singida MEO	None
Impact # 19: Degradation of local air quality and contribution to climate change	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Annually	Singida TIA Campus	Concentrations Complaints from affected community groups	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh NO_x≤1.1g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m	• TIA • Singida MEO	5,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard/Norm/ Specifications	Responsibility	Cost Estimate (TZS)
Decommissioning Phase							
Impact # 20: Land disturbances / soil erosion	Soil erosion tendencies	Continuous during phase of decommissioning	Singida TIA Campus	Ha	As minimum as possible	• TIA • Singida MEO	3,000,000/=
Impact # 21: Contamination of water and land due to improper waste management	Waste handling practices (collection, storage, transportation, treatment and disposal means)	Continuous during decommissioning phase	Singida TIA Campus	None	Tanzania "Solid Waste Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• TIA • Singida MEO	5,000,000/=
Impact # 22: Impairment of air quality & climate change	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Continuous during decommissioning phase	Materials transportation routes Infrastructure demolition sites	Concentrations Complaints from affected community groups	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh NO_x≤1.1g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m	• TIA • Singida MEO	3,000,000/=

10.2 Social Monitoring Plan

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs (TZS)
Site Selection Phase							

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs (TZS)
Impact 23: Economic gains	Type of supplies and expenses extracted / sourced locally	Monthly during construction phase	Contractors payment certificates and records and BOQ	None	As maximum as possible	• Contractors • Consultants • TIA	Part of contractual costs
Impact 24: Community safety and cultural integrity	Evidence of locally unacceptable behaviour	Monthly	Unyankhae Mtaa and Mandewa Ward	Records from Ward and Village offices	No or minimum complaints	• WEO and MEO • SMC	None
Mobilization and Constructions Phase							
Impact 25: Income to local suppliers of natural and industrial construction materials and other supplies required by project	Amount of money paid to suppliers of construction materials	Once every month during construction	Point source of construction material	TZS	None (As maximum as possible)	• WEO and MEO • SMC	Covered in 26 above
Impact 26: Employment opportunities and income	Number of people employed	Once every month during construction	Construction site	Number of people	None (as many as possible)	• TIA • Contractor	5,000,000/=
Impact 27: Loss of vegetation cover	Vegetation cover	Once before construction begins	Project site	Acres	None (as minimum as possible)	• TIA • SMC; • CDO	2,000,000/=

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs (TZS)
Impact 28: Increased Traffic and road accidents from construction activities	Tendencies of injuries and accidents	Monthly	Materials extraction and transportation routes Construction site	Records / Numbers / Complaints	No or minimum traffic accident	• Contractors • Consultant • TIA	Part of institutional costs and service contracts
Impact 29: Community cultural integrity	Evidence of locally unacceptable behaviour	Monthly	Unyankhae Mtaa and Mandewa Ward	Records from Ward and Village offices	No or minimum complaints	• WEO and MEO • SMC	None
Operation Phase							
Impact 30: increase urbanization of the area	Population of Singida District	Annually	NBS Reports	Number of people	None	• SMC	None
Impact 31: Modification of the Visual quality of local landscape features due new modern infrastructure	Emerging social complains	Continuous during operation phase	Core project area and surrounding villages	Number of complains	Zero or as minimum as possible	• TIA • Singida CDO	4,000,000/= per year
Impact 32: Disruption of local values moral standards following the presence of people	Evidence of locally unacceptable behaviour	Monthly	Unyankhae Mtaa and Mandewa Ward	Records from Ward and Village offices	No or minimum complaints	• WEO and MEO • SMC	None

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs (TZS)
from other parts of Tanzania							
Impact 33: Employment Opportunities	Number of people employed by the TIA Singida Campus	Quarterly	Human Resource Management Reports	Number of people	None (as many as possible)	• TIA	Part of university operation costs
Impact 34: Increased Traffic and associated road accidents in the project area	Tendencies of injuries and accidents	Quarterly	TIA Singida Campus and its surroundings	Records / Numbers / Complaints	No or minimum traffic accident	• TIA • SMC	Part of TIA operation costs
Impact 35: Stimulation of socio-economic activities and inducement of rapid economic growth	Per capita income	Once every year	Unyankhae Mtaa and Mandewa Ward around the project	TZS per person	National average	• TIA • SMC	Per capita income
Impact 36: Community cultural integrity	Cultural values and practices	Once very two years	Sensitization reports	Records, complaints	No cultural disruptions Positive enhancement of cultural values and practices	• TIA • SMC	Part TIA operation costs

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs (TZS)
Impact 37: Increased knowledgeable human resource base in Tanzania	Students enrolment	Annually	Admission Reports	Number of people	As many as possible	• TIA	Part of TIA operation costs
Decommissioning Phase							
Impact 38: Noise and air pollution nuisance from dust and smoke from demolition equipment	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Continuous during decommissioning phase	Materials transportation routes Infrastructure demolition sites within project premises	Concentrations Complaints from affected community groups	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh NO_x≤1.1g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m	• TIA • Singida MEO	Covered above
Impact 39: Pollution and nuisance due to haphazard disposal of waste / abandoned structures	Waste handling practices (collection, storage, transportation, treatment and disposal means)	Continuous during decommissioning phase	Singida TIA Campus	None	Tanzania "Solid Waste Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• TIA • SMC	Covered above
Impact 40: Loss of employment due to closure of the project	Employment records	Once	TIA Decommissioning Reports	Ceased activities	Tanzania (OSHA, 2003) and HSE standards	• TIA SMC	3,000,000/=

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs (TZS)
					Tanzania labour Laws		

CHAPTER TEN
COST BENEFIT ANALYSIS OF THE PROJECT

10.1. Introduction

This chapter presents the cost benefit analysis (CBA) of the proposed five storey academic building to be built at TIA Singida Campus. The estimation of cost benefit analysis reflects 50 years of the project design period. The presented costs in this section are indicative and elementary qualitative description of the costs and benefits. The total operation costs have considered the indicative costs for implementation of mitigation measures as well as the cost of monitoring. However, total cost of the project will be stated later as project tendering are still in process.

10.2. Project benefits

Benefits from the proposed building structures at TIA Singida campus project can be classified as direct benefits and indirect benefits to university, neighbour and the government. Building construction projects may generate negative benefits though; they are usually minimal compared to the positive benefits. Some of those impacts are non- quantifiable thus cannot be used in the benefit-cost analysis estimations. Generally, the benefits of the project will be experienced in all phases from mobilization, construction, operation to decommissioning phase. To mention few, employment opportunities and public benefits will occur during both the construction and the operation phases. Several benefits are associated with the proposed development both at local and national level in terms of revenue generation and the multiplier effects associated with linkages with local and national economy.

Direct benefits: the proposed project will create many job opportunities, good aesthetic view around Unyankae village premises, good environments for students in their studies, entrepreneurial opportunities to the surrounding community as well as increase the number of skilled labourers due to increase in the enrolment and presence of conducive environment for self-studies. Most of the non-quantifiable impacts are directly benefits to the project receptors.

Indirect Benefits: Indirect benefits from a proposed project mainly include increase in government revenue through various social sectors including; TANESCO, SUWASA, TRA etc. cultural interactions, infrastructural development, and economic growth. But since the construction project requires inputs from other sectors to produce this output, and the other sectors subsequently require inputs themselves, there will be multiple rounds of interaction among the sectors resulting in additional output from each sector of the economy.

10.2.1 Benefits to TIA

The proposed project has positive impacts to TIA Singida Campus since its benefit is a lifetime process throughout the project life span (50 years). The completion of these projects will be one of the pushing factors for increased number of students' enrolment thus in monetary cost its value has potential to increase annually. The completion this project is anticipated to improve the

institute financial capacity and sustainability. Further, the improved financial standing is not only going to promote enrolment but also good governance and efficient running of the TIA. Other benefits include suitable environment for; Teaching, Research and Public Service and its envisioned centre of excellence in knowledge and dissemination to a wide spectrum of beneficiaries at national and regional levels. The project will also have several intangible benefits to both TIA Singida campus and the surrounding community which include improving the university's image.

10.2.2 Benefit to the neighbourhood

The proposed construction of TIA Singida Campus will lead to the increase in staff requirement that is technical, administrators and academicians. During and after construction phase the project is going to provide additional employment opportunities for people surrounding TIA Singida campus related to operation and maintenance. However, non-skilled labourers will benefit from the daily wages. The institute will also create business opportunities in vicinity of the campus. Business opportunities will be supporting government initiatives to create employment opportunities for Tanzanians as advocated by the current Government. Notwithstanding that now salaries are yet to be specified, it is envisaged that from employment, workers will get incomes, which will improve quality of their lives and perhaps improve their lifestyles. However, employment opportunities and income from salaries provided will extend beyond the workers and benefits many other people including dependants.

Moreover, employment opportunities and the benefits therein will depend on whether suitably qualified local personnel that can take up positions are available. Capacity building therefore is a prerequisite for these benefits to be realized. Alongside capacity building, there shall be a need for putting in place deliberate policies that would compel developers in the real estate economic sector to employ local labour with the requisite skills and experience. In addition, the project will also have following economic and social benefits:

- Utilization of locally available resources;
- Revenue to the Government will increase through payment of the various taxes (indirect and direct).
- Boosting the infrastructure and economy of the country and Singida Municipal Council in particular Mandewa ward, Unyankae mtaa in which the project is located.

10.2.3 Benefit to the Government

The project will benefit the government in various aspects. These includes budget saving due to the relatively decrease in TIA financial dependence on the government. It is anticipated that during the operation phase the project will improve TIA financial capacity and sustainability resulting from project earnings. For that case, the government will have the opportunity to use the share of the budget which was supposed to go to TIA for other government development plans. Further the ability of TIA in contributing towards the realization of National Policies such as Education

Reforms through expansion of enrolment of students into various degree programmes is going to increase. The increase in the number of enrolments means the increase in financial capacity of the institution.

However, the government will benefit from the increased number of experts in priority discipline with different disciplines that will be graduating from TIA Singida Campus. This will create the potential of the government to use internal resources (home country experts) in different future projects rather than contracting foreign experts.

10.3 Project costs

10.3.1 Investment costs of the project

The capital investment cost for development of the proposed academic building at Singida Campus is estimated at TZS 13,633,600,000 covering the consultancy fees, land acquisition and construction materials, equipment and labour charges. The project is financed by the Government of Tanzania with financial support borrowed from the World Bank (WB) through Higher Education for Economic Transformation (HEET: P166415) Project.

10.3.2 Costs to community

The resulting negative environmental and social impacts such as noise, impairment of air quality, and safety and health risks due to project activities will be absorbed by the surrounding communities. However, the introduction of mitigation measures will reduce the anticipated impacts. Apart from the above, no any community activities will be disrupted. TIA is committed to mitigate the negative social and environmental impacts.

10.3.3 Costs to Government

The Government of the United Republic of Tanzania through the Ministry of Education, Science and Technology (MoEST) has secured fund from World Bank to promote higher education as a catalytic force in the new Tanzanian economy. The project is designed to revitalize the key areas for innovation, economic development, and labour market relevance. Also, as already mentioned the Government will directly and indirectly benefit from taxes generated during both phases of the project. Apart from tax generation, the investment will also enhance the economic growth, enhancement of industrialization and businesses.

10.3.4 Environmental and social cost

The Environmental and Social Management Plan (ESMaP) sets the “environmental conditions” that will be abided by project proponent (TIA) for ensuring effective implementation of the proposed environmental and social mitigation measures. The estimated total cost for implementing the Environmental and Social Management Plan (ESMaP) for the proposed development of TIA Singida Campus is TZS 236,000,000 throughout the entire project implementation cycle. It is important to recognize that these cost estimates for implementing the mitigation and enhancement measures serve as indicators and are subject to change.

Environmental and Social Monitoring Plan (ESMoP) intends to ensure implementation of mitigation measures is done in accordance with regulations and standards. The total costs for implementation of the Environmental and Social Monitoring Plan (ESMoP) for the proposed project during the development phase is TZS 91,000,000. The cost for implementation of the ESMoP during operation phase is TZS 19,000,000 per year. Likewise, the estimated costs for implementing the mitigation and enhancement measures are just indicative. Appropriate bills of quantities should clearly give the actual figures. TIA is committed to implement the ESMaP and ESMoP as an integral component of the proposed project.

10.4 Project cost benefit analysis

As it has been described previously, the potential benefits of the project, in terms of financial and social benefit are substantial. The environmental impacts are reasonably mitigatable and the financial resources needed to mitigate negative impacts, when compared to the required investment are relatively small. However, the benefit cost ratio concluded the project to have more benefits compared to the total cost of the project, this implies that the project is viable and TIA is encouraged to develop it.

CHAPTER ELEVEN
DECOMMISSIONING

11.1 Introduction

Since decommissioning will take place in later years, the specific conditions for mitigation are generally inherently uncertain. Due to this uncertainty, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty.

A detailed decommissioning plan that takes environmental issues into consideration shall be prepared by the proponent prior to the decommissioning works. Should it occur, decommissioning may entail change of use (functional changes) or demolition triggered by change of land use. Therefore what is presented here is just a Preliminary Decommissioning Plan which merely highlights on what shall be done if the need for decommissioning arise.

11.2 Preliminary decommissioning plan

This Section describes a brief outline of the works required to demolish the proposed project components on the site incase it happens. This Plan shall be used as a reference document that provides the framework to ensure that demolition activities on the site do not adversely affect the health, safety, traffic or the environment of the public and neighbouring properties. The Contractor shall be required to prepare a detailed Demolition Plan and Construction Management Plan to the satisfaction of the proponent and relevant Authorities prior to the commencement of works on site.

11.2.1 Components to be demolished

The project components to be demolished shall generally be constructed with load bearing masonry walls with steel or timber framed roofs and metal roofs.

11.2.2 Demolition methods

The Contractor shall prepare a detailed Demolition Plan prior to the commencement of work on site, however, the indicative demolition methods shall be as follows:

- The strip out and removal of non-structural elements shall be undertaken utilising manual labour and small plant including – bobcats, 3-5t excavators and dingo type loaders.
- The materials shall be removed from site using small to medium sized trucks.
- The structures shall be demolished using larger plant and equipment including 15-40t hydraulic excavators. These machines shall be equipped with rock breakers, pulverisers and the like which would be used in a sequential manner.
- The engineer shall be engaged to provide further engineering advice in relation to temporary support or backpropping of the structure during demolition.
- During the demolition process erosion control measures shall be established. These shall include treatment of dust and potential discharge into stormwater systems.

11.2.3 Materials handling

Materials handling shall be done by mechanical plant (including excavators and wheel loaders) loaded into trucks (bogie tippers and semi trailers). The debris shall be hauled offsite to an approved waste facility or recycling centre.

The contractor shall submit a Demolition Waste Management Plan to TIA, which outlines the objectives of:

- Maximisation, reuse and recycling of demolition materials/wastes
- Minimisation of waste disposal and maximization of waste treatment such as composting organic demolition wastes
- Evidence of implementation for specified arrangements of waste management

Reusable materials shall be stored at the site. Recycling and disposal containers shall also be accommodated at this location for collection vehicles. Hazardous materials shall be treated separately. A hazardous materials inspection shall be undertaken by an accredited consultant and a report issued. Hazardous materials shall be removed in accordance with EMA 2004. A final clearance report shall be provided by the hygienist which shall include the provision of tip dockets from waste centres.

11.2.4 Proposed sequence

The Contractor shall be required to prepare the following documentation prior to the commencement of demolition and/or excavation works:

- Rapid assessment
- Construction waste management plan
- Demolition Management Plan

In principle, the demolition process is undertaken in the reverse sequence as construction. Essentially, internal finishes shall be stripped out first. Service amenities shall then be removed including air conditioning, pipework and conduits. The facades shall be removed where necessary and the structure shall then be demolished using the larger plants and equipment. It is estimated that it shall take 3 months to demolish and clear the site.

11.2.5 Protection measures

An A Class hoarding shall be erected around the perimeter of the construction site prior to the commencement of demolition works. Additionally, wherever the risk arises of material falling into public areas, overhead protection shall be provided in the form of a B Class hoarding. Scaffolding shall be erected to facades where materials could fall in excess of 4m. The scaffolding shall be clad with chainwire and shadecloth to enclose debris and dust onto the site. During the demolition, dust control measures shall be used to minimise the spread of dust from the site. The Contractor shall have a senior representative on site at all times to ensure compliance with the safety guidelines and agreed work methods.

11.3 Traffic management

The management of construction traffic during the deccommissioning phase shall be subject to the provision of a detailed traffic management plan. This plan shall be prepared by the Contractor for the various stages of demolition. During demolition, all traffic shall be held within the site boundaries. The site shall remain closed to pedestrian traffic and shall be generally manned by security.

11.3.1 Occupational Health and Safety

Detailed OH&S measures shall be provided by the Contractor prior to work commencement. A detailed Site Safety Plan shall be prepared for the specific project. The plan shall highlight important issues as stipulated in the IFC general EHS guidelines for project decommisioning

11.3.2 Environmental management plan

A detailed Environmental Management Plan pertaining to demolition works shall be provided by the Contractor prior to the commencement of the work.

11.4 Potential Impacts and Mitigation Measures

11.4.1 Dust, Noise and vibration Pollution

The demolition activities for the remained part (foundation structure) shall be accompanied with emission of a lot of dusts, noise and vibration since the demolition works are expected to be carried out by conventional method using mechanical breakers and jackhammers. However, alternative methods of demolition including explosive techniques can be used.

Mitigation measures

i. Water sprinkling shall be applied to open earth to reduce dust emission;
ii. Trucks transporting construction materials shall be covered if the load is dry and prone to dust emissions;
iii. The demolition area shall be fenced with iron sheets; this shall prevent the dust at the ground to be picked up by the wind;
iv. Public notifications shall be sent where appropriate especially in nearby residential areas likely to be impacted by dust;
v. Construction equipment, with noise sinks, shall be used;
vi. Machine operators in various sections with significant noise levels shall be provided with noise protective gear
vii. Construction equipment shall be selected, operated and maintained to minimize noise.

11.4.2 Increased waste

A lot of demolition waste is expected to be generated as a result of demolition of this project. Non-hazardous solid waste will include excess fill materials from grading and excavation activities.

Hazardous wastes during decommissioning include release of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment. These shall include blocks, concrete, reinforcements, pipes, etc. Most of the building materials shall be salvaged and recycled.

Mitigation measures

i. All materials that can be reused shall be reused;
ii. Materials that cannot be reused shall be sent to an authorised dumpsite.

11.4.3 Loss of employment

Many people shall suffer loss of employment if it happens that the buildings have to be decommissioned, including members of staff (academic and administrative Staff), security guards, cleaners, etc.

Mitigation measures

i. Prior notice shall be given to all those who are going to be affected;
ii. Credit and Savings account shall be established; and,
iii. Proper compensation shall be given to those who deserve it.

CHAPTER TWELVE

SUMMARY AND CONCLUSION

12.1 Summary

Tanzania Institute of Accountancy (TIA) has received financial support from the World Bank (WB) through Higher Education for Economic Transformation (HEET: P166415) Project. The project's objective is to strengthen the learning environment and labour market alignment of priority programs at TIA. Through HEET the Institute is going to construct academic building at TIA Singida Campus' plot measures the land's size of 16.23 hactares (162,300 m^2). Construction of proposed academic building will realize approximately a total of 13,850 m^2 of gross floor area for all five floors and terrace floor. The proposed project scope involves design and construction of five storey single block coupled with support and ancillaries' infrastructures. Basically, construction works will involve medium to large scale engineering works mainly civil and building engineering works, electrical and mechanical engineering works and plumbing works. It is envisaged that the development of the proposed academic building in terms of design, construction and operation will have both positive and negative environmental and social impacts. In compliance with the Tanzania Environmental Management Act, Cap 191 of 2004, TIA would wish to ensure that implementation of proposed project is environmentally sustainable and friendly, socially acceptable and economically viable through conducting EIA study.

This EIA study has followed procedures stipulated in the Environmental Impact Assessment and Audit Regulations of 2005 and its amendment of 2018 requires description on how the EIA study should be conducted. The study has been undertaken based on checklists supported by expert judgment of consultant professional and through consultation with Proponent (TIA), relevant government authorities' local government officials in the vicinity of the project site. The EIA study involved a combination of stakeholder consultations, desktop study, and site assessment covering all aspects of the approved ToR.

The relevant Policies, Acts, Strategies, and International Agreements and Treaties relevant to this project has been reviewed and provided in Chapter 3 of this EISA report. The assessment of environmental, economic and social characteristics of the proposed project area has been described in Chapter 4. Potential stakeholders related to the proposed project have been consulted and their issues and concerns raised have been well documented and addressed in Chapter 5. All stakeholders consulted positively accept the proposed project. This EIA study has identified and assessed potential environmental and social impacts of the proposed project in all phases of its implementation as well described in Chapter 6 of this EIS. Though the impacts significance ranges from low to high, all impacts can be adequately mitigated and enhanced by appropriate measures as addressed in Chapter 7.

The Environmental and Social Management Plan (ESMaP) and Environmental and Social Monitoring Plan (ESMoP) for all potential identified impacts have been developed and provided

in Chapter 8 and 9 respectively. The ESMP will guide management of all potential impacts during all phases of the project implantation whereas the ESMoP will ensure implementation of mitigation measures is done in accordance with regulations and standards. Cost benefit analysis/financial analysis for the proposed project has been conducted and provide in Chapter 10. The analysis includes project business case, associated costs for implementation of Environmental and Social Management and Monitoring Plans, and highlight of socio-economic benefits of the proposed project. The decommissioning plan for the proposed project has been prepared and provided in Chapter 11 and comprehensive plan should be prepared based on the known situation at the closure time.

12.2 Conclusion

A consultant is of the opinion that all potential impacts associated with the proposed project are of nature and extent that can be reduced, limited and/or eliminated by the application of appropriate mitigation measures described in Chapter 7. Also cost benefit analysis revealed that the proposed project is financially feasible. The project therefore is considered to be environmentally, socially and financially viable to be undertaken. It is hereby recommended that the TIA should provide all required resources in good time to facilitate implementation of the proposed ESMP and ESMoP to better safeguard the integrity of the natural environment and social settings. Furthermore, it is recommended that the proposed ESMaP and ESMoP be disseminated to relevant stakeholders including contractor(s) for follow up in all phases of proposed project implementation.

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Appendix 1: Certificate of Land Occupancy

TITLE No. 35640-DLR
REGISTERED ON 19-4-2018
at 10:00 AM
Asst. Registrar of Titles

Land Form No. 22

Stamp Duty Shs. 100 Paid
Revenue Receipt No. 9900139165
of 13-3-2018 issued.
Stamp Duty Officer

TANZANYIKA
STAMP DUTY PAID ON
ORIGINAL Shs. 900
Receipt No. 9900139165 of 13-3-18
Asst. Registrar of Titles

THE UNITED REPUBLIC OF TANZANIA

THE LAND ACT, 1999
(NO. 4 OF 1999)

CERTIFICATE OF OCCUPANCY
(Under Section 29)

Title No. 35640-DLR
L.O. No.915537
SG/MLO /DD/726

The 19th **day of** April, **two thousand and Eighteen**

THIS IS TO CERTIFY that **TANZANIA INSTITUTE OF ACCOUNTANCY ~~SINGIDA~~** RAMLO **established under The Executive Agencies (The Tanzania Istitutute of Accountanvy - TIA) (Establishment) ORDER, 2002** of Box Number 9522 **Dar Es Salaam** (Hereinafter called the Occupier") is entitled to a Right of Occupancy (hereinafter called the Right) in and over the land described in the Schedule hereto (hereinafter called "the Land") for a term **ninenty nine (99) years** from the first day of **January, two thousand and Eighteen** according to the true intent and meaning of the Land Act and subject to the provisions thereof and to any regulations made there under and to any enactment in substitution therefor or amendment thereof and to the following special conditions:-

1. The Occupier having paid rent up to thirteenth day of **June, 2018** shall there after pay rent of shillings **one hundred twenty one thousand seven hundred and twenty five (121,725)** only a year in advance on the first day of July in every year of the term without deduction PROVIDED that the rent may be revised by the Commissioner for lands.

2. The Occupier shall:-
   (i) Be responsible for the protection of all beacons on the land throughout the term of the Right. Missing beacons will have to be re-established at any time at the Occupiers' expenses as assessed by the Director responsible for Surveys and Mapping.

   (ii) Do everything necessary to preserve the environment and protect the soil and prevent soil erosion on the land and do all things which may be required by the authorities responsible for environment and to achieve such objective.

(iii) Maintain on the Land building (hereinafter called (the building") in permanent material designed for use in accordance with the condition of the Right and which comfort to the building line (if any) decided by the **SINGIDA MUNICIPAL COUNCIL** (hereinafter called "the AUTHOIRTY").

(iv) At all times during the term of the Right have on the land building as approved by the **Authority** and maintain them in good order and repair to the satisfaction of the Commissioner for Lands. (Hereinafter called "the Commissioner").

(v) Not erect or commence to erect on the land any building except in accordance with building plans and specifications which shall have been first approved by the Authority as here in before provided.

(vi) Approval of plans of any building by the authority shall not imply that the construction of such building will satisfy the occupier's obligation under the conditions of the right and shall not imply waiver or modification of any condition in the right.

3. **USER:** The land and the buildings to be erected thereon shall be used for **Education Buildings Purpose Only, Use Group 'K' Use Class (b)** as defined in the Town and Country Planning (Use Classes) Regulations, 1960 as **amended in 1993.**

4. The Occupier shall not assign the right within three years of the date hereof without the prior approval of the Commissioner.

5. The Occupier shall deliver to the Commissioner notification of disposition in prescribed form before or at the time the disposition is carried out together with the payment of all premia. Taxes and dues prescribed in connection with that disposition.
6. The President may revoke the right for good cause or in public interest.

SINGIDA MUNICIPALITY

N

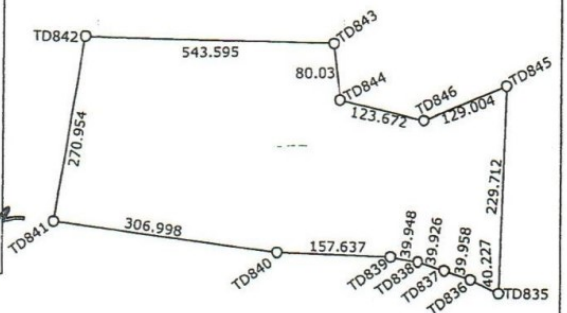
LOCALITY UNYANKHAE

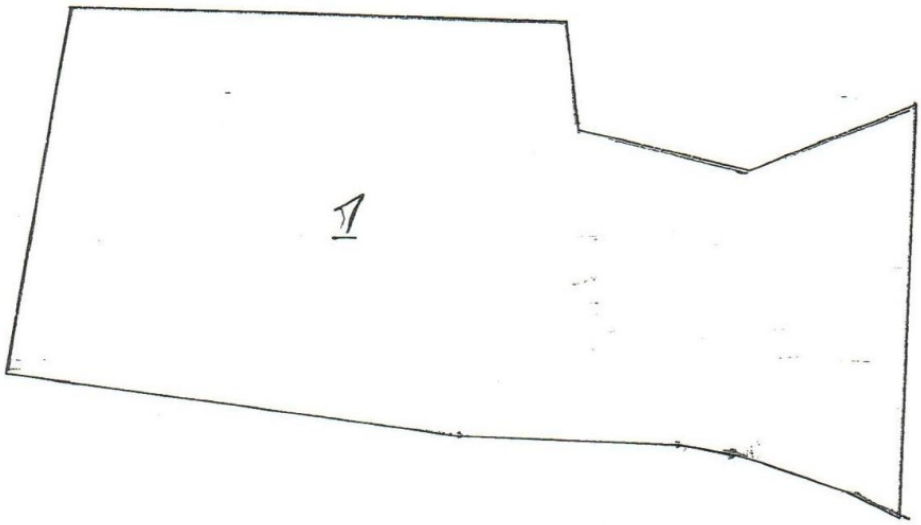
BLOCK Z

PLOT No 1

L.O. No 915535

AREA 16.23 Hectares





This plan is prepared in accordance with Registered plan No. **20487** is approved for the purpose of the Land Registration Ordinance.

Director of Surveys and Mapping.....

Date... 15th March 2018

Survey and Mapping Division Ministry of Lands, Housing and Human Settlement Development- Dar es salaam.

The issue of the plan implies no guarantee or admission of the tittle by the Government.

SCHEDULE

ALL that Land known as **Plot No. 1** Block **'Z'** situated at **Unyankhae** in **Singida Municipality** containing **Sixteen point two three (16.23) Hectares** shown for identification only edged red on the plan attached to this Certificate and defined on the registered Survey Plan Numbered **20487** deposited at the Office of the Director for Surveys and Mapping at Dar Es Salaam.
Given under my hand and my official seal the day and year first above written.

ASST. COMMISSIONER FOR LANDS

We the within named **TANZANIA INSTITUTE OF ACCOUNTANCY ~~SINGIDA~~ HAMLD CAMPUS** hereby accept the terms and conditions contained in the foregoing certificate of occupancy.

SEALED with the **COMMON SEAL** of the said)

TANZANIA INSTITUTE OF ACCOUNTANCY SINGIDA CAMPUS and **DELIVERED**)

In the presence of us this.....day of.....2018)

Name: DR. JOSEPH MABULA KIHAMIA)

Signature:..... CHIEF EXECUTIVE OFFICER TANZANIA INSTITUTE OF ACCOUNTANCY)

Postal Address: 9522 DAR ES SALAAM)

Qualification; CHIEF EXECUTIVE OFFICER)

Name: EMMANUEL WILSON IGNGU)

Signature:.....)

Postal Address: 338, SINGIDA)

Qualification; CAMPUS MANAGER)