ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED ESTABLISHMENT OF THE FEMALE AND MALE HOSTEL BUILDINGS AT PLOT NO. 522, BLOCK 'E', NYANG'HOMANGO VILLAGE, USAGARA WARD IN MISUNGWI DISTRICT, MWANZA REGION

PROPONENT

Tanzania Institute of Accountancy,
P. O. Box 9522,
Kilwa/Nelson Mandela Road,
Dar es Salaam
Contact Person: Prof William A. Pallangyo
Telephone: +255 22 2850540
Email: tia@tia.ac.tz;
Website: https://www.tia.ac.tz

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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 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. The Institute has seven (7) campuses which are strategically located in Dar es Salaam, Mbeya, Singida, Mtwara, Kigoma, Mwanza and Zanzibar. 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 female and male hostel buildings at Mwanza Campus.

It is envisaged that the development of the proposed female and male hostel buildings at Mwanza 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 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. Thus, TIA has commissioned a registered Environmental Impact Assessment (EIA) expert through force account arrangement to carry out the environmental and social impact assessment (ESIA) study for this proposed project.

The Consultant conducted the full ESIA study and prepared this Environmental Impact Statement (EIS) for the proposed project. Both World Bank Environmental and Social Framework which include Environmental and Social Standards (ESSs) and Environmental Health and Safety (EHS) and the EMA, cap 191 of the Environmental Impact Assessment and Audit Regulations, G.N No 349 of 2005 and its amendment of 2018 form the basis for the EIA study. 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. 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).

PROJECT DESCRIPTION

The proposed project is about construction of the male and female hostel buildings at Nyang'homango village, Usagara Ward, Misungwi District in Mwanza region in a plot of 26.1 acres (105,511m^2). Design of proposed project shows a plinth area (built-up area) of the proposed academic building and its associated infrastructures is 4,017 m^2. The proposed project scope involves design and construction of three storey male and female hostels buildings. 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 site is embracing some vegetation in the form of short grasses and scattered planted and natural trees. The major part of the land holds an intact soil and big stones. It has a relatively mixed flat and undulating land with good soil for drainage issues. Thus, the site is proximity (not more than 20m) to other existing TIA academic and administration infrastructures 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:
    - ESS1- Assessment and Management of Environmental and Social Risks and Impacts;
    - ESS2 - Labour and Working Conditions;
    - ESS3 - Resource Efficiency and Pollution Prevention and Management;
    - ESS4 - Community Health and Safety;
    - ESS8 – Cultural Heritage;
    - ESS10 - Stakeholder Engagement and Information Disclosure

BASELINE CONDITIONS

The baseline conditions of the project area include the hydrology, biological and built up environment as well as socio-economic activities. In terms of hydrology and water

resources, Mwanza Region is characterized by a variable groundwater level, influenced by local topography and seasonal fluctuations. The water table typically ranges between 1.5 and 2.5 meters beneath the surface, with variations observed throughout the year, particularly during the dry and wet seasons. Lake Victoria serves as the primary surface water body for Mwanza City, receiving the discharge from all surface drains. The lake holds significant importance as a shared natural resource among the partner states of the East African Community (EAC) and plays a vital role in providing water resources and supporting the fisheries industry in the region. The ecosystem surrounding the lake encompasses diverse landscapes, including savannahs, forests, and wetlands, contributing to its ecological significance. With regard to the 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. The main economic activities in Misungwi District include office works, small to large business, financial services transportation, industries, rental houses, hotels and bar. Horticultural crops are practiced mainly at Usagara Ward. Livestock including cattle, goats, sheep, chicken, and guinea fowls are mostly kept under zero grazing. Fishing is also an important activity at Lake Victoria.

STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

Stakeholder consultation and 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. Misungwi District Council
iv. Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA)
v. MwanzaTanzania National Roads Agency (TANROADS)
vi. Tanzania National Electric Supply company (TANESCO)
vii. Occupation and Safety Authority (OSHA)- Mwanza Office;
viii. Misungwi Fire and Rescue Brigade
ix. Tanzania Rural and Urban Roads Agency (TARURA);
x. Tanzania Telecommunication Company Limited (TTCL);
xi. Lake Victoria 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 Nyang'homango village, Usagara 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 potentially large 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
Positive environmental impacts

i. Improved amenities/ landscaping; and
ii. ii. Increase waste management facility in the area.
iii. Visual impression

Negative environmental impacts

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 degradation
vii. Air pollution
viii. Contribution to climate change
ix. Nuisance due to noise pollution
x. Generation of vibrations
xi. Visual impact

B. Impacts on social environment

Positive social impacts

i. Increased enrolment of students;
ii. Creation of employment opportunities both semi-skilled and skilled;
iii. Improve quality of life through increase of social services to the community;
iv. Increased skills and impart knowledge to local communities;
v. Increase of academic facilities

Negative social impacts

i. Increased pressure on social services;
ii. Increased traffic flow;
iii. Increased risks of road accidents;
iv. Increase in level of crimes;
v. Change in social values and ethics;
vi. Increase in conflicts;
vii. Price inflation of goods and services;
viii. Occupation health, safety and security risks;
ix. Community health and safety risks;
x. Child labour;
xi. Increased incidence of GBV/SEA/SH;
xii. Increased risks of communicable diseases such as STDs, COVID etc.;

C. Economic impacts

Positive 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; and
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.

Most of the mitigation measures put forward are essentially good engineering practice that shall be adhered throughout the project phases.

Potential mitigation measures during construction phase

Negative Social Impacts

i. Ensure good site practices including 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. Ensure 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. Provide awareness campaigns and education on communicable diseases including HIV/ASIDS, COVID-19 and STDs 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. 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
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. Wastewater shall be properly and adequately treated using the system consists of the septic tanks and constructed wetlands wetland systems. Only effluents complying with Tanzanian standards will be discharged on receiving water body.
ix. The contractor shall have adequate facilities for handling the construction and demolition waste;
x. 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;

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 ESMaP for this proposed project is provided in chapter 8. 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 206,000,000 throughout the entire project implementation cycle. Consultant used informed judgment to come up with these indicative costs. 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. Chapter 9 of this 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 Mwanza campus during the development phase is TZS 85,000,000/=. 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 (Chapter 11) 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 usually minimal compared to the positive benefits. Some of those benefits are not quantifiable in monetary terms, thus cannot be used in the cost- benefit analysis estimations.

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. The successful preparation of this EIS for the development of the proposed Male and Female hostel buildings at TIA-Mwanza Campus Project in Plot No. 522, Block "E", Nyang'homango area, Usagara ward, Misungwi District, Mwanza region Tanzania would not have been possible without full participation, commitment and hard work of various stakeholders.

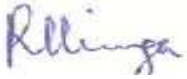
TIA wishes to thank other Government Institutions which were involved during this study for sharing their views especially with regard to key environmental issues associated with the proposed Male and Female for TIA-Mwanza Campus project. These include Mwanza Urban Water Supply and Sanitation Authority (MWAUWASA), Misungwi District Fire and Rescue Force as well as OSHA Mwanza office, TANROADS, TARURA; TANESCO. The TIA is grateful to the Mwanza RAS office as well as Misungwi District's DAS and DED offices for sharing their technical inputs, views, providing data on biophysical and socioeconomic and for their availability in consultation. TIA also wishes to thank all Local Government Authorities particularly the Leadership of Nyang'homango village and Usagara ward for availing themselves for consultations and for organising stakeholders' meetings.

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. 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	Vicent Temu	Sociologist and Gender Expert	

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ACRONYMS AND ABREVIATIOS

	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
EIA	Environmental Impact Assessment
EHS	Environmental Health and Safety
ELO	Environmental Liaison Officer
EMA	Environmental Management Act
EMO	Environmental Management Officer
EMP	Environmental management Plan
ERB	Engineers Registration Board
ERB	Engineering Registration Board
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMoP	Environmental and Social Monitoring Plan
ESMP	Environmental and Social Management Plan
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
MWAUWASA	Mwanza Urban Water Supply Authority
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
RUWASA	Rural Water Supply Authority
RHA	Risk Hazard Assessment
SEP	Stakeholder Engagement Plan
SGR	Standard Gauge Railway
SO2	Sulfur dioxide
STD	Sexually Transmitted Diseases
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 Institution in Tanzania and a Government Agency under Ministry of Finance that was established on 1st July, 2002 by the Government Notice No. 489 of 1st November, 2002. The Institution was 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. The Institute has seven (7) campuses strategically located in Dar es Salaam, Mbeya, Singida, Mtwara, Mwanza, Kigoma and Zanzibar. The Dar es Salaam campus serves as the Institute headquarters.

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Through HEET, the TIA is going to construct students' hostels at Nyang'homango area in Misungwi district 20 kilometres from Mwanza city and 60 metres from Mwanza – Shinyanga main road. The plot measures the land's size of 26.1acres (105,511 square metres). It is expected that upon project completion, the number of enrolled students will increase including female and special needs students, also private sector participation in provision of petty trades and hostel around the Campus will increase. The project will involve construction of hostels as described below:

Female Hostels

- Self-contained room with kitchen facility and one single room for warden.
- 50 Students shared rooms with capacity of 200 students
- 3 Students self-contained room with capacity of 3 students
- Enough toilets as per the standard also include two toilet units for the special need students
- Enough showers as per the standard also include two showers for special needs student's standard
- Common area for watching TV and other small games
- Reception

Male Hostels

- Self-Contained Room with Kitchen facility and one single room for warden

- 25 Students shared rooms with capacity of 100 students
- 3 Students self-contained rooms with capacity of 3 students
- Enough toilets as per the standard also include two toilet units for the special need students
- Enough showers as per the standard also include two showers for special needs student
- Common area for watching TV and other small games
- Reception

It is envisaged that the development of the proposed female and male hostel buildings at Mwanza 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 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. Thus, TIA has commissioned a registered Environmental Impact Assessment (EIA) expert through force account arrangement to carry out the environmental and social impact assessment (ESIA) study for this proposed project.

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1.2 Nature of the project and its objectives

The EIA study addresses all environmental and social aspects of the proposed establishment of the female and male hostel buildings TIA Mwanza Campus. As described previously, this EIA study has been conducted in accordance with World Bank Environmental and Social Standards and the National Environmental Impact Assessment and Audit (amendment) regulations 2018, formulated for the purpose of implementing the Environmental Management Act No. 20 of 2004. This Act specifically requires mandatory carrying out of EIA for development projects implemented in Tanzania. The nature of the proposed project falls under category 'A', mandatory EIA, thus the 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.

1.2.1 Objective of the TIA HEET project

The project mainly aims at strengthening 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 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 construction site. 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

Tanzanian government has achieved a remarkable progress in expanding access to basic education since 2015. The primary enrolment rose by 24.5% from 2015 to 2018, reaching over 10 million pupils in 2019. On the other hand, secondary enrolment also increased in 2013/14, with more students enrolled to secondary education. However, the Tanzanian education system faces challenges in absorbing the growing number of graduates from basic education into the higher education sector. Moreover, the higher education sector in Tanzania faces persistent 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 combat 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 centres, and partnerships in priority areas. Moreover, it 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.

Lack of the adequate number of basic infrastructures such as academic buildings and hostels is the cause for the TIA Mwanza Campus to operate on the rented building which is not academically good environment. Large population of the students are living in the rented rooms at the communities which potentially pose high risks of their safety, high living costs and poor academic performance due to unacceptably bad learning environment.

These challenges faced by TIA Mwanza Campus are in line with Programme Development Objective of the HEET project, which is "to increase students' enrolment and improve the quality and labour market relevance of degree programmes in the priority disciplines in Tanzanian public universities while improving the governance and management of the higher education system at institutional and national levels". Thus, through HEET project, TIA Mwanza Campus will have sufficient number of hostels and ultimately it will attract a number of students joining at the studies. Also, the efforts towards improvement of the academic infrastructures will produce 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 will create many employment opportunities throughout the project life time. This is in line with The Third Five Year Development Plan 2020/2021` – 2025/26 (FYDP III) of the country that focuses on building an industry-cantered economy and reducing unemployment through a multi-sector transformative framework.

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 the 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 Nyang'homango Village and Usagara Ward. Misungwi District Council and utilities officials also provided much of the needed information. Specific checklists and interview guides were used. Site visit was conducted on May 2023. The ESIA 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 Usagara Ward and Misungwi District 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, Misungwi District 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 Class Ohlson digital sound level meter type 36-1604, model ST-805. Dust Measurements was done using Micro-dust 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 Mwanza 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 micro-dust monitor. During measurements, the device was mounted at a breathing height of approximately 1.5 meters above the ground, and measurements were 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), Sulphur dioxide (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' 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

Collection of biological information

The proposed area for construction is in the existing TIA Mwanza 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; meeting and assessments 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

The site proposed for construction of the Male and Female Hostels at Mwanza campus is located at the Nyang'omango village, Usagara ward, Misungwi district, Mwanza region. It is located approximately 60m from Mwanza to Shinyanga highway road. Total area of the proposed construction site of the new district administration block office is approximately 26 acres (105,511 m^2 passing through the following coordinates

- X Coordinate in Decimal Degree (DD) Format: -2.657312°
- Y Coordinate in Decimal Degree (DD) Format: 32.980559°

2.2 Adjacent land uses

The site for proposed project is located within the area allocated for construction of education building purpose only. The adjacent land use is for small agricultural activities, grazing of animals and settlements. The proposed project is located within the area allocated for construction of the TIA Mwanza Campus in Usagara. The area is surveyed and marked as plot No. 522 block "E". On the East side the project site is bordered by the residential building which are scattered (Commonly for rural settlements) see plate 3 below. To the Westside the site is bordered by the ongoing construction of the TIA Administration block, Seminar rooms, Computer lab etc. To the north side the site is bordered with some residential houses and the Mwaza- Shinyanga highway road.

2.3 Availability of nearby sensitive ecosystem/areas

The proposed project is located within the area allocated for education buildings and its associated facilities. There is no sensitive ecosystem proximity to the proposed project area.

2.4 Proof of land ownership and planned land use

TIA has identified and allocated an area of 26 acres (105,511 m^2) for construction of the Male and female Hostels at Mwanza Campus located on plot No. 522 block "E" in Nyang'omango village, Usagara ward, Misungwi district, Mwanza region. Thus, the proposed site is land which is legally owned by TIA has an area of 26 acres (105,511 m^2). The area has been surveyed and the Institute poses the Certificate of occupancy appended on the appendix 1.

2.5 Current Zoning

The current zoning for the proposed project is for construction of the education purposes only and associated infrastructure which includes administration building, seminar room, theatres, Computer lab. & library, Hostels, play grounds, Dispensary , Business centre, play grounds & Cafeteria and more classes etc as shown in figure 3 and the master plan figure 4 below

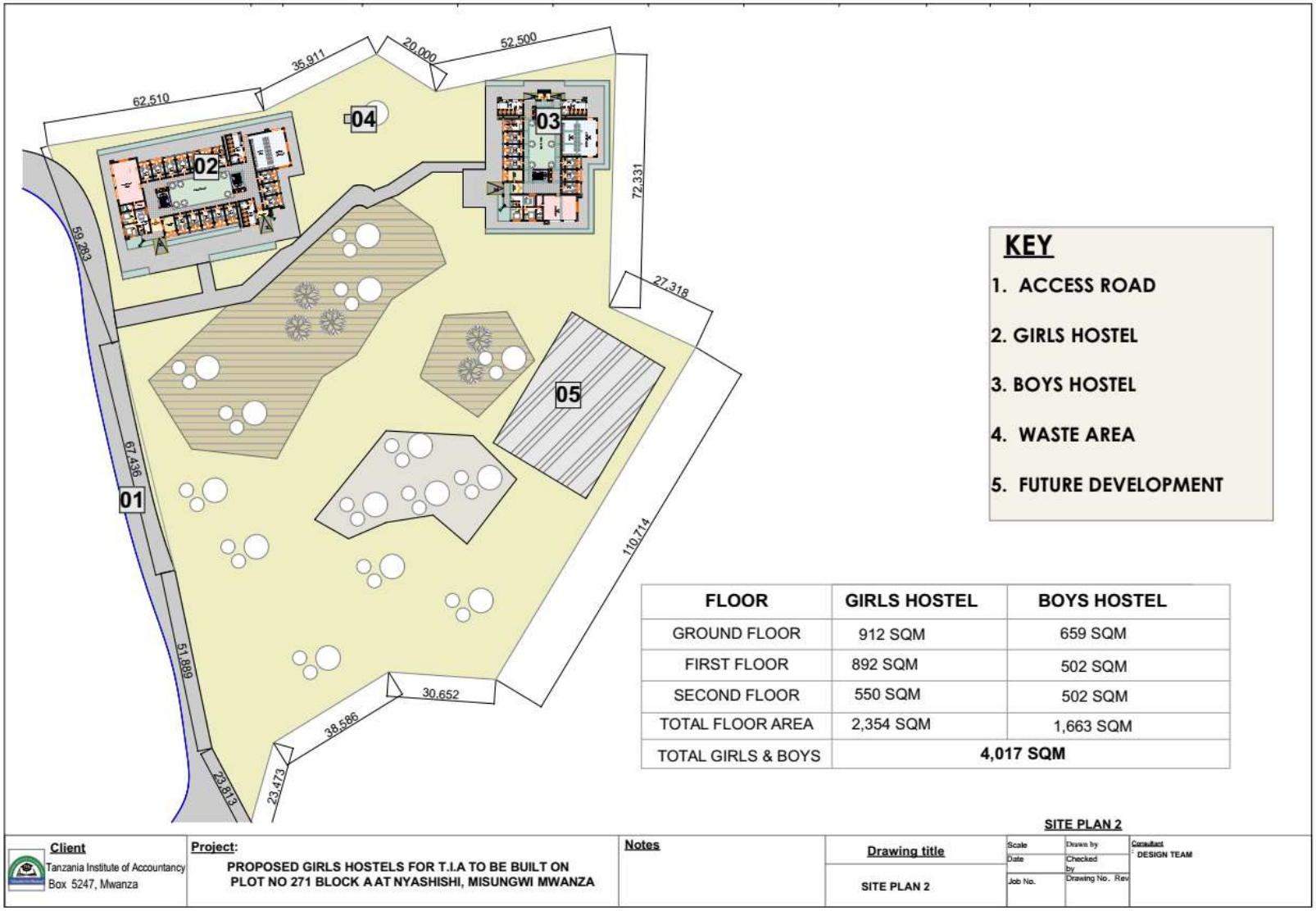

Figure 2. 1 Proposed TIA Mwanza Campus Master Plan(TIA, 2023)

2.6 Design summary of the proposed project

The proposed project is about construction and subsequent use, upon its completion, of three-storey male and female hostels for TIA Mwanza Campus. Basically, the proposed construction works will involve medium to large scale engineering works mainly civil and building engineering works, electrical and mechanical engineering works and plumbing works. The building has been designed to allow large number of rooms. The building design is based on modern trends and contemporary design concepts on green design which considers environment protection and minimization of resources utilization which promote lightness, airiness and usability. It will be made of framed structure, solid concrete block walling, retaining walls, aluminium partition, concrete roofing, skylight, timber/aluminium doors/window, curtain wall, other finishes and services. Proposed project has been designed with a life span of minimum 50 years. During project preparations, TIA engaged several experts in assessing and understanding risk and integrating risk management in development planning of the proposed project as per Environmental and Social Standards (ESS1: Assessment and Management of Environmental and Social Risks and Impacts).

2.6.1 Components of the project

Basically, the proposed construction works will involve small to medium scale civil works. Therefore, the main project components will include the following:

Table 2. 1 Female hostel building requirement at Mwanza Campus

S/No.	Name of Facility	Capacity	No. of Person/students
1	Self-Contained Room with Kitchen facility and one single room for warden	1 family	Family max. of 3 persons
2	Students shared rooms	50 rooms	200
3	Students self-contained rooms	3	3
4	Other requirements and facilities ☞ Enough toilets as per the standard also include two toilet units for the special need students ☞ Enough showers as per the standard also include two showers for special needs student's standard ☞ Common area for watching TV and other small games ☞ Reception		

Table 2. 2 Male hostel building requirement at Mwanza Campus

S/No.	Name of Facility	Capacity	No. of Person/students
1	Self-Contained Room with Kitchen facility and one single room for warden	1 family	Family max. of 3 persons
2	Students shared rooms	25 rooms	100
3	Students self-contained rooms	3	3
4	Other requirements and facilities ☞ Enough toilets as per the standard also include two toilet units for the special need students ☞ Enough showers as per the standard also include two showers for special needs student ☞ Common area for watching ☞ TV and other small games ☞ Reception		

2.6.2 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.

2.7 Design and preparatory phase

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

- **Topographical Survey:** Done by Surveyors to establish the boundaries and the ground levels of the proposed project area;
- **Geotechnical investigations:** This has been conducted by the geotechnical engineers to determine the physical properties of rock and soil around the proposed project site;
- **Structural and Architectural Designs of the proposed project:** These have been done by Architects and Structural Engineers.

- **Environmental and Social Impact Assessment (ESIA):** This is conducted in order to comply with environmental law and regulations. This EIS is part processes for acquiring the ESIA certificate from NEMC;
- **Acquisition of other required permits/ certificates:** Including building permit which has been acquired from MDC.

2.8 Climate Change risks mitigation and adaptation in the Project Design

To address and adapt the climate change risks (e.g. heat, drought, floods, water scarcity, etc.), the design of the proposed project will accommodate the infrastructures to enhance low energy use, rainwater harvesting, storm water management systems, adequate natural ventilation and lighting, and maintaining a significant green space, as defined hereunder.

- **Greenery walkways**: The design minimizes motorised transport within the site to reduce air emission (greenhouse gasses (GHGS)) in order to maximize carbon sequestration, as well as encouraging pedestrian movement. Walkways are provided to restrict free movement that causes vegetation destruction in the site and reducing land cover important for carbon sequestration. Trees are proposed to be planted along the vehicular access road and footpaths to improve landscape and reduce effects of sun radiation during the day.
- **Green areas**: Green areas will be distributed in the project area to permit fresh air into the hostel buildings. Due to the topographical nature and natural vegetation cover, green belt and conservation zone intend to preserve the ecosystem and control land degradation. Native and artificial trees and grasses is expected to reduce soil erosion in all areas.
- **Open space**: In the open spaces, native plants will be planted to add the advantage of being useful for visual impression. Open spaces are planned to maximize the tree canopy cover and shade provided by trees in the area and more provision of ecosystem services.
- **The buildings with low footprint:** This will increase green spaces; and accommodation of rainwater harvesting, storm water and waste management systems and embracing water-efficient processes.

2.9 Disaster risk management

The current project shall have provisions for fire prevention and firefighting facilities. Also, the building shall have provisions for solid waste and liquid waste management for diseases prevention. In addition, access roads will be used to ensure easy walkability and vehicular access to and from the building to avoid car accidents. The roads shall be safely connected to the parking area enough to accommodate cars for institute, staffs and visitors.

2.10 Gender inclusivity

The project will highly consider gender issues before, during and after implementation. This will include considerations of gender equality as well as person with special needs (e.g. physical,

learning impairment, emotional and behavioural). TIA will achieve this through provisions of lamps as well as toilets for special needs.

2.11 Mobilization phase

Necessary safety measures will be put in place by the contractor, and 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 involved the following activities:

- Procurement of contractors, service providers and suppliers of various goods and services for project development;
- 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, campsite, and store buildings, etc.)

2.12 Construction phase

Construction phase will take 18 months and will involve physical execution activities necessary to realize the operation of the proposed project. The construction phase activities will include but not limited to the following key undertakings:

- Excavation and levelling works;
- Continue mobilization of construction materials;
- Concreting, block walling, and steel works for construction of 3 three storey building;
- Installation and finishing works.
- Construction of water and sanitation facilities;
- Construction of paved parking and driveways;
- Supervision for construction and installation works.

During assessment of project site for scoping study it was observed that construction works had not begun, the land area is virgin (no any socio-economic activities are taking place)

Construction Materials Required

Proposed project will require various standard construction materials including cement, gravel, aggregates, sand, steel rods, water etc. for construction works. Most of construction materials will be obtained locally within Mwanza and others will be purchased from licensed local suppliers in Tanzania. Table 4 below shows details of construction material required for construction works. Detailed list, quantity and source of materials to be used will be provided in next stage of ESIA study.

Table 2. 3 Materials requirement for construction works

SN	Materials	Sources
1	Hardcore materials for filling (boulders, stones etc)	To be procured from the site allocated for quarry activities
2	Sand	To be procured from registered pits in Mwanza
3	Aggregates	To be procured from Mwanza authorised area for aggregates sourcing
4	Reinforcement bars	To be procured from registered suppliers in Mwanza
5	Formworks	To be procured from registered suppliers in Mwanza
6	Blocks for walling	To be procured from registered suppliers in Mwanza
7	Cement	To be procured from registered suppliers in Mwanza
8	Paint for painting walls	To be procured from registered suppliers in Mwanza
9	Plumbing	To be procured from registered suppliers in Mwanza
10	Water and sanitary appliances	To be procured from registered suppliers in Mwanza
11	Windows and doors	To be procured from registered suppliers in Mwanza
12	Electrical-mechanical equipment and accessories	To be procured from registered suppliers in Mwanza and elsewhere in Tanzania
14	Paving blocks	To be procured from registered suppliers in Mwanza
15	Roofing materials	To be procured from registered suppliers in Mwanza
17	Water	To be supplied by RUWASA and MWAUWASA and the existing borehole at the project site
18	Fuel, grease and oils	To be procured from registered suppliers in Mwanza
19	Timbers	To be procured from registered suppliers in Mwanza

Transportation

The materials from the local burrow pits will be transported by Lorries / trucks. The main road that will be used is the Mwanza – Shinyanga highway, other roads in Misungwi District. Most of the construction equipment will be the property of Contractors.

Storage

During construction phase, temporary yards will be constructed within the core 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.

Size of the Labour Force and Working Hours

Proponent (TIA) will contract a Contractor for construction works of the proposed Campus Hostels buildings. The contractor will engage skilled (e.g. engineers, quantity surveyors, experienced project managers and electricians), semi-skilled (e.g. drivers, equipment operators, technicians, craftsmen,) and unskilled labourers. A preliminary analysis of the project workforce requirement estimates that the proposed works will engage about 100 people during peak of construction phase who will be working for a minimum of 10 hours per day for a period of about 2 years (24 months).

Area Coverage

The total land allocated for construction of the TIA Mwanza campus is 26.1acres (105,511 m^2). In accordance with the design, the plinth area (built up area) of the proposed building and its associated infrastructures is estimated at 1204 m^2 with plot coverage of 1%. The design concept of proposed TIA Mwanza Campus Hostels is based on three storey coupled with support and ancillaries infrastructures.

Construction Technology

Both, conventional and modern construction technologies and methods will be employed in the construction of proposed project. The construction methods will involve a collection of innovative tools, machinery and software 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 of consideration will be environmental sustainability, social acceptability, institutional manageability as well as operation and maintenance requirement.

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/crane machines;
- Various hand tools; generators
- Fork lift, dump trucks;
- Water boozer, light duty vehicles;
- Supervision vehicles.

2.13 Operation phase

This phase will begin after construction works have been completed. Operation phase of constructed campus building will provide adequate and conducive working space/environment for TIA – students and staff. TIA will be responsible for overall management of all operational

and maintenance activities for the built up of the proposed Hostels building and its associated infrastructures.

2.14 Decommissioning phase

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.

2.15 Waste generation

Sizeable quantities of wastes are expected to be generated measurably and considerably during implementation of the proposed project mainly during construction and operation phases. Table 5 below provides a glimpse and snapshot of description of types of waste to be generated. Notably, wastes generated will be managed in accordance with the Environmental and Social Management Plan contained in this report.

Table 2. 4 Description of waste to be generated

Type of waste	Source and Characteristics	Estimated amount
Overburden	Will emanate from earth moving works during construction works.	M^3
Office solid waste	These will include garbage and rubbish (which includes papers, cardboards, woods, bottles, metals, plastic materials, containers and packaging materials) during construction and operation phases.	10kg/day and 200 kg/day during construction and operation phase respectively (based on generation rate of 0.1kg/cap/day)
Liquid waste	This will include wastewater to be generated from sanitation facilities (washing basins and toilets) during construction and operation phases	3.2 m^3/day and 6.4 m^3/day during construction and operation phase respectively (Based on water consumption rate of 40L/cap/day and wastewater discharge factor of 80%
Waste oils/ Hazardous wastes	Some amount of waste oil is expected during the construction phase. Waste oil shall include leaking fuels and	1 litre/day

	lubricants from poorly maintained trucks, vehicles and equipment during construction and operation phases.	
Construction wastes	These are wastes generated as a result of construction works. It comprises surplus materials from site clearance, excavation, construction activities.	20 tonnes
Emissions	These will include emissions from combustion of fossil fuels from stationary or mobile sources such as construction vehicles and machineries during construction phases and passengers service vehicles during operation phase.	320 kg CO_2 per day
Storm water runoff	This will be generated from the rainfall catchment areas in the core project area	

2.16 Waste management measures

Preliminary measures for management of waste to be generated during project implementation are described in table 6 below. Notably, wastes generated will be managed in accordance with the Environmental and Social Management Plan to be prepared during ESIA study.

Table 2. 5 Preliminary description of waste to be generated

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.
Municipal 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 Mitindo official solid waste dumping site in Misungwi by registered service provider.

Liquid waste	• 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 MWAUWASA FSTP located in Mitindo 6km from the Mwanza- Shinyanga Main road.
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; • Unuseful waste will be properly collected, stored and transported for safe disposal at Mitindo official dumping site in Misungwi; • Metal waste will be sold/ provided to registered scrap metal dealers.
Emissions	• Drivers and operator will be train on the measures to minimize emissions (e.g. shut off engines when vehicles not in use, etc.). • The efficient and well serviced vehicles and equipment will be used in order to minimize emissions.
Storm water runoff	• Appropriate storm water drainage systems will be established at core project sites

2.17 Project and ESIA boundaries

2.17.1 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 within Nyang'homango village in Usagara ward in in Misungwi District, Mwanza Region.

2.17.2 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. Size of the area of influence includes entire Nyang'homango area, Usagara ward in Mwanza region.

2.18 Project cost

The capital investment cost for development of the proposed TIA Male and Female Hostels at Mwanza Campus is estimated at TZS 6,000,000,000 (TZS 6 billion) covering the consultancy fees, land acquisition and construction/installation materials, equipment and labour charges.

CHAPTER THREE
POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

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 Mwanza 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 proposed project shall ensure mitigation of the adverse impacts during project implementation.	*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
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 conservation, wise-use and minimization of water uses.	*The proposed project is planned to utilize the least amount of water possible. 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,	*By keeping the workers in clean conditions and continuing to provide*

	POLICY	DESCRIPTION	COMPLIANCE
		promotes construction of latrines and their use, encourages maintenance of clean environment; working environment which is conducive to satisfactory work performance.	*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.*
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.*
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.*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
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 plans, sections and specifications of the block site for scrutiny on compliance with public health requirements and approval from the Authority.*	*The project proponent should ensure public health during the all the phases of the project.*
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,	*The proposed TIA projects will operate within the requirements of this legislation and abide by all relevant sections provided by this Act.*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
		and in the course of their employment, and in the case of death to their dependents.	
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 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.	*The contractor, in collaboration with TIA, will take measures to ensure that no child under the age of fourteen 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 Plans, 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 detriment to the uses specified for the waters concerned, so as to protect human health and conservation of the environment.	*By guaranteeing that all liquid waste produced by the planned project and existing infrastructures is disposed correctly through the appropriate treatment without harming the environment, TIA will comply with this rule.*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
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.*
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**	For the purposes of planning and the control of development, all uses of land and	*TIA ensures that these regulations are*

	LEGAL FRAMEWORK	DESCRIPTION	COMPLIANCE
	Group and Use Classes) Regulations, 2018	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".	*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 Management of Electrical and Electronic Equipment Waste) Regulations, 2021**	The Regulations apply to all categories of electrical and electronic equipment wastes with respect to generation, collection, storage, transportation, 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.	*TIA shall ensure compliance with all these requirements during the 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	*TIA project will contribute to the attainment of the 2025 Vision through improvement of education and provision of adequate skilled labor force for*

	PLAN/STRATEGY	DESCRIPTION	COMPLIANCE
		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.	*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.*

3.6 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)

3.6.1 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.

3.6.2 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.

3.7 Institutional Framework for the Management of 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 the 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. Moreover, section 36 (1), (2) of EMA stipulates that each City, Municipal, District and Town councils shall designate or appoint an Environmental Management Officer (EMO) who shall perform among the following functions:

i) Advice the environmental management committee to which he/she belongs on all matters related to the environment.

ii) Promote environmental awareness in the area he/she belongs on the protection of the environment and the conservation of natural resources.

iii) Monitor the preparation, review and approval of Environmental Impact Assessment for local investments.

The Institutional set up as presented in Table 3.5 explains the layers of decision making from national to Village/Mtaa/Hamlet levels.

Table 3. 5 Key Institutions to the ESIA Process

Level	Institution	Role and Responsibility
National level	Vice President's Office (Division of Environment,)	• Coordinate various environment management activities in Tanzania • Advise the Government on legislative and other measures for the management of the environment • Advise the Government on international environmental agreements • Monitor and assess activities, being carried out by relevant agencies in order to ensure that the environment is not degraded • Prepare and issue a report on the state of the environment in Tanzania; • Coordinate the implementation of the National Environmental Policy
	Vice President's Office - NEMC	• Carry on environmental audit and environmental monitoring • Carry out surveys which will assist in the proper management and conservation of the environment • Undertake and co-ordinate research, investigation and surveys in conservation and management • Review and recommend for approval of environment impact statements • Enforce and ensure compliance of the national environmental quality standards • Initiate and evolve procedures and safeguards for the prevention of accidents which may cause environmental degradation and evolve remedial measures where accidents occur; • Undertake in co-operation with relevant key stakeholders' environmental education and public awareness;
	Ministry of Education Science and Technology	• Issuing policy guidance • Providing legal frameworks • Issuing licenses, provisions of certificates of compliances • Enforcement of laws and regulations • Project monitoring.

	Tanzania Commission for Universities (TCU)	• Mandate to recognise, approve, register and accredit Universities • Conduct regular and impromptu periodic evaluation of universities, their systems and programmes • Advise the government and the general public on matters related to higher education in Tanzania as well as international issues pertaining to higher education, including advice on program and policy formulation and other best practices. • Providing support to universities in terms of coordinating the admission of students, offering training and other sensitisation interventions in key areas like quality assurance, university leadership and management, fund raising and resources mobilisation, entrepreneurial skills and gender mainstreaming.
	Occupation Safety and Health Authority OSHA	• Approval of building plans for the proposed project • Monitoring Health and Safety of workers in working premises
Municipal level	Misungwi District Council	• Oversee and advice on implementation of national policies at Municipal level • Oversee enforcement of laws & regulations • Advice on implementation of development projects and activities at Municipal level
Ward Level	Usagara Ward	• Oversee general development plans for the Ward. • Provide information on local situation and Extension services • Technical support & advice • Project monitoring
Street/Village (*mtaa*) level	Nyang'homango village office	• Information on local social, economic and environnemental situation • View on socio-economic and cultural value of the sites and on proposed plant operations • Rendering assistance and advice on the implementation of the project • Project Monitoring (watchdog for the environment, ensure wellbeing of residents and participate in project activities.

3.7.1 Key Players in Proposed Project Implementation

It is vital to identify key project implementers and their responsibilities in order to ensure the sound and effective implementation of the current project. TIA has formed a Project Implementation Unit (PIU) comprising members with vast experience in various fields for

managing the HEET project. TIA-PIU has a total of eighteen members. Out of this, there is one environmentalist, one social and gender expert locally known as ESS Team. At the project level, both contractors and consultants have been guided in the contract to employ experts in environment, social and gender. The ESS team is involved in SE, providing inputs in all ToR and contracts for procurement of contractors and consultants. The rest PIU members include coordinator, Deputy coordinator, Infrastructural Development, capacity building, curricular development, finance, ICT, procurement, M&E, Industrial linkage and communication officer. A high proportion of PIU members have been appointed based on their expertise and thus their contribution to this project is based on their expertise.

This ESIA has consulted most of these institutions at various stages as part of this ESIA undertaking and their views and concerns have been incorporated in the report. The Institute has in place all the required decision making organs for adjudicating and managing projects. The key institutional arrangement for HEET Project Implementation is postulated in the table below.

Table 3. 6 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

Level	Institution	Role and responsibility
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	Usagara Ward	• Oversee general development plans for the Ward. • Provide information on local situation and extension services • Technical support & advice • Project Monitoring
	Nyang'homango village office	• Information on local social, economic and environnemental situation • View on socio-economic and cultural value of the sites and on proposed plant operations • 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.

Level	Institution	Role and responsibility
		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. 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** 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 implementation of the C-ESMP

Level	Institution	Role and responsibility
		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 campaigns 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. ii. Organise and conduct awareness campaigns 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

3.8 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 3.8) 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. 7 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	○ Identify project E&S risks and impacts ○ Improve performance through an Environmental and Social Management System (ESMS) ○ 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	○ Fair treatment, non-discrimination, equal opportunity ○ Good worker – management relationship ○ Comply with national employment and labor laws ○ Protect workers, in particular vulnerable categories ○ Promote safety and health ○ 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

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
			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 o Reduced project-related Greenhouse Gas (GHG) emissions	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 materials, and contains provisions to address historical pollution.
ESS4: Community Health and Safety	o To anticipate and avoid adverse impacts on the health and safety of the Affected Community o 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.

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	o Improve or restore livelihoods and standards of living o Improve living conditions among displaced persons o 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 Living Natural Resources		NO	This standard is not applicable in this project because there is not any requirement related to ESS6.
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

Environmental and Social Standards (ESS)	Objectives	Applicability	Requirements
			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	○ Ensuring understanding ○ Building relationships ○ Ensuring Compliance ○ Engaging vulnerable groups ○ 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 was conducted in a manner proportionate to the nature, scale, risks and impacts of the project, and appropriate to stakeholders' interests.

3.9 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

3.10 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:

3.10.1 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.

3.10.2 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.

3.10.3 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.

3.10.4 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.

3.10.5 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. 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.

3.10.6 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 aims to provide a comprehensive overview of the relevant environmental, economic, and social characteristics pertaining to the construction of female and male hostel hostels at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, and Mwanza Region. It encompasses the project's core area, the immediate vicinity (Usagara Ward), and the broader area of influence in Misungwi District and Mwanza Region. The level of detail presented in each section will be determined by the extent of interaction between the project activities and specific environmental or socio-economic aspects. The information outlined here will serve as a basis for identifying and evaluating potential impacts, as well as for developing appropriate mitigation measures in alignment with the project concept and components.

4.2. Site description

The construction of female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region will take place within the designated area allocated for educational development. Currently, ongoing development activities include the construction of the main block building, which combines administration and academic facilities. Construction of the hostel buildings will commence following the completion of the Environmental and Social Impact Assessment (ESIA) study and the issuance of the necessary certificates.

The proposed site for the hostel buildings spans an area of 26.1 acres (105,511 square meters), providing ample space for the construction of the project. The immediate surroundings of the site consist of scattered residential buildings, typical of rural settlements. Towards the west, the site is adjacent to the ongoing construction of the TIA Administration block (main block building, which combines administration and academic facilities and other related facilities). On the northern side, the site is bordered by a few residential houses and the Mwanza-Shinyanga highway road.

4.3. Soil and topography

Soil

The Mwanza region exhibits a generally undulating topography with a variety of soil types. The soils in the area range from red friable clays to dominant brown soils, as well as yellow-red loamy sands and sands. In addition to the three main soil groups previously mentioned:

(a) Sandy soils derived from granite
(b) Red loams derived from limestone
(c) Black clays

The region also includes the aforementioned red friable clays, dominant brown soils, and yellow-red loamy sands and sands. These soil variations contribute to the diverse soil composition across the Mwanza region.

The sandy soils derived from granite, which constitute the first group, have moderate natural fertility but tend to degrade over time with continuous cultivation. The second and third groups, red loams derived from limestone and black clays, respectively, possess higher fertility potential but are typically associated with areas experiencing lower rainfall. It is worth noting that the majority of the population in the region resides on sandy soils.

Traditional soil fertility restoration methods such as fallowing have become impractical in many areas due to increasing population pressure. Consequently, there has been a decline in soil pH, organic matter content, and nutrient levels. The overworking of soils has resulted in reduced responsiveness to inorganic fertilizers. Soil exhaustion is likely the primary factor contributing to the decline in cotton yields and the limited effectiveness of fertilizers in the region.

Topography

The Mwanza Region exhibits diverse topography and soil characteristics across its different zones. In Zone one (I), the area experiences reasonably dependable rainfall with an undulating landscape and soils ranging from red friable clays to dominant brown, yellow-red loamy sands. Zone II, characterized by high population densities, faces moderate and unreliable rainfall, featuring red to yellow-red gritty sandy clay loams and poorly drained loamy sands and clays. Zone III, known as the "Sukuma Heartland," has high population densities concentrated along the lake shore, with soils ranging from yellow-red hillsands to poorly drained dark grey loam sands and clays. In Zone IV, moderate to high population and livestock densities coincide with isolated hill-masses, wide plains, and soils varying from hillsands to waterlogged loamy sands and black clays. Zone V, predominantly flat, showcases poorly drained grey loamy sands and black clays, while Zone VI, including the Ukerewe islands, experiences high rainfall, sandy soils, and limited arable land.

4.4. Hydrology conditions (Surface and Ground water)

The Mwanza Region is characterized by a variable groundwater level, influenced by local topography and seasonal fluctuations. The water table typically ranges between 1.5 and 2.5 meters beneath the surface, with variations observed throughout the year, particularly during the dry and wet seasons. Lake Victoria serves as the primary surface water body for Mwanza City, receiving the discharge from all surface drains. The lake holds significant importance as a shared natural resource among the partner states of the East African Community (EAC) and plays a vital role in providing water resources and supporting the fisheries industry in the region. The ecosystem surrounding the lake encompasses diverse landscapes, including savannahs, forests, and wetlands, contributing to its ecological significance.

4.5. Atmospheric conditions

Two key features show the climate of Mwanza region. These include temperature and rainfall. The climate is tropical modified by the existence of Lake Victoria and topography of the region.

4.5.1 Rainfall

The Mwanza region experiences an average annual rainfall of approximately 930 mm, with variations across different areas. The western parts of Ukerewe island receive higher rainfall, averaging around 1,800 mm, while the southern and south-eastern parts of the region have lower rainfall, around 750 mm. The rainfall distribution follows two main periods: the short rains from October to December and the long rains from March to May. There is a dry spell from January to March, and these rains often exhibit an erratic pattern. To adapt to this variability, farmers adopt a staggered planting approach, spreading their crop planting over several weeks. The rainfall tends to occur in localized storms rather than widespread downpours, leading to uneven distribution within small areas. As the dry season lengthens and vegetation cover weakens, water erosion becomes more pronounced.

Agro-Economic Zones

The Mwanza region exhibits significant variations in agricultural and demographic characteristics across different areas. To effectively design an agricultural development strategy, it is essential to tailor it as closely as possible to local conditions. In order to provide guidance for future efforts, the region was divided into six agro-economic zones between 1970 and 1973, although these zones do not align with current administrative boundaries.

Zone I is characterized by a relatively dependable average rainfall exceeding 900 mm. The topography is generally undulating, and the soils vary from red friable clays in the north of Geita town to dominant brown, yellow-red loamy sands, and sands elsewhere. With relatively light population densities, this zone engages in farming activities cantered on cotton, cassava, beans, and livestock. Bananas also play a significant role, particularly in the north-western area. The presence of a major forest plantation at Buhindi and several gazetted forest reserves adds to the region's ecological diversity.

Zone II experiences high population densities, both in terms of human and livestock populations. This density creates substantial pressures on land use, leading to competition and overlap between human and livestock requirements. The rainfall in this zone is moderate, surpassing 900 mm, but it is unreliable, with a 20% probability of falling below 850 mm. The soils in this zone range from red to yellow-red, including gritty sandy clay loams that are extensively cultivated. Additionally, poorly drained and wet greyish loamy sands and black clays are found in this area. The major crops cultivated in this zone are cotton, cassava, and maize, particularly on both sides of Smith Sound. Notably, a large flat "mbuga" area extends from Smith Sound into the southeast, specifically in Missungwi, where substantial areas are devoted to cereal cultivation, with chickpeas as a follow-on crop. Administrative divisions within this zone include Katunguru and Sengerema in Sengerema district, Ilemela and Busagala in Mwanza district, and Missungwi (formerly in Kwimba district).

Zone III comprises the majority of the region's territory and is known as the "Sukuma Heartland" as it represents the originally settled area. Population densities in this zone are very high, although there is a slight decrease towards the eastern end, particularly in Kivukoni Division. The soils in this zone follow the typical "Sukuma Catena" pattern, starting with yellow-red "hill sands" on granite inselbergs and progressing to poorly drained dark grey loam sands and clays in the valley bottoms and low-lying plains. Rainfall in this zone is highly erratic and undependable, with an average annual amount ranging from 700 to 850 mm. The population in this zone is concentrated along the lake shore, leading to intense competition for land. The soils are overworked, and there is a general shortage of land to meet nutritional, personal, and social requirements. The major crops cultivated in this zone are cotton and cassava, with fishing also playing a significant role alongside farming activities. In the western areas of the zone, milking of the traditional herd serves as an important cash-generating activity. This zone represents a critical area in terms of the relationship between land and population. The traditional solution to the problem of land deficit in this zone has been the out-migration of people and livestock to areas of surplus land in western Geita. Administrative divisions within Zone III include Sanjo, Kahangara, Itumbili, Busega, and Kivukoni, all located in Magu district.

Zone IV is characterized by moderate to high population and livestock densities, accompanied by an average annual rainfall ranging from 800 to 900 mm. The topography of this area consists of isolated hill masses and ridges, along with wide plains. The soils vary across the region, ranging from relatively small areas of hillsands to large areas of poorly drained or waterlogged greyish loamy sands and black clays. Some of the lower-lying soils, where hillsands meet the "mbuga" clays, are prone to "panning" and are utilized for substantial rice cultivation. In addition to rice, the major crops in this zone include cotton, sorghum, and cassava. Administrative divisions within Zone IV include Msalala and Nyang'wale in Geita district, Nyanchenche in Sengerema district, Mbarika and Inonelwa in Missungwi district, and Ngudu, Ngula, and Ibindo in Kwimba district.

Zone V predominantly consists of flat to depressed areas, with only a few isolated hill masses and granitic tors (rocky hills). The soils in this zone are predominantly poorly drained to waterlogged grey loamy sands and black clays. The average annual rainfall ranges from 750 to 900 mm, and although it is unreliable, the high water-retaining capacity of the soil compensates to some extent. The population and livestock densities in this zone are moderate, but due to the dominance of oxmechanization as the basic agricultural technology, the extent of cultivation in the area is relatively high. The major crops cultivated in this zone include maize and chickpeas, with cotton and cassava serving as secondary crops. Divisions within Zone V include Ng'wamashimba and Nyamilama.

Zone VI represents a densely populated area with an average rainfall of 1200 mm, which is reliable. This zone includes the Ukerewe islands, where arable land is limited, and the soils are predominantly sandy. The main crops cultivated in this zone include cotton, cassava, coffee,

paddy, sweet potatoes, and various fruits. The administrative divisions within Zone VI include Ilangala, Ukara, Mumulambo, and Mumbuga.

4.5.2 Temperature

The Mwanza region experiences a moderate and fairly consistent temperature range throughout the year. The average temperatures typically vary between 62°F (16.7°C) and 83°F (28.3°C). It is uncommon for temperatures to drop below 59°F (15°C) or rise above 88°F (31.1°C). This suggests a relatively mild and comfortable climate overall.

The temperature variations within this range can be attributed to factors such as seasonal changes, elevation, and local weather patterns. The region may experience slightly cooler temperatures during the wetter months or when influenced by breezes from nearby bodies of water, such as Lake Victoria. Conversely, temperatures may reach the higher end of the range during the drier months or when affected by warm air masses.

4.5.3 Wind

The average wind speed in the Mwanza region can vary depending on the specific location and time of year. However, the region generally experiences moderate wind speeds. On average, wind speeds range between 5 to 10 miles per hour (8 to 16 kilometers per hour). The wind patterns in the Mwanza region are influenced by several factors, including the proximity to Lake Victoria and local topography. The lake can contribute to the development of breezes and wind currents that affect the region's weather conditions. Additionally, the undulating topography and presence of hills may create localized variations in wind speed and direction. It's important to note that wind speeds can fluctuate throughout the year, with certain seasons or weather events experiencing higher wind velocities. For example, during the rainy season, known as the long rains from March to May, wind speeds may be slightly elevated due to the influence of weather systems associated with the precipitation.

4.5.4 Humidity

The humidity in the Mwanza region varies throughout the year but generally remains moderately high. Being located near Lake Victoria, which is the largest tropical freshwater lake in the world, the region experiences a significant influence from the lake's moisture. On average, the humidity levels in Mwanza can range from around 60% to 80%. During the rainy seasons, which occur from October to December (short rains) and March to May (long rains), the humidity levels tend to be higher due to increased moisture in the air from rainfall and evaporation. The air can feel more humid and moisture may be noticeable in the form of increased cloud cover and occasional mist or fog. In the dry seasons, particularly from June to September, the humidity levels may decrease slightly, but still remain relatively moderate. However, the proximity to the lake ensures that the air retains a certain level of moisture, preventing the region from becoming excessively dry. It's worth noting that humidity levels can also vary depending on the time of day, with higher humidity typically observed during the early morning and evening hours, while it may decrease slightly during the afternoon.

4.5.5 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)

The proposed TIA-Mwanza Campus currently is largely of peri – urban ecological system with marked terrestrial ecosystems. The Baseline assessment and review of primary and secondary literature and interviews have indicated that the area to be covered by proposed TIA-Mwanza Campus have neither protected areas no endangered species. Furthermore, the propose area for development of the TIA-Mwanza campus has no forest reserves, no National Parks or any form of conservation area.

4.6.1 Flora/Vegetation

The vegetation cover in the Mwanza region is diverse and varies across different areas and ecological zones. The region encompasses a range of vegetation types, including grasslands, woodlands, forests, wetlands, and aquatic vegetation along the shores of Lake Victoria. In the drier areas, particularly in the southern and southeastern parts of the region, the vegetation is predominantly characterized by savannah grasslands and scattered shrubs. These areas often experience shorter and less dense vegetation due to lower rainfall and higher aridity. As you move towards the lake shore and areas with higher rainfall, the vegetation becomes lusher and more varied. Woodlands with trees such as acacias, figs, and mahoganies can be found, providing shade and habitat for various wildlife species. Along the lake shore and wetland areas, there are dense patches of papyrus reeds and other aquatic plants. In the western parts of the region, where the Ukerewe Island is located, the vegetation is influenced by the presence of the lake. The island has more fertile soils and higher water availability, resulting in a denser vegetation cover compared to some other parts of the region.

4.6.2 Fauna/Animals

The project area and its vicinity in the Misungwi district in Mwanza region are not known for having significant wildlife resources or conservation interest. The area is primarily characterized by human settlements, agricultural activities, and domestic animals. During observations conducted at the project site, no notable presence of wildlife or fauna was reported. This suggests that the local ecosystem in the immediate project area is not a typical habitat for a diverse range of wildlife species. Instead, it is primarily focused on human habitation, livestock rearing, and agricultural practices.

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. During EIA study, no any development project was reported by Proponent (TIA) to be implemented in proposed project area or in conjunction with the proposed project.

4.8. Socio-economic conditions

4.8.1 Local administration and governance

Local Administration

The proposed project will be implemented specifically within the designated area allocated for the development of Education buildings. Administratively, the project falls under the administration of Nyang'homango village, located in Usagara Ward within the Misungwi District of the Mwanza region.

Governance

The Village is the lowest level in governance system which is governed by 7 members who form the village council. A number of villages form the ward. The wards are governed by the ward councils constituting of various members including Ward Executive Officers. Various committees constituted within the council to oversee different development and social economic aspects of the respective ward include infrastructure, social welfare, reconciliation/resolution, water and agriculture, security, education, environment and health.

4.8.2 Demographic profile

Population & Ethnicity

According to the 2022 national census, the population of Mwanza region was recorded at 3,699,872 people. This represents a significant increase compared to the previous national census conducted in 2012, which reported a population of 2,772,509 for the region. Mwanza region, located in northern Tanzania, is renowned for its economic significance and diverse population. The region has experienced notable population growth over the years, driven by factors such as natural increase, migration, and urbanization.

Comprising a mix of ethnicities and cultures, the region is home to various communities. The Sukuma people constitute the largest ethnic group, contributing a significant portion to the population. Alongside the Sukuma, other ethnic groups, including the Zinza, Haya, and Nyamwezi, among others, also contribute to the region's cultural richness.

The urban areas within Mwanza, particularly Mwanza City, have witnessed rapid urbanization and population growth. As a major commercial and administrative center, Mwanza City attracts individuals from different parts of the country in search of employment opportunities and an improved quality of life. This influx of people has contributed to the expansion of infrastructure and services to cater to the growing needs of the urban residents.

In terms of age distribution, Mwanza region, similar to many other regions in Tanzania, has a predominantly young population. A significant proportion of the population falls under the age of 25, indicating a youthful demographic structure. This demographic composition has implications for various sectors, including education, healthcare, and employment, as efforts are needed to address the needs and aspirations of the younger generation.

Furthermore, gender dynamics play a role in the region's demographic profile. While both males and females contribute to the population, certain sectors and activities may exhibit gender disparities. Recognizing the importance of gender equality, initiatives are being implemented to empower women and promote their participation in education, employment, and decision-making processes.

Types and pattern of housing

Housing in Mwanza region exhibits a diverse range of types and patterns, reflecting the socioeconomic conditions and cultural backgrounds of the population. In urban areas, formal housing such as detached houses and apartment buildings with amenities is prevalent in city centers and wealthier neighbourhoods. Informal settlements, characterized by makeshift dwellings, also exist in marginalized areas. In rural areas, traditional housing using locally available materials and designed for the region's climate is common. Rural households often have homesteads with multiple buildings and farmhouses near agricultural land. Housing patterns vary based on factors like income, culture, and proximity to urban centers, while ongoing development initiatives may impact housing types and patterns over time.

Gender Aspects

Gender aspects play a significant role in the context of Mwanza region, influencing various aspects of social and economic life. Gender roles and norms shape the division of labor, with women often engaged in household chores, caregiving, and subsistence farming, while men are more involved in income-generating activities. However, efforts are being made to challenge traditional gender roles and promote gender equality. Women's empowerment initiatives aim to enhance their access to education, healthcare, and economic opportunities, and to increase their participation in decision-making processes at all levels. Additionally, there is a growing recognition of the importance of addressing gender-based violence and promoting women's rights, with organizations and community groups working towards creating safer and more inclusive environments for women and girls. While progress has been made, continued efforts are required to achieve full gender equality and ensure that women have equal opportunities and rights in all spheres of life in Mwanza region.

4.8.3 Main economic activities

The main economic activities in Mwanza region are diverse and contribute significantly to the local economy. Agriculture plays a crucial role, with subsistence farming being a common practice. Farmers cultivate crops such as maize, cassava, beans, cotton, and sorghum, while also engaging in livestock rearing, particularly cattle and goats. Fishing is another important economic activity, given the region's proximity to Lake Victoria, providing a source of income and food for many communities. Trade and commerce thrive in urban areas, with Mwanza City serving as a regional business hub. Small businesses and informal markets contribute to the local economy, offering a range of goods and services. Mining activities, particularly gold mining in areas like Geita, contribute to the region's economic growth. Additionally, tourism is gaining prominence, driven by the region's natural attractions, including Lake Victoria and national parks. Efforts to diversify the economy and promote industries such as manufacturing and processing are underway to create more employment opportunities and enhance economic development in Mwanza region.

4.8.4 Economic infrastructure

(a) Transportation infrastructures

Road transportation

Road transportation infrastructure plays a vital role in driving the economic development of the Mwanza region. The region boasts a well-established road network that connects it to the national road system, enabling efficient movement of goods, services, and people. Major highways such as the Mwanza-Musoma Road (A1) and the Mwanza-Shinyanga Road (B6) serve as important corridors for trade and transportation, linking Mwanza to other regions and neighbouring countries.

Efforts have been underway to improve and expand the road infrastructure in the region. Construction and rehabilitation projects have been implemented to enhance the condition and capacity of key road sections. This includes the upgrading of roads to bitumen standards, widening of lanes, and installation of modern traffic management systems. These infrastructure improvements aim to reduce travel times, enhance safety, and support the region's growing economic activities.

In addition to the major highways, Mwanza region benefits from a network of feeder roads that reach out to rural areas. These feeder roads play a crucial role in connecting remote communities to urban centers and markets. They facilitate the transportation of agricultural produce, allowing farmers to access wider market opportunities and improve their livelihoods. The development and maintenance of these rural roads contribute to agricultural productivity and the overall economic growth of the region. Furthermore, the Mwanza region is home to various road infrastructure projects, including the construction of new roads and bridges. These projects aim to enhance connectivity within the region and improve access to key economic centers, tourist destinations, and social amenities. The strategic location of the region, along with its well-connected road network, has also positioned Mwanza as a significant transport hub for transit trade with neighbouring countries, contributing to its economic importance.

Misungwi district in Mwanza region benefits from important transportation infrastructures that contribute to its economic connectivity. The paved trunk road T8, stretching from Shinyanga to Mwanza, passes through the district in a south-to-north direction. This road serves as a vital transportation route, facilitating the movement of people and goods between major urban centers and trading hubs. It plays a crucial role in supporting trade activities, allowing businesses in Misungwi to access markets and customers in neighbouring districts and regions.

Air transport services

In addition to its well-established road and railway networks, Mwanza region benefits from a robust air transportation infrastructure, centered on the Mwanza Airport. As an international airport, it serves as a significant aviation hub for the region, facilitating both domestic and international flights. The airport's strategic location and comprehensive services contribute to the region's economic development and connectivity.

Mwanza Airport offers convenient air travel options, connecting the region to major cities within Tanzania and neighbouring countries. It serves as a vital gateway for tourists visiting the renowned Serengeti National Park and other popular tourist destinations in the region. The airport plays a pivotal role in promoting tourism, enabling visitors to easily access Mwanza and explore the diverse natural attractions and cultural heritage of the area. This, in turn, boosts the local economy through increased tourism revenue and job opportunities.

The airport's international status allows for direct flights to and from various destinations, further enhancing Mwanza's connectivity with the global market. It serves as a crucial transportation link for business travellers, enabling efficient connections with regional and international markets. The availability of air cargo services facilitates the transportation of goods, supporting trade activities and fostering economic growth in the region. The airport's proximity to Mwanza city center provides convenience for travellers, minimizing travel times and allowing for seamless transfers between air, road, and rail transportation modes. Various ground transportation options, including taxis and buses, connect the airport to different parts of Mwanza and neighbouring areas. This accessibility contributes to the overall efficiency and ease of travel for passengers arriving or departing from the region.

Furthermore, Mwanza Airport serves as a vital transportation link for the region's residents, facilitating domestic air travel for personal and business purposes. It enables individuals to access medical services, educational opportunities, and employment prospects in other parts of the country without the need for long and arduous journeys.

Railway transport services

Railway transportation plays a significant role in the connectivity and economic development of Mwanza region. The Central Line railway, which traverses the region, serves as a vital link connecting Mwanza to other parts of Tanzania, particularly the port city of Dar es Salaam. This railway network facilitates the transportation of both passengers and freight, contributing to trade, commerce, and regional integration.

The Central Line railway provides a reliable and efficient means of transporting goods and commodities, supporting various industries and businesses in the region. It serves as a lifeline for the movement of agricultural produce, mining materials, and other essential goods, connecting Mwanza to national and international markets. This transportation infrastructure enhances trade opportunities, boosts economic growth, and fosters regional cooperation.

Efforts have been made to enhance the railway's efficiency and reliability through investments in infrastructure and rolling stock. Upgrades to railway tracks, signalling systems, and stations have been carried out to improve safety and operational efficiency. Modernization projects, including the introduction of the SGR, aim to increase capacity, reduce transit times, and ensure the smooth flow of goods and passengers along the Central Line.

The railway provides an affordable and accessible mode of transportation for passengers, offering a convenient alternative to road travel. It facilitates the movement of people within the region and allows for easy access to employment opportunities, educational institutions, and healthcare services. Additionally, the railway serves as a popular choice for domestic tourism, enabling travellers to explore different parts of Tanzania comfortably and enjoy scenic views along the journey.

The presence of railway stations within the Mwanza region, including the station at Fella village, ensures that local communities have convenient access to rail transportation services. These stations serve as important hubs for passenger boarding and disembarking, providing facilities and amenities that enhance the overall travel experience. They also contribute to the local economy by creating employment opportunities and supporting ancillary services such as hospitality, catering, and transportation.

As a mode of transportation that is less affected by weather conditions and road congestion, railway transportation offers reliability and stability in logistics planning for businesses and industries in Mwanza region. It helps reduce transportation costs and ensures the timely delivery of goods, supporting supply chains and trade networks. Moreover, the Central Line railway facilitates regional connectivity, encouraging cooperation and economic integration among different parts of Tanzania.

Continued investments in railway infrastructure, maintenance, and operational improvements are crucial for the sustained growth and efficiency of railway transportation in Mwanza region. These efforts aim to enhance capacity, reliability, and safety, ensuring that the railway remains a competitive and sustainable mode of transportation for both passengers and freight. By leveraging the advantages of railway connectivity, Mwanza region can further enhance its economic potential and contribute to Tanzania's overall development.

(d) Water transportation

Water transportation plays a crucial role in the transportation network of Mwanza region, thanks to its strategic location along the shores of Lake Victoria. The expansive lake serves as a natural waterway, facilitating the movement of goods and people within the region and

beyond. Ferries and boats operate on Lake Victoria, providing an important mode of transportation for various economic activities.

The water transportation system in Mwanza region supports the thriving fishing industry, which is a significant contributor to the local economy. Fishermen rely on boats to venture into the lake, harvest fish, and transport their catch to markets. This not only sustains the livelihoods of fishing communities but also supplies fish to local and regional markets, promoting trade and food security.

(b) Energy infrastructure and use

Energy infrastructure and its efficient use are crucial for the economic development and well-being of Mwanza region. The region has made significant progress in expanding its energy infrastructure to meet the growing demands of industries, businesses, and households.

Electricity is the primary source of energy in Mwanza region, and efforts have been made to improve access to reliable and affordable electricity. The region is connected to the national power grid, ensuring a steady supply of electricity. The Tanzania Electric Supply Company Limited (TANESCO) is responsible for electricity generation, transmission, and distribution in the region.

Power generation in Mwanza region is mainly derived from hydroelectric sources, including the Mtera and Kidatu power stations. These hydroelectric plants harness the energy of nearby rivers to produce electricity. In recent years, there has been a push to diversify the energy mix by incorporating renewable energy sources such as solar and wind power. This transition towards cleaner and more sustainable energy sources contributes to reducing the region's carbon footprint and promoting environmental conservation.

In terms of energy consumption, industries, businesses, and households in Mwanza region rely on electricity for various purposes, including lighting, heating, cooling, and powering machinery and equipment. The availability of electricity has facilitated the growth of industries, particularly in sectors such as manufacturing, agriculture, and services. It has also improved the quality of life for residents by providing access to modern amenities and enhancing productivity and efficiency in daily activities.

In remote and off-grid areas of the region, where access to the national power grid is limited, alternative energy solutions are being implemented. These include the installation of solar power systems, which provide clean and reliable electricity to households, schools, health facilities, and other community institutions. The use of renewable energy in these areas not only improves energy access but also contributes to sustainable development and poverty reduction. The proposed project will therefore liaise with TANESCO to extend its existing power infrastructures (see plate 6). A standby generator will be installed to cater for electricity supply during power outage. The quantity of electricity required will be established in the next stage of ESIA study.

(c) Marine services

Marine services play a significant role in the economic development and transportation infrastructure of Mwanza region. As a region located on the shores of Lake Victoria, the largest freshwater lake in Africa, marine services are essential for facilitating trade, fishing activities, tourism, and passenger transportation.

The region has a well-established network of ports, harbors, and landing sites along the lake, providing docking and berthing facilities for various water vessels. These marine services cater to both commercial and recreational purposes. Major ports in the region, such as the Mwanza Port, serve as crucial hubs for the import and export of goods, connecting the region to other ports and countries within the East African region.

The marine services sector supports the fishing industry, which is a significant economic activity in Mwanza region. Fishing vessels, including traditional fishing boats and modern commercial fishing vessels, operate on Lake Victoria, contributing to the region's fish production and supporting livelihoods. The marine services also provide support for fish processing and storage facilities, enabling efficient distribution of fish products within and outside the region.

Passenger transportation is another important aspect of marine services in Mwanza region. Ferries and boats operate on Lake Victoria, connecting various ports and islands. These water vessels offer transport services for commutes and tourists, facilitating movement across different locations and enhancing regional connectivity. The marine services sector plays a vital role in promoting tourism, allowing visitors to explore the scenic beauty of the lake, its islands, and the surrounding areas.

Efforts are being made to improve and expand marine services in Mwanza region. This includes the construction and renovation of ports and landing sites, the acquisition of modern water vessels, and the implementation of safety and security measures to ensure the smooth and efficient operation of marine transportation. These developments enhance the region's capacity to handle increased trade volumes, support tourism growth, and strengthen the overall marine infrastructure.

(d) Communication network

The communication network in Mwanza region is essential for connecting people, facilitating the exchange of information, and supporting various economic and social activities. The region has witnessed significant advancements in communication infrastructure, enabling efficient communication within the region and beyond.

Telecommunication services, including landline telephone and mobile networks, are widely available in Mwanza region. The presence of major telecommunication providers ensures reliable voice communication and internet connectivity. This allows businesses, government institutions, and individuals to stay connected, access information, and engage in online activities. Mobile phone penetration is high, providing a convenient means of communication

for both urban and rural areas. All mobile companies operates in the region, these includes, VODACOM, TTCL, AIRTEL, TIGO and ZANTEL. Through these companies Internet, service made easily and affordable. Other media include TBC, ITV, Star TV, EATV, CNN, BBC and print media from IPP media and other News publishers.

Internet connectivity has become increasingly important in Mwanza region, enabling access to online resources, e-commerce, and digital services. The availability of broadband internet services and the expansion of 4G and 5G networks contribute to improved connectivity, allowing for faster data transfer and a seamless online experience. This has positive implications for education, e-health services, e-commerce, and other digital initiatives.
The region also benefits from a well-established postal and courier services network. Post offices and courier companies facilitate the delivery of mail, parcels, and documents, supporting business transactions, personal correspondence, and the transportation of goods. In terms of media, Mwanza region has a vibrant broadcasting industry. Radio and television stations operate in the region, providing news, entertainment, and educational content to the local population. Additionally, newspapers and magazines contribute to the dissemination of information and serve as platforms for public discourse.

4.8.5 Social Infrastructure and Services

Health services and facilities are crucial components of social infrastructure in Mwanza region. The region is equipped with a network of healthcare facilities that provide medical services to the population. These facilities range from primary healthcare centers to specialized hospitals, ensuring accessible healthcare for residents. Primary healthcare centers, commonly known as dispensaries, are scattered throughout the region, especially in rural areas. These centers offer basic medical services, including preventive care, treatment of common illnesses, and maternal and child healthcare. They play a vital role in addressing the healthcare needs of the local communities and serve as the first point of contact for patients.

In addition to dispensaries, Mwanza region is home to several health centers and district hospitals. These facilities provide a broader range of medical services, including emergency care, diagnostic tests, outpatient services, and minor surgeries. They serve as referral points for more complex cases and offer specialized clinics in areas such as pediatrics, obstetrics, and dentistry. At the tertiary level, the region boasts a major referral hospital, Bugando Medical Centre, located in Mwanza City. Bugando is a teaching hospital affiliated with the Catholic University of Health and Allied Sciences. It offers comprehensive medical care, advanced diagnostic services, specialized treatments, and surgical interventions. The hospital plays a critical role in handling complex cases and serving as a training center for healthcare professionals. To support the delivery of healthcare services, Mwanza region also has a network of health personnel, including doctors, nurses, midwives, and other healthcare professionals. These dedicated professionals work in collaboration with support staff to ensure quality healthcare provision.

(a) Education facilities

Status of primary schools in the Region

The Mwanza region prioritizes education as a fundamental aspect of its social infrastructure. The region is home to numerous primary schools that play a vital role in providing basic education to children. These schools serve as the foundation for academic development and serve a significant portion of the region's population.

The primary schools in Mwanza region are spread across both urban and rural areas, ensuring that education is accessible to all children. These schools are administered by various entities, including the government, private organizations, and religious institutions. They adhere to the national curriculum set by the Ministry of Education, providing a standardized education system.

The primary schools in the region vary in terms of infrastructure, resources, and capacity. While some schools have well-equipped classrooms, libraries, and laboratories, others may face challenges such as inadequate facilities and limited resources. Efforts are being made to address these disparities and improve the overall quality of education in the region.

The availability of teachers in primary schools is also a crucial aspect. Mwanza region strives to ensure an adequate number of qualified and trained teachers to meet the demands of the student population. Teacher training programs and initiatives are implemented to enhance the skills and competencies of educators, ultimately benefiting the students' learning experience.

There are two primary schools in Nyang'homango Village where the project site is located. Establishment of TIA-Mwanza Campus will increase the number of students enrolled to these schools.

Status of public secondary schools facilities

The status of public secondary school facilities in Mwanza region reflects the ongoing efforts to provide quality education to students beyond the primary level. The region is home to several public secondary schools that serve as important institutions for the academic and personal development of young individuals. Public secondary schools in Mwanza region are established and operated by the government with the objective of providing accessible and affordable education to students. These schools follow the national secondary education curriculum set by the Ministry of Education, ensuring a standardized and comprehensive educational experience.

The status of public secondary school facilities in Mwanza region is influenced by the trends and data regarding secondary education enrolment. In 2019, the total enrolment in secondary schools (Forms 1-6) in the region increased by 8.8% from the previous year, reaching a total of 2,338,457 students. This includes enrolment in both government secondary schools (2,023,205) and non-government secondary schools (315,252). The enrolment in government secondary schools witnessed a significant increase of 11.5%, while non-government schools experienced a decrease of 5.6%.

The government's initiative to provide fee-free basic education in public schools has contributed to the increased enrolment in government secondary schools. This initiative aims to ensure that all primary school leavers who pass the Primary School Leaving Examination (PSLE) have the opportunity to attend secondary education. As a result, government schools have attracted more students, leading to a rise in enrolment figures.

Tertiary education institutions in the Region

Mwanza region is home to a diverse range of tertiary education institutions, including the prestigious University of Mwanza, which offers a wide array of undergraduate and postgraduate programs in business, education, social sciences, health sciences, and natural resources. In addition to the university, the region boasts Mwanza Polytechnic Institute, renowned for its technical education in fields such as engineering, IT, business studies, and agriculture. The region also hosts specialized health sciences colleges like Mwanza International College of Health Sciences, Mwanza College of Health and Allied Sciences, Lake Institute of Health and Allied Sciences, and Tanzania Institute of Accounts (TIA Mwanza). TIA Mwanza provides quality education in accounting and related disciplines, producing skilled professionals to meet the demands of the financial sector. These institutions collectively contribute to the region's intellectual and socio-economic development by equipping students with the necessary knowledge and skills to excel in their chosen fields.

(b) Water supply

Water supply is a critical aspect of social infrastructure in Mwanza region. The region has implemented various measures to ensure access to clean and reliable water for its residents. The primary source of water is Lake Victoria, which provides a significant water resource. Water is extracted from the lake and treated at water treatment plants to ensure its quality. The region has also invested in the construction of reservoirs, storage tanks, and distribution networks to efficiently distribute water to urban and rural areas. Efforts have been made to expand the coverage of piped water supply, especially in densely populated areas. Additionally, community water projects, such as boreholes and wells, have been established in rural areas to cater to the water needs of the population. These initiatives aim to improve access to safe drinking water and enhance sanitation practices, ultimately improving the overall well-being and health of the communities in Mwanza region.

The Misungwi District, where the project is located, is served by the Misungwi Zone of the Mwanza Urban Water and Sanitation Authority (MWAUWASA). In discussions with the zonal manager, it has been confirmed that the project aligns with their long-term vision and plans. According to recent developments and the ongoing implementation of their water network, MWAUWASA aims to extend their coverage to the project site within the next six months. This commitment from MWAUWASA demonstrates their dedication to expanding water supply services in the Misungwi District and ensuring the successful implementation of the project.

(c) Waste Management and Sanitation

Solid Waste Management

Solid waste management is a crucial aspect of maintaining a clean and healthy environment in the Misungwi District. Efforts have been made to establish effective waste management systems to ensure proper disposal and minimize environmental pollution. The responsibility for solid waste management in the district lies with the Misungwi District Council, in collaboration with relevant stakeholders.

Currently, the district faces challenges in solid waste management due to rapid urbanization and population growth. As the population increases, so does the volume of waste generated, posing significant challenges in collection, transportation, and disposal. The inadequate infrastructure and limited resources further exacerbate these challenges. Plate7 below shows the existing designated open dumping for management of the solid waste generated in Misungwi District at Mitindo.

Wastewater Management

Misungwi District has made significant progress in wastewater management, including the establishment of a faecal sludge treatment plant. This plant has a daily capacity of approximately 2500 cubic meters, and its system comprises sludge thickening tanks, drying beds, and soak away pits. The faecal sludge treatment plant plays a crucial role in the district's efforts to safely treat and dispose of wastewater and fecal sludge.

However, despite the existing wastewater infrastructure, the district still faces challenges related to population growth, limited resources, and inadequate regulatory enforcement. To overcome these challenges, it is crucial for the district to continue investing in the expansion and improvement of wastewater treatment facilities and distribution networks. Furthermore, exploring decentralized wastewater treatment systems, like constructed wetlands or bio-digesters, can provide alternative solutions for areas with limited access to centralized systems. The FSTP were observed to be clean and in good condition.

CHAPTER FIVE

STAKEHOLDERS' ENGAGEMENT

5.1 Introduction

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. Accordingly, 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. For this project a plan for public involvement was developed early in the process. Informing the local people, leaders and key stakeholders about the proposed project through consultative meetings, key informant interviews, email communication, public meeting and telephone calls. During the consultation process, the stakeholders were briefed about the proposed project including its objectives, technologies of implementation and possible impacts associated with implementation of the project. In addition, they were informed to report any grievances through University grievances desk. Stakeholders were then given time to ask relevant questions regarding the proposed project to enable the consultants clarify on any issues that they may not have understood properly.

This part provides detailed description of stakeholder consultation and participation in the proposed project on construction of Male and Female Hostels for TIA-Mwanza Campus. It provides definition of stakeholder, stakeholders identification process, the initial list of stakeholders identified and consulted; the consultation methodology used; and identified stakeholders' issues and concerns regarding the proposed project.

5.2 Consulted stakeholders

This section provides an overview of the stakeholder engagement activities carried out and planned as part of the Environmental and Social Impact Assessment (ESIA) process for the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, and Mwanza Region. During the scoping stage, a participatory and consultative approach was adopted to disseminate information and gather data. The ESIA project team engaged and consulted various stakeholders and organizations within the project area, including experts and representatives from Nyang'homango Village and Usagara Ward, Misungwi District officials, utility authorities such as Mwanza Urban Water and Sanitation Authority (MWAUWASA) in Misungwi, OSHA lake zone, TANESCO, Fire and rescue, Ministry of Education and local NGOs.

The involvement of stakeholders through consultation is a vital component of the ESIA and scoping process. Through consultation, stakeholders have the opportunity to provide feedback

and comments on the proposed project and the reports generated at each phase of the ESIA. This inclusive approach ensures that affected communities are actively involved in finding solutions to mitigate potential impacts and implementing appropriate management measures. The input and perspectives of stakeholders are valuable in shaping the project design and addressing any concerns or issues raised during the consultation process.

5.3 Involving all affected stakeholders

The ESIA stakeholder engagement activities by the team for the scoping phase commenced on 3rd May 2023 and continued until 5th May 2023 based on a Stakeholders Engagement Plan (SEP) developed for the ESIA process. The consultant ensured that all the concerned parties were given adequate opportunity to participate in the scoping 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; (iii) village community assembly; 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, religious or traditional leaders 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. During this scoping phase of the establishment of TIA Mwanza Campus, local leaders, representatives of the communities, potential vulnerable groups such as women, disabled and youth were consulted to understand their specific issues and concerns. The ESIA team involved stakeholders categorized in the following:

a) Stakeholders who will directly or indirectly and positively or negatively be affected;

People in Nyang'homango Village and Usagara Ward, Misungwi District in Mwanza region; are stakeholder groups who are considered to be directly affected by the project (project-affected groups).

b) Stakeholders whose cooperation, expertise, or 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 (i.e. district government) were consulted during the scoping phase through District management team and individual meetings were conducted. Table 13 below provide a list of Stakeholders Consulted, their interest and method used

5.4 Objective of Stakeholder Engagement

Objectives of the stakeholder engagement at this stage of the ESIA 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 ESIA 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 the stakeholders and ensure these are addressed in the ESIA

Table 5. 1 List of Stakeholders views and their concerns.

Stakeholders	Stakeholders' Views and Concerns	Responses
Usagara Ward Executive Office	• TIA should rise awareness on safe sex during implementation of the project, policies related to HIV/AIDS should be encouraged so as to minimize the spread of HIV/AIDS to students and community at large. • Workers in the project should arrange to have their food while in the site as they will not be able to share canteen with students. • 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. • Stakeholders advocated that; there should be regular follow up during project implementation. • To avoid injuries, contractor will be advised to ensure safety of the workers by supplying all necessary protective gears like safety boots. • 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 • Constructor must have enough toilets to serve person in the construction site and to avoid interacting with students and ensuring their safety. • The project will change socio-economic status of the local community through expansion of the employment opportunities during and after the implementation of the project.	• Instructs HIV/AIDS programs and campaigns for safe sex • Instructs and comply with Stakeholders Engagement plan • Education on GBV and provide policy on GBV management • Sexual exploitation and abuse Action Plan that ensures 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.
Misungwi District Council	• Acquisition of NEMC certificate is crucial before starting construction; • Environmental protection and waste management regulations should be followed; • 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 Misungwi District. • Restrict activities in sensitive areas: Limit clearance, trampling, and digging

	• 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. • Local community and leaders should be engaged; • 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 Misungwi district. The place is attractive to transits and prostitution is high, hence education is highly needed during and after project implementation. • Semi-skilled labours should be recruited from the local people at Usagara. • Workers in the project should be paid on time so as to motivate them and accomplish the project on due.	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. • Management will recruit semi-skilled labour from Usagara and the nearby wards. • TIA and contractor will adhere to the view that workers will be paid on time.

Occupational Safety and Health Authority (OSHA)- lake 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; • 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 • OSHA will visit site after completion of	• Contractor will ensure all legal documents from OSHA has been obtained. • Contractor have to display policy at the construction site.

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; • 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
MWAUWASA	TIA and contractors should avoid placing infrastructures structures on water pipes or in order to avoid problem of wastewater and blockage of water pipes.	• Contractor will ensure no water infrastructure on the site, if found; contractor have to consult MWAUWASA in order to re-allocate water pipes.
Misungwi Fire and Rescue Force	• TIA should consider all measures related to fire prevention in the hostels and make sure fire and rescue force has approved and certify it before construction begins. • Both female and male hostels should have fire extinguishers • There should be regular training on fire rescue during and after project implementation	• TIA and contractor will adhere to this view and ensure all procedures will be taken in to considerations. • Fire extinguishers will be installed in the hostel corridors. • Staffs, non-staffs and students will be given awareness on fire rescue.

5.5 Acceptance of proposed project

The stakeholders consulted generally viewed the proposed project positively, hoping that it enhances opportunities for their families in acquiring higher learning studies and also it will create socio-economic benefit to the village and Mwanza region at large. Summary of degree of acceptance by different stakeholders consulted above is presented in Table below;

Table 5. 2 Level of stakeholders' acceptance of the project

S/N	Stakeholder	Level of Acceptance		
		High	Medium	Low
1.	TIA -Developer	√		
2.	Misungwi District council departments	√		
3.	(MWAUWASA)	√		
4.	Misungwi district Fire and Rescue Force	√		
5.	Usagara Ward Executive leaders	√		
6.	Nyang'homango village leaders	√		
7	OSHA lake zone offices	√		

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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 construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, will primarily occur within the designated core impact zone. This zone encompasses the specific land within the campus on Nyang'homango Village in Usagara Ward. The main focus of the project will be the construction of the hostel buildings and associated infrastructure in this area.

Additionally, the primary impact area extends to a radius of 500 meters surrounding the project's footprint, covering the immediate vicinity within Usagara Ward.

6.2.2 Secondary impact area

The construction of the hostel buildings also involves off-site locations that are crucial to the project. These locations include sources of construction materials, water supply, and waste disposal sites. Potential sources of construction materials may include borrow pits with sand and fill materials, as well as authorized quarry sites for natural stones, gravel, and aggregates within the Mwanza region. Water may be obtained from the Mwanza Urban Water and Sanitation Authority (MWAUWASA) or a borehole within the existing TIA campus in Mwanza. For waste disposal, there is an existing solid waste disposal site known as an open dumping site within the district, but plans are underway to construct a sanitary landfill in another location. The secondary impact areas encompass specific point locations spread throughout the district and potentially beyond.

6.2.3 General Project Area of Influence

The project's influence extends beyond its immediate footprint, encompassing a wider area that experiences the effects of the construction of the hostel buildings. This includes transportation routes and potential recipients of project impacts, such as noise, air emissions, and discharges. The area of influence may extend to cover regions within the Misungwi District and potentially even beyond, considering the scale of the project.

6.3 Causes of Impacts and Risks

The identification of impacts for the construction of female and male hostel buildings at TIA - Mwanza Campus has been conducted by analysing the cause-effect interactions between project activities and relevant baseline receptors. These receptors encompass various aspects, including physical, chemical, biological, built, and human factors. The impact assessment covers the entire project cycle, from site selection, planning, and design, to mobilization, construction, demobilization, operation and maintenance, and finally decommissioning stages.

Due to the diverse nature of project components and construction activities, the level of civil works and their impacts on natural features may vary. The assessment considers both on-site and off-site impacts related to the construction phase, as well as potential impacts during the operation and decommissioning stages of the project. This comprehensive assessment ensures a thorough understanding of the project's potential impacts and risks.

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 - Procurement of domestic and industrial supplies and services
Transportation/delivery of input materials, machinery and equipment and crew;	- 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) - Lack of/inadequacies in the use of Personal Protective Equipment (PPE) - Use of hazardous practices, such as operating motorized or sharp-edged equipment and equipment emitting noise or emissions - Exposure to hazardous substances, chemicals (such as paints, adhesives, cement dust), gases, dust, corrosive substances, and disease agents - Practices exposing workers to extreme or risky working conditions, such as low or high temperatures and lack of ventilation for hazardous fumes, as well as inadequate provision of drinking water - Exposure to disease agents and vectors - Risk of encountering dangerous animals, such as snakes - Negligence at work, including issues such as understaffing, long working hours, employing unqualified individuals for specific jobs, and low staff morale.
	Public Health and safety hazards

	- Construction site hazards: Open pits and excavations pose risks of falls and accidents. - Social interactions: Increased interaction between newcomers and local communities may lead to social challenges and potential conflicts. - Transport hazards: Construction vehicles can cause accidents, congested traffic, and material spillage. - Creation of new water bodies: Excavation activities may create water bodies that serve as breeding grounds for disease-carrying agents and vectors of water-borne diseases.
Demobilization	- Collection and disposal of demolition waste; - Termination of contracts / employment
Operation Phase	
Procurement of teaching and research materials, inputs and staff, Delivery of input materials, machinery and equipment	- 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
TIA Mwanza 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 changes, whether positive or negative, in the natural surroundings resulting from human activities. In the context of the construction of female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, a standardized matrix approach was used to assess potential impacts. This approach considered the effects of significant project activities on the physical environment (e.g., air quality and land) as well as the socio-economic environment of the core areas and surrounding regions influenced by the project.

6.5 Classification and significance of impacts

The identified potential environmental impacts have been classified based on the activities that cause them. The significance of these impacts was determined by considering certain criteria. The impacts were considered significant if they met the following conditions:

- Extensive over time and space
- Intensive in proportion to assimilative capacity
- Exceeding environmental standards or thresholds
- Non-compliance with environmental policies, land use plans, and sustainability strategies
- Adversely and seriously affecting ecologically sensitive areas
- Adversely and seriously affecting heritage resources, other land uses, communities, or indigenous people's traditions and values

The significance criteria are based on the assessment of the impact's magnitude, duration, exposure, probability, and consequences. A scoring or scaling system was used, and the results were represented through colour codes. Detailed descriptions of the significance criteria assigned to the various impacts of the project can be found in Table 16, Table 17, and Table 18.

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
Duration of the Impact	An indication of duration or time over which the impact will be experienced.	Permanent	Will remain permanently	5
		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 Exposure and Probability

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**
Probability of the occurrence	An assessment of the degree of certainty associated with a potential impact	Highly likely	Very likely or certain to occur		**5**
		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 6. 4 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 6. 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 6. These descriptions guide the development of mitigation measures, which are outlined in the Environmental Management Plan (EMaP) presented in Chapters 10 and 11.

		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 Colour codes for Impact Significance

Table 6. 5 Colour Code Implications

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

In the evaluation of impact significance for the construction of female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, several factors were considered. These factors include the magnitude, extent, and duration of each impact, as well as the likelihood of their occurrence. The assessment considers avoidance and minimization strategies, the use of best technologies and practices, and the specific phases of the project, such as construction, installation, and operation. To ensure a comprehensive analysis, the impacts were divided into two main categories: environmental impacts and socio-economic impacts. This approach allows 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 construction of female and male hostel buildings at TIA - Mwanza Campus, activities such as topographical surveys and soil investigations are necessary. However, these activities can lead to soil disturbances and erosion. Clearing vegetation, trampling on vegetation and the ground, and drilling for soil data can result in the loss of vegetation and disruption of land and soil. This can contribute to accelerated gully

formation and soil erosion, leading to land degradation in the project area. Mitigation measures should be implemented to minimize these impacts.

Impact 2: Disturbance to fauna species due to noise and vibration:
The presence of people, vehicles, machinery, and equipment during the feasibility and design phase can generate noise and vibrations that may disturb fauna species, particularly avifauna. These disturbances can affect the natural behaviours, breeding patterns, and well-being of the local fauna.

Impact 3: Water and land quality impairment due to improper waste management:
In the planning and design phase, waste generation is expected, including overburden materials from ground investigations and general waste from the technical teams. Improper waste management practices, such as discharging waste onto the land or into water bodies, can result in the impairment of water and land quality. The impacts can spread further in water environments and be more concentrated and localized on land. Proper waste management measures should be implemented to prevent these negative effects.

These potential environmental impacts should be carefully considered and appropriate mitigation measures should be implemented to minimize their effects during the feasibility and design phase of the project.

6.7.2 Mobilization Phase

Impact 4: Disruption of fauna due to noise emission and vibrations:
During the mobilization phase, the operation of heavy machinery, equipment, and vehicles/trucks can generate significant noise levels and vibrations. These disturbances can disrupt the natural habitats of fauna species, potentially causing displacement and affecting their behaviours and well-being.

Impact 5: Land degradation/soil erosion due to extraction of resources:
Activities such as vegetation clearance, levelling, trenching, and excavation for foundations during the mobilization phase can lead to land degradation and soil erosion. Improper management of these activities can result in the removal of vegetation cover, making the soil vulnerable to erosion by wind and water, leading to the loss of topsoil and nutrients essential for healthy vegetation growth.

Impact 6: Impairment of air quality & 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 (CO2), 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 (CO2) 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:
Improper waste management during the mobilization phase poses a risk to water and land quality. Waste generated, including solid waste, liquid waste, and waste oils, must be properly managed to prevent contamination of water resources and land. The project site's terrain and proximity to seasonal urban flows exacerbate this risk. The site's slopes and natural drainage patterns can facilitate the movement of waste materials, while urban flows during heavy rainfall can transport waste into waterways and sensitive ecological areas. To mitigate this impact, proper waste containment, disposal, and treatment measures must be implemented, adhering to local regulations and guidelines. By doing so, the project can safeguard the environment and protect water resources.

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 female and male hostel buildings at TIA - Mwanza Campus, 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 approximately 60 kilometres away, with in Mwanza region. Local suppliers extract these materials from authorized sources, although there are also unregistered sources on private properties. It is important to note that while most authorized sources adhere to local regulations, some extraction sites lack proper management practices, resulting in land degradation,

disorderly vegetation clearance, and eroded soils. Additionally, these sources are accessible to all contractors and users, further exacerbating the environmental impact.

If TIA and the contractor choose to utilize these local sources for the construction of the female and male hostel buildings at TIA - Mwanza Campus, the project is anticipated to contribute to the ongoing issue of resource depletion and degradation at the points of source. This cumulative effect raises significant environmental concerns. To address this potential impact, close consultation with environmental officers is crucial. These officers can help identify licensed sources of construction materials and provide guidance on proper procedures to safeguard the environment during extraction activities. By seeking their expertise, the project can ensure responsible sourcing, minimize the negative environmental consequences associated with material depletion and degradation, and promote sustainable construction practices.

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. (i) Decline in Grassland Cover: Grasslands, an important habitat for many species, will experience a decline in coverage, potentially impacting the ecological balance and biodiversity. (ii) 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. (iii) 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. (iv) 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. (v)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 refueling 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, stormwater runoff can become loaded with various pollutants, such as sediments, oils, and other contaminants. If not properly managed, this stormwater 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.

6.7.4 Operation Phase

Impact 14: Loss of Aesthetic Values

During the operation phase of the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, there is a potential negative impact on the aesthetic quality of the existing landscape. Depending on the project design, man-made structures such as buildings, civil infrastructure, sport facilities, fishing landing areas, interdisciplinary agricultural zones, and road networks may stand out and contrast with the surrounding environment in terms of shape, color, texture, and other visual aspects. Several factors contribute to the negative impressions and potential impacts on aesthetic values:

- Shiny surfaces and colour contrast: The presence of shiny surfaces and contrasting colours to the natural surroundings can create an artificial appearance that contrasts with the existing environment.
- Visual disruption and intrusion: The arrangement and positioning of project components, including university structures and other facilities may result in an unnatural intrusion into the landscape, causing disfigurement and visual disruption.
- Presence of logos and advertising signs: The inclusion of logos or advertising signs within the project area can detract from the natural aesthetic and create a sense of visual clutter.
- Impact on prominent landscape features: If the project components are located near prominent landscape features, such as hills or bodies of water, their presence can detract from the visual appeal of these natural elements.

The likely impacts of these factors include:

- Unnatural appearance or disfigurement: The introduction of man-made structures and contrasting elements can create an unnatural appearance within the landscape, detracting from its visual harmony.
- Degradation or reduction of visual quality: The presence of project components may partially degrade or impair the existing level of visual quality, diminishing the overall aesthetic appeal of the area.

- Complete loss of visual resources: In some cases, the development may result in the complete loss of visual resources, particularly if natural landscapes or scenic views are significantly altered or obscured.
- The potential victims of this impact include both the local community members who view the project area and drivers traveling along public access roads within the vicinity. These individuals may experience a diminished aesthetic experience and a sense of visual disruption due to the changes brought about by the project.

To mitigate this impact, it is important to consider incorporating design elements that blend harmoniously with the surrounding landscape, minimizing the visual contrast and intrusion. Proper placement of structures, sensitive signage design, and strategic landscaping can help preserve the aesthetic values of the area. Engaging with the local community and stakeholders in the design process can also ensure that their perspectives and preferences are considered, resulting in a more aesthetically pleasing and accepted project outcome.

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 construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, takes place in a predominantly flat terrain, except for a hilly location with slopes towards the west of Lake Victoria (with 10 kilometres) which can easily be reached through seasonal urban flow. This terrain configuration plays a vital role in determining the surface water drainage pattern in the surrounding area. The existing drainage pattern within the project area has ecological interconnections with the two prominent urban streams Nyang’homongo village in Misungwi.

However, the development of the TIA Mwanza campus and the construction of the associated academic building block in this area have the potential to alter the existing terrain and increase the extent of paved surfaces. As a result, there is a concern that this alteration may disrupt the natural flow of surface water in the locality.

Impact 18: Pollution from Electronic waste

The construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, will involve the operation of various electronic equipment, such as mobile phones, computers, photocopying and printing facilities, among others. As time passes, these devices will eventually become electronic waste (e-waste). It is crucial to note that improper disposal and management of e-waste can pose significant environmental risks, primarily due to the presence of heavy metals in these gadgets.

If e-waste is haphazardly discarded or not managed properly during the operation of the TIA Mwanza campus, it can release harmful substances into the environment, including heavy metals like lead, mercury, cadmium, and arsenic. These pollutants have the potential to leach into the soil and water bodies, including Lake Victoria, posing threats to the local ecosystems and potentially impacting human health. To mitigate these risks, it is essential to implement proper e-waste management practices, including recycling and safe disposal, to prevent environmental pollution and safeguard the well-being of the local community and surrounding ecosystems.

Impact 19: Degradation of local air quality and contribution to climate change

The construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, will have an impact on local air quality and contribute to climate change during the operation phase. This is primarily due to the utilization of various vehicles, machinery, and equipment on campus, which can result in interactions that affect the ambient air quality.

The emissions generated by these vehicles, machinery, and equipment are primarily caused by the combustion of fuels, releasing gaseous pollutants such as carbon monoxide (CO), carbon dioxide (CO2), and unburned hydrocarbons. The continuous use of these vehicles and equipment can contribute to air pollution, leading to the degradation of local air quality. These emissions have the potential to accumulate in the immediate surroundings, which may adversely affect the health and well-being of individuals within the vicinity.

Furthermore, the release of greenhouse gases, particularly carbon dioxide, during the combustion process adds to the overall greenhouse gas emissions. These emissions contribute to climate change, resulting in long-term implications 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 20: Contamination of water and land due to improper waste management

Similar to those under Impact10

Impact 20: Impairment of air quality & climate change

Similar to those under Impact 20

Table 6. 6 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 hostel project at Nyang'omango village, Usagara ward, and Misungwi district. They raised their concern that the project will have positive outcomes to the local community at Usagara 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 TIA Mwanza Campus 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. ESIA study will have to establish the locally valued practices, state and status of health services and common infections.

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 from other places in Misungwi district, Mwanza region and the entire Lake Victoria zone. 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 28: 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 29: Public health and Accidents

During project implementation, number of populations will increase due to attraction of employment opportunities in Nyang'homango village. 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 30: Community cultural integrity

Development of TIA Misungwi Campus 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 31: Spread and Prevalence of HIV/AIDS

The pandemic is prevalent in Misungwi district 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 32: GBV at the area

Prevalence of GBV is rarely reported in Misungwi district. However, there are cases of unintended pregnancies and unplanned children from young females in Misungwi 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 alleviate the problem completely. It was further advocated that, there should be thorough follow-up of workers during project implementation and community was advised to report cases of GBV.

6.8.3 Operation and Maintenance Phase

Impact 33: **Rapid urbanization of the area of Nyang'homango Village and Usagara ward following the increase of people (students, staff, visiting researchers, etc.)**

Once the centre opens up, population in and around the project area is going to increase following the presence of students and staff of the research centre. This will in turn lead to the increase of the purchasing power in the area and hence stimulate commercial activities among both the local population and immigrants and improve people's incomes.

Impact 34: Modification of the visual quality of local landscape features due new modern infrastructure such as buildings, recreational and sports facilities

Construction of new modern buildings contrary to the present largely low-income residential buildings is going to modify the landscape to give a sense of a new town at Nyang'homango village.

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

TIA Mwanza Campus will employ a number of staffs being hostels wardens and matrons, 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: Increased Traffic and associated road accidents in the project area

During operation phase of the project, the area will experience increased traffic to and from the campus that are bringing students, lecturers, researchers, government officials and visitors. Due to increased number of vehicles there is a potential for increased number of accidents in the area.

Impact 38: Stimulation of socio-economic activities and inducement of rapid economic growth

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 Misungwi district and Mwanza region as they will need a place to stay and foods to eat as well as other necessities. Other benefits that accrue from development of the proposed project and other direct and indirect positive effects include:

- ☞ Induced settlements in the proximity of the project area
- ☞ Induced development in other sectors particularly water, energy, transport, security, etc.

Impact 39: Community cultural integrity

The proposed TIA campus in Misungwi district 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 disrup locally valued cultural practices, spread of communicable diseases and unplanned practices.

Impact 40: Increased Knowledgeable Human Resource Base in Tanzania

Increase of the number of students who will be enrolled to join the TIA Mwanza 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

6.8.4 Decommissioning Phase

Impact 41: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment

At the end of the facility lifespan, the TIA Mwanza Campus 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 42: 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 43: 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: Loss of income and food security due to clearance of productive crops & trees	Negative
	Impact 28: Increased Traffic and road accidents from construction activities	Negative
	Impact 29: Public health and Accidents	Negative
Operation	Impact 30: Community cultural integrity	Negative
	Impact 31: Spread and Prevalence of HIV/AIDS	Negative

Project Phase	Impact	Nature
	Impact 32: GBV at the area	Negative
	Impact 33: Rapid urbanization of the area of Nyang'homango Village and Usagara ward following the increase of people (students, staff, visiting researchers, etc.)	Positive
	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: Increased Traffic and associated road accidents in the project area	Negative
	Impact 38: Stimulation of socio-economic activities and inducement of rapid economic growth	Positive
	Impact 39: Community cultural integrity	Negative or positive
	Impact 40: Increased Knowledgeable Human Resource Base in Tanzania	Positive
Decommissioning	Impact 41: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment	Negative
	Impact 42: Pollution and nuisance due to Haphazard Disposal of Waste / Abandoned Structures	Negative
	Impact 43: 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

Ensuring the health and safety of the project staff is of utmost importance during the mobilization phase of the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, and Mwanza Region. It is essential to identify and address potential risks and hazards that may affect both public health and safety and the welfare of the project staff. Specific concerns related to mobilization activities include:

- **Cuts/wounds:** Mishandling of equipment can pose a risk of cuts and wounds to the project staff. Proper training and adherence to safety protocols can help minimize the occurrence of such incidents.
- **Bites by insects or poisonous reptiles:** The project area may be inhabited by insects or poisonous reptiles such as snakes, which can pose a risk of bites. Awareness programs and appropriate preventive measures, such as wearing protective clothing and footwear, can reduce the likelihood of such incidents.

- **Burns due to direct exposure to sunlight:** Working under direct sunlight for extended periods can lead to sunburns and heat-related illnesses. Providing adequate shade, implementing regular breaks, and promoting the use of sun protection measures can help mitigate this risk.
- **Fatigue:** Overwork and long working hours can contribute to fatigue among the project staff. Managing workloads, promoting work-life balance, and ensuring sufficient rest periods can help prevent fatigue-related incidents.
- **Nuisance from vibration and noise:** The operation of equipment and machinery during the mobilization phase can generate vibrations and noise, which may cause inconvenience and discomfort to both the project workers and the public. Monitoring noise levels and implementing measures to control vibrations can minimize these nuisances and ensure a safe working environment.
- By proactively addressing these potential risks and hazards, the construction project can prioritize the health, safety, and welfare of both the project staff and the public, creating a conducive and secure environment for all stakeholders involved.

(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

During the operation phase of the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, several potential risks to environmental health and safety need to be considered. These risks include:

- **Disturbances and Nuisance:** The presence of site hazards such as open pits and excavations can pose a significant risk of accidents, particularly for vulnerable individuals such as children and the elderly. Falls into open pits can result in severe injuries and even fatalities. Proper safety measures, including adequate fencing and warning signs, should be implemented to prevent accidents and ensure the well-being of everyone on-site.
- **Human-Transmitted Diseases:** Social interactions between newcomers and local communities during the operation phase may increase the risk of human-to-human transmission of diseases, including sexually transmitted diseases (STDs) and HIV. Promoting awareness campaigns, providing access to healthcare facilities, and implementing preventive measures such as safe sex education can help mitigate these risks and protect the health of individuals involved.
- **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 harbor disease-causing pathogens and pose a significant risk to public health. It is essential to implement proper waste management practices, including the use of designated waste disposal areas and appropriate treatment methods, to prevent the spread of infections and protect the environment.
- **Water-Borne Diseases:** The expansion of the TIA - Mwanza Campus and the subsequent increase in population can present challenges related to hygiene and sanitation. Inadequate provision of toilet facilities, improper drainage systems, and a lack of effective mosquito control strategies can contribute to the spread of water-borne diseases. To mitigate these risks, it is crucial to ensure proper sanitation infrastructure, including the construction of sufficient and well-maintained toilet facilities, proper drainage systems, and regular mosquito control measures. Additionally, promoting hygiene practices and raising awareness about the importance of clean water sources can help reduce the risk of water-borne illnesses such as malaria and bilharzia.
- Through addressing these potential risks and implementing appropriate measures, the operation phase of the hostel buildings construction project can prioritize environmental health and safety, safeguard public well-being, and promote sustainable development within the Nyang'homango Village, Usagara Ward, Misungwi District, and Mwanza Region.

(c) Decommissioning

During the decommissioning phase of the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, it is important to address several environmental issues that may arise, including:

Nuisance and discomfort: The use of demolition equipment and machinery can generate excessive vibrations, fumes, and noise, causing nuisance and discomfort for both project workers and the public. It is crucial to implement measures to control and mitigate these effects, ensuring that the levels of vibrations, emissions, and noise remain within acceptable limits. This will help minimize the impact on the surrounding environment and communities.

Proper waste management: During the decommissioning phase, the disposal of demolished waste must be handled carefully to avoid negative environmental impacts. Improper disposal can lead to the impairment of water quality, posing risks to water sources. It is essential to implement proper waste management practices, including the segregation of materials, recycling where possible, and appropriate disposal of non-recyclable waste. Hazardous substances should be identified and treated or removed in accordance with regulations to prevent contamination and protect water resources.

By addressing these environmental issues during the decommissioning phase, the construction project can ensure responsible and sustainable practices, minimizing the impact on the surrounding environment and promoting the well-being of the Nyang'homango Village, Usagara Ward, Misungwi District, and Mwanza Region.

6.9.2 Emergence Preparedness and Response Plan

To address the potential risks and hazards associated with the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, the project proponent shall implement the following measures as part of its emergency preparedness and response plan:

- Personal protective gear: All personnel involved in the project will be provided with appropriate protective gear in accordance with relevant occupational health and safety guidelines. This will help ensure their safety and minimize the risks associated with the construction activities.
- Resources for camp support facilities: Adequate resources, including human and financial resources, will be allocated to operate and maintain construction camp support facilities. This includes ensuring the availability of cleaners and waste management facilities to maintain cleanliness and proper waste disposal practices.
- First aid provisions: A First Aid Kit will be provided and maintained in a readily accessible location during working hours. This will ensure that immediate medical assistance can be provided in case of any injuries or emergencies.
- Equipment maintenance: The use of equipment in good condition will be emphasized to minimize the risk of accidents and malfunctions during construction activities. Regular maintenance and inspection of equipment will be conducted to ensure their safe operation.
- Health awareness programs: The project proponent will collaborate with local public health offices to conduct awareness and education programs on communicable diseases, including sexually transmitted diseases (STDs) such as HIV/AIDS. These programs will target both workers and the local community to promote health and prevent the transmission of diseases.

- Construction camp facilities: A contractor's camp will be established during the construction phase, which will include office space, sufficient toilet facilities, and appropriate hygiene equipment and water supply. This will ensure that sanitation and hygiene standards are maintained to safeguard the health and well-being of the workers.
- First aid training: All workers involved in the project will receive comprehensive first aid training to enhance their preparedness and response capabilities during emergencies. This will enable them to provide immediate assistance and support in case of injuries or medical emergencies.
- Oil spill and equipment leakage response: 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, to mitigate the impact on the environment.

By implementing these measures, the project aims to ensure the safety, health, and well-being of the personnel involved in the construction activities and minimizes the potential risks and hazards associated with the project in Nyang'homango Village, Usagara Ward, Misungwi District, and Mwanza Region.

6.10 Analysis of project alternatives

6.10.1 No project alternative

As required in her vision, TIA made the decision to develop Mwanza Campus at Nyang'homango Village, Usagara ward, Misungwi District in Mwanza Region with the view of addressing the challenges of lack of hostels for male and female on the existing college area. The idea to establish its campus:

- Reach out as many sons and daughters of mother Tanzania as possible
- Minimize lack of accommodation facilities
- Reduce cost of the accommodation for students
- Improve education services to students
- Promote students to the Institute

Under this zero-scenario alternative, consideration was given to a case where no Male and Female hostels at Mwanza campus are put in place. This case would be feasible if all conditions for development of the proposed Hostels infrastructures 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.

6.10.2 Alternative site for the project

Before selecting location site for the TIA Mwanza Hostels, site inspection was done thoroughly to find the best location. Site selection was based on the physical suitability of the site, geotechnical / soil suitability for civil structures, accessibility and functionality of the campus

and all its units / components. After analysis of alternative site locations, the present site was found to be more suitable and fits well all criteria mentioned above.

6.10.3 Alternative access route

The proposed project site is easily accessed through existing Mwanza to Shinyanga highway about 60 km from Mwanza city. Generally, the existing access roads are in good condition and can successful be used for transportation of workers, materials, tools and equipment during project implementation phases. As such there was no consideration of alternative access route to the project site.

6.10.4 Project components related alternatives

(a) Design alternatives

Several alternative designs for hostels of the TIA Mwanza Campus 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.

(b) Technology alternatives

As highlighted in previous sections, the project considered both conventional and modern construction technologies in the development of TIA Misungwi Campus. The construction methods will involve a collection of innovative tools, machinery and software 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.

(c) Alternative Source for Construction Materials

Developing the proposed infrastructure of TIA Mwanza Campus will require construction materials. The source of construction materials has been identified within the vicinity and proximity of the project site. The selection considerations for such materials have based on their easy availability, cost effectiveness, reliability, and accessibility, environmental and social concerns.

(d) Alternative for Water Supply

The source of water supply for the project has been recommended and proposed from water utility, MWAUWASA. The utility serves water supply in Misungwi town. The water at the TIA Misungwi Campus will be used for domestic and construction purposes and others. Groundwater is another water source alternative that has been sought.

(e) 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.

(f) Alternative for 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 promote wastes minimization by the approaches of reduce, re-use and re-cycle to reduce amount of wastes to the landfill. Wastes will be properly collected, segregated, transported for safe disposal at Misungwi official solid waste crude dumping site in Misungwu District by registered service provider.

(g) Alternatives for liquid wastes management

Alternative 1: Currently, there is no sewerage system in Misungwi District.
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 enhances 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 Misungwi crude sludge dumping site in the district.

6.10.5 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 6,000,000,000 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 the context of the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, this chapter presents a comprehensive overview of mitigation measures that have been identified to address potential impacts. Through a careful assessment of their significance, we ensure that appropriate preventive, avoidance, and corrective measures are implemented. The primary objective of these mitigation measures is to minimize any adverse (negative) effects or, when necessary, to avoid or compensate for impacts that cannot be fully mitigated by the project. These measures aim to uphold environmental and social sustainability throughout the project's lifecycle.

7.1 Environmental impacts – mitigation measures

Environmental Impact mitigation measures have been presented according to the phases of the project implementation. Table 23 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, • Optimize mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible.

Phase	Impact	Mitigation / enhancement measure
		• 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 Mwanza 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 by forbidding littering of especially organic wastes i.e. garbage and fruits.
	Impact # 5 Land degradation/ Soil erosion due to extraction of resources	• 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 # 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

Phase	Impact	Mitigation / enhancement measure
		• 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 Misungwi district, Mwanza 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 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
	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: Impairment of	• Prepare and disseminate awareness materials to drivers on safe driving and handling of vehicles

Phase	Impact	Mitigation / enhancement measure
	air quality & climate change	• 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 #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
	Impact #12: 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 by forbidding littering of especially organic wastes i.e. garbage and fruits.

Phase	Impact	Mitigation / enhancement measure
	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 Misungwi district and Mwanza 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 #14: Loss of Aesthetic Values	• Paint structures uniformly with matt non-reflective and non-shiny colours; light grey colours 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 #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.
	Impact #16: Water and land quality	• Develop and implement project and site-specific waste management plan which integrate principles aiming to prevent, minimize, and control waste discharges

Phase	Impact	Mitigation / enhancement measure
	impairment due to improper waste management	• 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 Misungwi district and Mwanza 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; • 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 • 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 handlers and other staffs
	Impact #19: Degradation of local air quality and	• 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

Phase	Impact	Mitigation / enhancement measure
	contribution to climate change	• Provide for regular servicing of engines of transportation facilities to improve efficiency
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.
	Impact #21: 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 • Ensure proper collection and disposal of solid wastes at approved / official sites in Misungwi district and Mwanza 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 #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

Phase	Impact	Mitigation / enhancement measure
	Impact #23: Potential risks and hazards associated with child labour and labour conditions	• Institute and adhere to labour Management Plan

7.2 Social impacts – mitigation measures

Similar to the section 7.1, the Social Impact mitigation measures are also presented according to the phases of the project implementation. Table 24 provides the mitigation measures for the social impacts identified in chapter 6.

Table 7. 2 Mitigation measures for the Social Impacts

Phase	Impact	Mitigation/enhancement measure
Feasibility & Design	Impact 23: Economic gains	• Maximize procurement of supplies from locals e.g. food, drinks, water, construction materials, consumables, etc., • Prioritizing local markets at Misungwi and Mwanza city
	Impact 24: Community safety and cultural integrity	• Orient project workers about the valued traditional practices in Misungwi district. 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 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 Misungwi district
	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 Misungwi District Council
	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;

Phase	Impact	Mitigation/enhancement measure
		• 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 #25
	Impact 30: Spread and Prevalence of HIV/AIDS	• Awareness rising campaign
	Impact 31: GBV at the area	• Education and policy on GBV shall be provided by the management.
Operation and Maintenance Phase	Impact 32: Rapid urbanization of the area of Nyang'homango Village and Usagara ward following the increase of people (students, staff, visiting researchers, etc.)	Misungwi District Council shall: • Prepare land use plan for the areas around the project area • In collaboration with Nyang'homango 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
	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	• Misungwi DC-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

Phase	Impact	Mitigation/enhancement measure
		• Tanzania Police Force should establish a police post in or around the centre to ensure law and order
	Impact 36: Employment Opportunities	• Maximize procurement of supplies from local markets at Misungwi and Mwanza • 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: Increased Traffic and associated road accidents in the project area	• Implement mitigation measures on impact 32
	Impact 38: Stimulation of socio-economic activities and inducement of rapid economic growth	• Enhance the university operation to generate more revenues
	Impact 39: Disruption of Community cultural integrity	• District, ward and village Community development officers sensitize the local community to cautiously interact with new values and practices brought in TIA campus community.
	Impact 40: Increased Knowledgeable Human Resource Base in Tanzania	• Enhance the university operation to generate more revenues
Decommissioning	Impact 41: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment	• Implement measures under impact # 22
	Impact 42: Pollution and nuisance due to Haphazard Disposal of Waste / Abandoned Structures	• Implement mitigation measures as identified under Impact # 21
	Impact 43: 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

In the context of the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, Mwanza Region, the Environmental and Social Management Plan (ESMP) has been developed to guide the implementation of the identified mitigation and enhancement measures outlined in Chapter 7. The responsibilities for implementation are divided between TIA Main Campus and the designer/consultant, with the contractor being responsible for specific construction activities.

As the project proponent, TIA assumes overall responsibility for implementing the ESMP during the construction and operation phases, as summarized in Section 8.4. The TIA Estate Manager or Environmental Management Officers will oversee day-to-day activities, including supervision and engagement with stakeholders. The estimated costs provided for implementing the mitigation and enhancement measures are approximate and will be accurately reflected in the relevant bills of quantities. The consultant exercises professional judgment in determining these figures.

8.2 Institutional capacity and responsibilities

8.2.1 Project Proponent: TIA

The project implementation unit (PIU) for this project will be TIA headquarters with some support from TIA - Mwanza Campus, responsible for the construction of female and male hostel buildings in Nyang'homango Village, Usagara Ward, Misungwi District, assumes the role of the project proponent. 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 Chief Executive Officer (CEO) of TIA, along with key staff members including project managers, an Environmental Officer, and an Estate Manager, play crucial roles in the successful implementation of the project. The specific responsibilities of TIA - Mwanza Campus are as follows:

- Overall management of project activities throughout the planning, design, mobilization, and construction phases of the hostel buildings at TIA - Mwanza Campus.
- Overall management of project activities during the operation phase of the hostel buildings at TIA - Mwanza Campus.
- Coordination of stakeholders and project development activities at TIA - Mwanza Campus.
- Supervision and monitoring of the work conducted 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 - Mwanza Campus collaborates with the technical expertise of Misungwi District Council and other entities such as MWAUWASA and TARURA. On the other hand, and the local communities in the intended project area have the following responsibilities:

- Acting as the host/owner of the project at the Misungwi District Council.
- Coordinating project stakeholders and development activities in Nyang'homango Village, Usagara Ward, and Misungwi District.

8.2.2 Project Consultant

The project consultant, appointed for the construction of the female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District, is responsible for the design and construction supervision of the project. This entails various tasks, including conducting feasibility studies, preparing preliminary designs, conducting detailed baseline studies, and developing engineering drawings and cost estimates. During the construction phase, the project consultant assumes 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, particularly concerning 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 provide an overview of 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(s)

TIA will procure contractor(s) to carry out the construction activities in accordance with the 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 water supply and sanitation infrastructure at the dry port facilities.
- 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 the construction activities, ensuring that the built facilities comply with the 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

The Mwanza Regional Administrative Secretary and Misungwi District Council offices, as the local government authorities, have a significant role in the construction of the female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District. Various departments within these authorities, including Environmental Management, Planning, Engineering, Education, Health, Community Development, Forestry/Natural Resources, Wildlife, Land, and Agricultural Officers, will be involved in the implementation of the Environmental and Social Management Plan (ESMP). Their responsibilities include, but are not limited to:

- Defining and assisting in the issues related to land acquisition and Rights of Occupancy.
- Mobilizing and creating awareness among the local community about the project.
- Conducting environmental monitoring and audits to ensure compliance with the ESMP.

The local government authorities play a crucial role in facilitating the smooth implementation of the project by providing expertise, coordination, and oversight in various areas related to land, environment, community development, and other relevant aspects.

8.2.5 Local Leaders

The Usagara Ward Executive leaders and Nyang'homango Village local leaders play a crucial role in the construction of the female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District. Their involvement in the implementation of the Environmental and Social Management Plan (ESMP) includes, but is not limited to:

- Facilitating the transfer of land or land rights necessary for the project.
- Engaging various Mtaa leaders and committees, such as those responsible for security and environment, to ensure their participation and cooperation.
- Mobilizing the local community, providing training, and raising awareness about the project's objectives, benefits, and potential impacts.

The active engagement of the Usagara Ward Executive leaders and Nyang'homango Village local leaders is essential for the successful implementation of the project. Their collaboration helps to foster community support, ensure effective communication, and address any concerns or issues that may arise during the construction process.

8.2.6 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 the table below.

Table 8. 1 Permitting requirement for the project

Type of Permit	Permitting Authority	Remarks / Status
Environmental Clearance Certificate	NEMC	This ESIA Report after review and approval by NEMC will facilitate the attainment of environmental clearance certificate
Building Permits	LGAs (i.e. Misungwi District council)	To be processed from the Misungwi District council in Mwanza region. In addition, the project will engage licensed Consultant (registered by ERB) and Contractor(s) (registered by CRB).
Extraction of construction materials	LGAs (Misungwi District council)	Construction materials (i.e. aggregates, sand, etc.) will be sourced from licensed suppliers with required permits in Mwanza Region during mobilization and construction phases
Connections to public water supply services	MWAUWASA, Misungwi District	The project plans will acquire water supply from MWAUWASA during construction and operation phases
Connection to TANESCO services	TANESCO Misungwi District/region	For the energy needs, the project will be connected to TANESCO
Solid and liquid waste disposal	LGAs (Misungwi District)	To be liaised with Misungwi District during construction and operation phases

8.3 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.

Table 25 presents the Environmental and Social Management Plan (ESMP) for the development of the proposed TIA Mwanza Campus, divided into two parts:

a) Environmental management plan
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.

Table 8. 2 Environmental and Social Management Plan for the proposed TIA Mwanza 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 quality	• Minimize excavations works during feasibility and design phase; • Provide for free to the local communities all recyclable/usable materials (i.e. plastic containers, etc.)	TIA	1,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
	impairment due to improper waste management	• Provide for proper solid waste containment facilities and ensure proper use • Ensure proper collection and disposal of solid wastes at approved / official sites in Mwanza 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	2,000,000/=
	Impact # 5 Land degradation/ Soil erosion due to extraction of resources	• 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
	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 Misungwi district, Mwanza region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets	TIA	5,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
		• 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 gases, noise and vibrations)	• 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	TIA	95,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
	& 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 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 the mobilization activities by keeping trucks, vehicles and equipment movements to a minimum extent possible.	TIA	3,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
		• 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 Misungwi district and Mwanza region • Treat contaminated land occurred by direct removal and safe disposal • Waste oils, hydrocarbons and chemicals managed in accordance with Materials Safety Data Sheets	TIA	2,500,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
		• 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 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	5,000,000/=

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 Misungwi district and Mwanza 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 • Provide for regular maintenance of the drainage infrastructure by de-silting and clearing debris	TIA	5,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
		• 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	5,000,000/=
	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	10,000,000/=
	Impact #21: 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;	TIA	5,000,000/=

Phase	Impact	Mitigation / Enhancement Measure	Responsibility	Cost Estimate In Tzs
		• 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 Misungwi district and Mwanza 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 TSHS.
Feasibility & Design	Impact 23: Economic gains	• Maximize procurement of supplies from locals e.g. food, drinks, water, construction materials, consumables, etc., • Prioritizing local markets at Mwanza region.	TIA	Management measures
	Impact 24: Community safety hazards and disruption of cultural integrity	• Orient project workers about the valued traditional practices in Misungwi 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 Mwanza 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 Misungwi district Council	TIA	BOQ
	Impact 27: Increased Traffic and road	• Establish speed restraining humps, signs and symbols at all potential black spots on the access roads;	TIA	8,000,000/= for signs, symbols, temporary walk

PHASE	IMPACT	MITIGATION/ENHANCEMENT MEASURE	RESPOSNIBILITY	COST ESTIMATE IN TSHS.
	accidents from construction activities	• 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		ways, capacity building, etc.
	Impact 28: Community cultural integrity	• Implement mitigation measures on impact #25	TIA	5,000,000/=
Operation and Maintenance Phase	Impact 29: Rapid urbanization of the area of Nyang'homango Village and Usagara ward following the increase of people (students, staff, visiting researchers, etc.)	Misungwi district Council shall: • Prepare land use plan for the areas around the project area • In collaboration with Nyang'homango village government guide community members to realize business opportunities availed by the center • 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 TSHS.
	Impact 30: 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 31: Disruption of local values moral standards following the presence of people from other parts of Tanzania	• Misungwi DC-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 32: Employment Opportunities	• Maximize procurement of supplies from local markets in Mwanza 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;	TIA	They are all management aspects

PHASE	IMPACT	MITIGATION/ENHANCEMENT MEASURE	RESPOSNIBILITY	COST ESTIMATE IN TSHS.
		• Provide awareness and education to project staff, and communities around on regular basis		
	Impact 33: Increased Traffic and associated road accidents in the project area	• Implement mitigation measures on impact 31	TIA	8,500,000/=
	Impact 34: Stimulation of socio-economic activities and inducement of rapid economic growth	• Enhance the university operation to generate more revenues	TIA	Management measures
	Impact 35: Community cultural integrity	• Sensitize the local community to cautiously interact with new values and practices.	TIA	1,500,000/=
	Impact 36: Increased Knowledgeable Human Resource Base in Tanzania	• Enhance the university operation to generate more revenues	TIA	Management measures
Decommissioning	Impact 37: Noise and Air Pollution nuisance from Dust and smoke from demolition equipment	• Implement measures under impact # 22	TIA	5,000,000/=
	Impact 38: Pollution and nuisance due to	• Implement mitigation measures as identified under Impact # 21	TIA	

PHASE	IMPACT	MITIGATION/ENHANCEMENT MEASURE	RESPOSNIBILITY	COST ESTIMATE IN TSHS.
	Haphazard Disposal of Waste / Abandoned Structures			
	Impact 39: 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	TIA	Management aspect

Therefore, the estimated total cost for implementing the Environmental and Social Management Plan (ESMaP) for the construction of the female and male hostel buildings at TIA - Mwanza Campus in Nyang'homango Village, Usagara Ward, Misungwi District is TZS 206,000,000/= for the entire project implementation cycle. It is important to note that these cost estimates for implementing the mitigation and enhancement measures are provided as indicators and are subject to potential changes. The actual costs will be determined and accurately reflected in the appropriate bills of quantities, considering all relevant factors and considerations. The consultant will exercise informed judgment to determine these figures, ensuring their accuracy and alignment with the project's requirements.

CHAPTER NINE

ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Introduction

The Environmental and Social Monitoring Plan (ESMoP) for the construction of female and male hostel buildings at TIA - Mwanza Campus, located in Nyang'homango Village, Usagara Ward, Misungwi District, is a systematic and continuous process that aims to observe and assess environmental and social changes associated with the project. The ESMoP ensures that mitigation measures are implemented in accordance with relevant regulations and standards. It is designed based on monitoring indicators that will be compared against established targets to evaluate the effectiveness of the mitigation plans. The ESMoP also includes a comparison of baseline data with targets and the post-construction situation. This chapter provides a comprehensive overview of the ESMoP specifically developed for the construction of the female and male hostel buildings at TIA - Mwanza Campus.

9.2 Environmental Monitoring Plan

For the construction of the female and male hostel buildings at TIA - Mwanza Campus, an Environmental Monitoring Plan (EMoP) is a crucial component of the project. TIA is committed to implementing a comprehensive and effective monitoring program to ensure environmental compliance and the successful execution of mitigation measures. The EMoP is designed to achieve specific objectives, such as verifying the proper implementation of proposed mitigation measures described in earlier sections of this report and making any necessary adjustments to accommodate changes. The plan includes the design of monitoring activities, setting targets, and assigning responsibilities to ensure the project's environmental performance is regularly monitored and evaluated.

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.
Table 26 presents the (a) Environmental Monitoring Plan and (b) Social Monitoring Plans

Table 9. 1 Environmental and Social Monitoring Plan for the proposed development of TIA Mwanza Campus Male and Female Hostels

9.1.1 Environmental Monitoring Plan

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
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 • Misungwi DEMO • Contractor	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 (Control of Noise and Vibration) Regulations of 2011 70dB during daytime; 60dB during night	• Consultant • TIA • Misungwi DEMO	1,000,000/=
Impact # 3: Water and land quality impairment due to improper waste management	Waste handling practices (collection, storage, transportation,	Continuous during design phase	Within project site and surrounding areas	None	Zero or as minimum as possible Tanzania "Solid Waste	• Consultant • TIA • Misungwi DEMO	2,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
	treatment and disposal mean)				Regulations of 2009" 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	• Consultant • TIA • Misungwi DEMO	2,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
					Environmental Management (Control of Noise and Vibration) Regulations of 2011 70dB during daytime; 60dB during night		
Impact # 5: Land degradation/ Soil erosion due to extraction of resources	Soil erosion tendencies	Twice during mobilization	Project site premises	Ha	As minimum as possible	• Consultant • TIA • Misungwi DEMO	3,000,000/=
Impact # 6: Impairment of air quality & climate change	• CO, CO2, NOx, PM, SOx, 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	• Consultant • TIA • Misungwi DEMO	2,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
					• NOx≤1.1g/kWh • PM ≤0.612g/kWh • HC≤8.0g/kWh • Smoke≤0.15 g/m		
Impact # 7: 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" • Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• Consultant • TIA • Misungwi DEMO	5,000,000/=
Construction Phase							

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
Impact # 8: Land disturbances / soil erosion	Soil erosion tendencies	Monthly during construction phase	Project premises	Ha	As minimum as possible	• Consultant • TIA • Misungwi DEMO	2,000,000/=
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 • Misungwi DEMO	Part of operational cost
Impact # 10: Impairment of air quality & climate change	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Quarterly during construction phase	Materials transportation routes Infrastructure sites within 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 • Misungwi DEMO	95,000,000/=
Impact # 11: Reduced vegetation cover and	• Soil erosion tendency	Continuous during	Construction sites within project premises	Complaints	As minimum as possible	• TIA • Misungwi DEMO	Part of Operation cost

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
abundance of some valuable plants	• Level of deforestation • Physical observation of the monitored plants and frequently vegetation plantation	construction phase					
Impact # 12: Disturbance and temporary flight of fauna species	Noise levels	Continuous during construction phase	Materials extraction area and material transportation routes Construction sites at project premises	Complaints from affected community groups dB(A)	Environmental Management (Control of Noise and Vibration) Regulations of 2014: 45dB during daytime; 35dB during night	• Consultant • TIA • Misungwi DEMO	1,000,000/=
Impact # 13: Water and land quality impairment due to improper waste management	Waste handling practices (collection, storage,	Continuous during construction phase	Construction sites within project premises	None	Tanzania "Solid Waste Regulations of 2009"	• Consultant • TIA • Misungwi DEMO	2,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
	transportation, treatment and disposal means)				Tanzania "EMA (Water Quality Standards) Regulations of 2007"		
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 • Misungwi DEMO	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 at project premises	Complaints from affected community groups dB(A)	Environmental Management (Control of Noise and Vibration) Regulations of 2011 70dB during daytime;	• TIA • Misungwi DEMO	2,500,000/= per year

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
					60dB during night		
Impact # 16: Water and land quality impairment due to improper waste management	Waste handling practices (collection, storage, transportation, treatment and disposal means)	Continuous during operation phase	Mwanza TIA Campus	None	Tanzania "Solid Waste Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• TIA • Misungwi DEMO	5,000,000/= per year
Impact # 17: Disruption of surface water flow regime	Storm water runoff	During rainy season	Mwanza TIA Campus and surrounding areas	None	As minimum as possible	• TIA • Misungwi DEMO	2,500,000 /= per year
Impact # 18: Pollution from Electronic waste	Type and legal recognition of service providers involved to collect E-waste	Quarterly	Procurements, records and operational reports	None	None	• TIA • Misungwi DEMO	None

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
	Source, type and amount of E waste collected						
Impact # 19: Degradation of local air quality and contribution to climate change	CO, CO_2, NO_x, PM, SO_x, VOC and Smoke	Annually	Mwanza 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 • Misungwi DEMO	4,000,000/=
Decommissioning Phase							
Impact # 20: Land disturbances / soil erosion	Soil erosion tendencies	Continuous during decommissioning phase	Mwanza TIA Campus	Ha	As minimum as possible	• TIA • Misungwi DEMO	3,000,000/=
Impact # 21: Contamination of water	Waste handling practices	Continuous during	Mwanza TIA Campus	None	Tanzania "Solid Waste	• TIA	3,000,000/=

Impact	Monitoring Parameter	Monitoring Frequency	Monitoring Area	Measurement Unit	Standard / Norm/ Specifications	Responsibility	Cost Estimate (Tzs)
and land due to improper waste management	(collection, storage, transportation, treatment and disposal mean)	decommissioning phase			Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• Misungwi DEMO	
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 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 • Misungwi DEMO	2,000,000/=

9.1.2 Social Monitoring Plan

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs
Site Selection Phase							
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	Nyang'homango Village and Usagara	Records from Ward and Village offices	No or minimum complaints	• WEO and VEO • Misungwi DC	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 VEO • Misungwi DC	Covered in 26 above
Impact#26: Employment opportunities and income	Number of people employed by the scheme	Once every month during construction	Construction site	Number of people	None (as many as possible)	• TIA • Contractor	3,000,000/=
Impact #27: Loss of income and food security due to clearance of productive crops & trees	Number and acreage of farms lost to the scheme	Once before construction begins	Project site	Acres	None (as minimum as possible)	• TIA • Misungwi DC Community Development Officer	2,000,000/=
Impact #28: Increased Traffic and road accidents from construction activities	Tendencies of injuries and accidents	Monthly	Materials extraction and transportation routes	Records / Numbers / Complaints	No or minimum traffic accident	• Contractors • Consultant • TIA	Part of institutional costs and

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs
			Construction sites				service contracts
Impact #29: Community cultural integrity	Evidence of locally unacceptable behaviour	Monthly	Nyang'homango Village and Usagara	Records from Ward and Village offices	No or minimum complaints	• WEO and VEO Misungwi DC	None
Operation Phase							
Impact #30: Rapid urbanization of the area of Nyang'homango Village and Usagara ward following the increase of people (students, staff, visiting researchers, etc.)	Population of Misungwi District	Annually	NBS Reports	Number of people	None	Misungwi DC	None
Impact#31: Modification of the visual quality of local landscape features due new modern infrastructure such as buildings, recreational and sports facilities	Emerging social complains	Continuous during operation phase	Core project area and surrounding villages	Number of complains	Zero or as minimum as possible	• TIA • Misungwi Community Development Officer	4,000,000/= per year
Impact #32: Disruption of local values moral standards following the presence of people from other parts of Tanzania	Evidence of locally unacceptable behaviour	Monthly	Nyang'homango Village and Usagara Ward	Records from Ward and Village offices	No or minimum complaints	• WEO and VEO Misungwi DC	None
Impact 33: Employment Opportunities	Number of people employed by the TIA	Quarterly	Human Resource	Number of people	None (as many as possible)	• TIA	Part of university

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs
	Mwanza Campus		Management Reports				operation costs
Impact #34: Increased Traffic and associated road accidents in the project area	Tendencies of injuries and accidents	Quarterly	TIA Mwanza Campus and its surroundings	Records / Numbers / Complaints	No or minimum traffic accident	• TIA • Misungwi DC	Part of Institute operation costs
Impact #35: Stimulation of socio-economic activities and inducement of rapid economic growth	Per capita income	Once every year	Nyang'homango Village and Usagara Ward around the project	TZS per person	National average	• TIA • Misungwi DC	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 • Misungwi DC	Part of Institute operation costs
Impact #37: Increased Knowledgeable Human Resource Base in Tanzania	Students enrolment	Annually	Admission Reports	Number of people	As many as possible	• TIA	Part of Institute 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	Concentrations Complaints from affected	Tanzania "EMA (Air Quality Standards) Regulations of 2007" CO≤4.5g/kWh	• TIA • Misungwi DC DEO	Covered above

Potential Impact	Parameter to be monitored	Monitoring frequency	Monitoring areas	Measurement units	Target level or standard	Responsible party	Estimated costs
			project premises	community groups	$NO_x \leq 1.1$g/kWh PM ≤0.612g/kWh HC≤8.0g/kWh Smoke≤0.15g/m		
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	Mwanza TIA Campus	None	Tanzania "Solid Waste Regulations of 2009" Tanzania "EMA (Water Quality Standards) Regulations of 2007"	• TIA • Misungwi DC	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 Tanzania labour Laws	• TIA Misungwi DC	3,000,000/=

The estimated total cost for implementing the Environmental and Social Monitoring Plan (ESMoP) for the construction of the female and male hostel buildings at TIA - Mwanza Campus is TZS 155,000,000/= during the development phase. Additionally, the cost for implementing the ESMoP during the operation and maintenance phase is TZS 19,000,000/= per year. It is important to note that these cost estimates are subject to change and should be considered as indicators. 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.

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 Mwanza 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 Mwanza 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 Nyang'homango 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, MWAUWASA, 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 Mwanza 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 Mwanza campus and the surrounding community which include improving the university's image.

10.2.2 Benefit to the neighbourhood

The proposed construction of TIA Mwanza 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 Mwanza 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 Misungwi District Council in particular Usagara ward, Nyang'homango 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 Mwanza 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 Mwanza Campus is estimated at TZS 6,000,000,000 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 Mwanza 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 back propping 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 storm water 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 decommissioning 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 decommissioning

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 male and female hostel buildings. TIA Mwanza Campus' TIA aim to construct its own building for the Mwanza Campus in order to minimize costs related to renting the buildings and to improve the overall quality and reach more students in the region at large. HEET project has set a fund to construct new TIA hostels buildings at the new plot owned by TIA in Nyang'homango area at Misungwi district. Implementation of this project will improve the accommodation services offered by TIA to its students and will also trigger more students joining the institute.

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 ESIA study.

This ESIA 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 ESIA study should be conducted. The study has been undertaken based on checklists supported by expert judgment of consultant professional and through consultation with Proponent (MoEST), relevant government authorities' local government officials in the vicinity of the project site. The ESIA 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 have 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

The 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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APPENDICES

Appendix 1: Certificate of Occupancy

Land Form No. 22

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs: 500/= Paid
Receipt No: 922214119381731
of: 05. 08. 2022
Stamp Duty Officer

TANGANYIKA STAMP DUTY ACT
Stamp Duty Shs: 83,200/= Paid
On Original Receipt Shs: 922214119381731
of: 05. 08. 2022
Stamp Duty Officer

THE UNITED REPUBLIC OF TANZANIA

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

CERTIFICATE OF OCCUPANCY

(Under Section 29)

Title No. 102506 'R' Mwanza
L.O. No. **682808.**
L.D. No. **MSG/7418.**

The 30th day of August Two thousand and Twenty Two.

THIS IS TO CERTIFY that **TANZANIA INSTITUTE OF ACCOUNTANCY** P.O. Box 9522, **DAR-ES-SALAAM** (hereinafter called "the Occupier") **is** entitled to the Right of Occupancy (hereinafter called "the Right") in and over the land described in the Schedule hereto (hereinafter called "the Land") for a term of **Ninety Nine (99)** years from the first day of **July, Two Thousand and Two** 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 there for or amendment thereof and to the following special conditions:-

1. The Occupier having paid rent up to the thirtieth day of June, **2023,** shall hereafter pay rent of shillings **Eight Hundred Thirty Two Thousand (832,000/=) 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 Occupier's 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) Building to be in permanent materials.

(iv) Submit building plans to the **Misungwi District Council** within six months from the date of the commencement of the Right.

(v) Building construction to begin within six months after approval of plans.

3. **USER:** The land and the buildings to be erected thereon shall be used for **Education purpose only.** Use Group **"K"** Use Class **(d)** as defined in the Town and Country Planning (Use Groups and Use Classes) Regulations of 2018.

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 all premia, taxes and dues prescribed in connection with the disposition.

6. The President may revoke the right for good cause or in public interest.

SCHEDULE

ALL that Land known as Plots No. **522** Block **'E'** situated at **Nyanghomango** in **Misungwi District** containing **Two decimal point Six Zero (2.60) Hectares** shown for identification only edged **red** on the plan attached to this Certificate and defined on the registered Survey Plan Numbered **160443** 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.

ASSISTANT COMMISSIONER FOR LANDS

The within named **TANZANIA INSTITUTE OF ACCOUNTANCY 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)
and **DELIVERED**)
in our presence of us this 18 day of August 2022.)

Name WILLIAM A. PALLANGYO)
Signature: .....)
Postal Address: P. O. BOX 9522 DSM)
Qualification: CHIEF EXECUTIVE OFFICER)

Name SAID B. M. MATUNGA)
Signature: .....)
Postal Address: P. O. BOX 9522 DSM)
Qualification: PRINCIPAL LEGAL OFFICER)

MISUNGWI DISTRICT

INSET SHOWING DETAILS OF THE PLOT

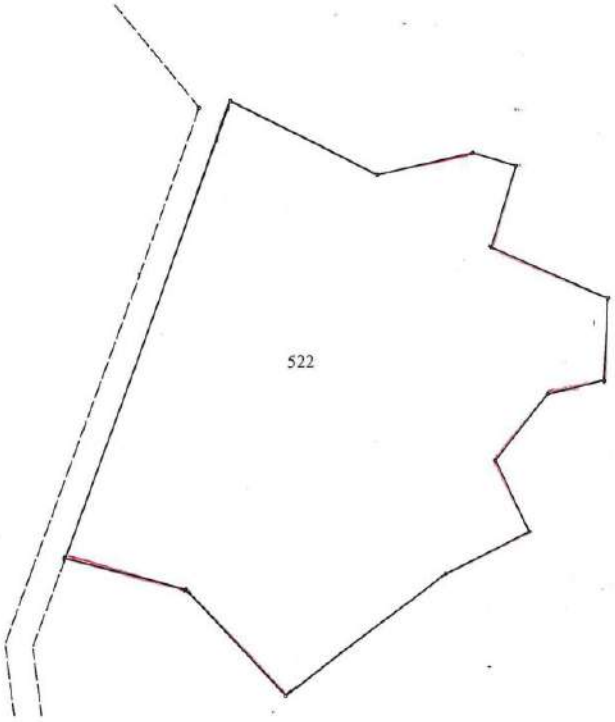
LOCATION: NYANGHOMANGO

BLOCK NO: E

PLOT NO: 522

L.O.NO: 682808

AREA: 2.60 Ha



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

This plan prepared in accordance with Registered Plan No. 160443 is approved for the purpose of the Land Registration Ordinance.

.....

For Director of Surveys and Mapping.

Date 21/07/2022

Ministry of Lands and Human Settlements Development Dar es Salaam.