ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED CONSTRUCTION OF KIHBT NGONG KIBIKO CAMPUS TUITION BLOCK, KAJIADO COUNTY

COMPREHENSIVE PROJECT REPORT

AT PDP REF NO. 164.2021.01 KIBIKO, KAJIADO COUNTY

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LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	-	African Development Bank
BCG	-	Burial Ground & Graves
CoK	-	Constitution of Kenya
CAR	-	Contractors All Risk Insurance
CCTV	-	Closed Circuit Television
CESMMP	-	Contractor's Environmental and Social Management & Monitoring Plan
CFP	-	Chance Find Procedures
CIDP	-	County Integrated Development Plan
CSR	-	Corporate Social Responsibility
EASTRIP	-	East Africa Skills for Transformation & Regional Integration
EIA & EA	-	Environmental Impact Assessment & Environmental Audit
EHS	-	Environmental, Health and Safety
EMCA	-	Environmental and Management and Coordination Act
EOC	-	Emergency Operations Coordinator
ERP	-	Emergency Response Plan
ESMMP	-	Environmental and Social Management &Monitoring Plan
ESIA	-	Environmental and Social Impact Assessment
GBV	-	Gender Based Violence
GHG	-	Green House Gas
GMP	-	Gender Management Plan
GRC	-	Grievance Resolution Committee
GRM	-	Grievance Resolution Mechanism
GoK	-	Government of the Republic of Kenya
HIV/AIDS	-	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IFC	-	International Finance Corporation
ICPAC	-	IGAD Climate Prediction and Applications Centre (ICPAC)
ILO	-	International Labour Organization
IAP	-	Interested and Affected Parties
ICR	-	Implementation Completion Report
ICT	-	Information Finance Corporation
ISR	-	Implementation Supervision Report
JICA	-	Japan International Cooperation Agency
KNQF	-	Kenya National Qualification Framework
KEBS	-	Kenya Bureau of Standards
KeNHA	-	Kenya National Highways Authority
KERRA	-	Kenya Rural Roads Authority
KIHBT	-	Kenya Institute of Highway & Building Technology
KURA	-	Kenya Urban Roads Authority
KVA	-	Kilo Volt Ampere
LR	-	Land Reference
LVSR	-	Low volume seal roads course

MMP	-	Materials Management Plan
MSDS	-	Material Safety Data Sheet
NCA	-	National Construction Authority
NDT	-	Non Destructive Testing
NEMA	-	National Environment Management Authority
NMT	-	Non Motorised Transport
NP	-	National Polytechnics
OHS	-	Occupational Health and Safety
OP	-	Operational Policy
OSHA	-	Occupational Safety and Health Act
OSSF	-	Onsite Sewage Facility
PCR	-	Physical Cultural Resources
PIR	-	Presence Infra Red
PPE	-	Personal Protection Equipment
PABX	-	Private Automated Branch Exchange
RFTI	-	Regional Flagship TVET Institutes
RI	-	Resident Instructor
SDG	-	Sustainable Development Goal
SGR	-	Standard Gauge Railway
STI	-	Sexually Transmitted Infections
TOR	-	Terms of Reference
TVC	-	Technical and Vocational Colleges
TVET	-	Technical & Vocational Education & Training
TVETA	-	Technical and vocational Education and Training Authority
TTI	-	Technical Training Institutes
VAT	-	Value Added Tax
VTC	-	Vocational Training Centres
WIBA	-	Work Injury Benefits Act
WSP	-	Water Service Providers

EXECUTIVE SUMMARY

Kenya Institute of Highways and Building Technology (KIHBT) is the training division of the State Department for Roads in the Ministry of Roads and Transport. In addition, KIHBT is a TVET registered institution, and it derives its mandate from Executive Order No. 1 of 2022. KIHBT operates from three campuses located in Nairobi, Ngong – Kajiado County and Kisii. It specializes in equipping staff from the National Government, County Governments and the private sector with skills that are aimed at enhancing their performance in the infrastructure sector. Moreover, KIHBT trains fresh secondary school graduates at craft and technician levels.

KIHBT is one of sixteen institutions in Kenya, Ethiopia and Tanzania that was competitively selected to be a beneficiary of the East Africa Skills for Transformation and Regional Integration Project (EASTRIP). EASTRIP is a regional skills initiative which the World Bank in partnership with the three East African countries is implementing. The Project's development objectives are to increase the access to and improve the quality of Technical and Vocational Education and Training (TVET) programs in the selected Regional Flagship TVET Institutes (RFTIs), and to boost regional integration. Under EASTRIP, KIHBT is being upgraded into a Regional Flagship TVET Institute (RFTI) and Centre of Excellence in Highway Technology. The Project's development objectives are to increase the access to and improve the quality of Technical and Vocational Education and Training (TVET) programs in the selected Regional Flagship TVET Institutes (RFTIs) such as KIHBT Ngong campus. The overall objective of the Proposed KIHBT Ngong Kibiko Campus Tuition Block is to increase the access to and improve the quality of training infrastructure, facilities, and equipment at KIHBT.

The purpose of this Environmental and Social Impact Assessment (ESIA) report is to assess the environmental and social impacts related to the construction, operation and decommissioning of the proposed facilities and propose how to minimise the anticipated negative environment, social and ecological impacts.

The report covers the following topics: ESIA methodology; background information of the proposed project; description of the proposed project, components, schedules and justification; baseline information of the project area; policy and legal framework; public consultation and participation; assessment of identified environmental and socio-economic impacts and their mitigation measures; project alternatives and analysis; and environmental and social management and monitoring plan; and the project's emergency response plan.

Project Location

The Proposed Tuition Block is to be built within the KIHBT Kibiko Ngong Campus which is in Kibiko location, Kajiado West Sub-County, Kajiado County. The proposed project is to be located on PDP NO.NRB.164.2021.01 (see Appendix A3). The land is owned by the Government of Kenya. The Proposed Tuition Block site is located on latitude 1^{0}20'16.15776" N and longitude 36^{0}38'38.3766" E. The proposed site of the tuition block and related facilities covers an area of 7,982.676sm, which is approximately 1.97 acres (see figures 3-4). The building covers a total plinth area of 3,900sm (three floors included).

Currently, the immediate neighbourhood of the proposed site is operational and occupied by KIHBT staff and students. Within the campus there is the following: an administration block, which is a prefabricated structure, a double-storey workshop with offices, a single-storey block of classrooms, single storey library, dining hall with kitchen, student hostels, staff quarters which are prefabricated structures, sports fields, Plant Operator Course practice field, and a borehole with water tower (see figure 1). The SGR tunnel also crosses the southern part of this campus.

Project Components

The proposed development is designed to accommodate the following spaces in a three (3) storey building; entry court, lobby, highways lab (1 No), concrete lab (1 No), soils lab (1 No), classrooms (6 No), offices, lactation room, kitchenette, washrooms (staff and students), meeting hall, roof terrace with a hall, car park, students' passive recreational park, and external works i.e. car park, pavement and walkways. Furthermore, service installations will consist of; electrical, and mechanical works.

Project Cost

It is estimated that the total project cost is approximately **KSHS 180,000,000.00**

ESIA Methodology

A team of experts was engaged to carry out the ESIA study. The study approach comprised of desk study to obtain background biophysical information of the site, legal and associated regulatory issues and the terms of reference; field data collection through observation within the locality of the project site to establish the baseline site conditions and administration of questionnaires to collect public views about the project from KIHBT staff and students, the local community, and other stakeholders.

Policy and Legal Framework

The ESIA report was prepared in consideration of the Constitution of Kenya, 2010 and various policy documents, acts of parliament and regulations. Policy documents considered include: Reforming Education, Training & Research for Sustainable Development, 2019; Technical Education & Vocational Training (TVET) 2014. Acts of parliament considered include; Technical Education & Vocational Training Act 2013; Environmental Management and Co-ordination Act, 1999 amended 2015, Children's Act 2012; County Governments Act 2012; Urban Areas and Cities Act, 2011; Land Registration Act, 2012; Physical & Land Use Planning Act 2019; Public Health Act 2012; HIV Prevention & Control Act 2006; OSHA Act, 2007; Work Injury Benefits Act, 2007; The Water Act, 2016; The Energy Act 2019; Sustainable Waste Management Act, 2022; and the National Construction Authority Act, 2011. Regulations considered include: TVET Standard-Governance & Management of VTCs & TVCs 2019; Environmental Impact Assessment & Audit regulation, 2003; Noise and excessive vibrations regulations 2009; Air Quality Regulations 2014; Water Quality Regulations 2006; and Planning and Building Regulations, 2009. World Bank environmental and social safeguard policies.

Environment Assessment Category & World Bank Safeguard Policies

This ESIA report has been developed with reference to the World Bank environmental and social safeguard policies. It is a requirement of World Bank funded projects that an environmental assessment is carried out as indicated in OP/BP 4.01 – Environmental Assessment. This project is assigned category B as exhibited by the project's type, location, sensitivity, scale of works and the nature and magnitude of its environmental and socio-economic impacts.

Public Participation, Consultations and Analysis

Public consultation for the Proposed KIHBT Ngong Campus Tuition Block was conducted to capture project stakeholders' concerns regarding the project. The exercise was carried out through issuance of questionnaires (between 6/06/2023 and 08/06/2023) and participation in a stakeholders' consultative meeting held at KIHBT Ngong campus on Thursday 8th June 2023. The targeted stakeholders included members of the public i.e. surrounding business community; teachers; religious leaders, farmers and other tradespersons; neighbouring institutions such IGAD Climate Prediction and Applications Centre (ICPAC); key informants such as Kajiado County government officers, national government officers, local political leaders, KIHBT staff, KIHBT students and their leaders. The stakeholder consultative meetings and completed questionnaires provided views, opinions, and suggestions on the most appropriate considerations on the construction and use of the Proposed Tuition Block.

Key social issues raised by the stakeholders included: interference with KIHBT daily operations and activities; criteria for employing skilled and casual labourers; criteria for prequalifying suppliers of consumables and non-consumables; social vices such as prostitution resulting in STIs and HIV/AIDS, alcoholism and drug abuse; social conflicts arising due to favouritism, corruption during employment of casual labourers at the construction site; traffic challenges arising from movement of heavy construction machinery as well as vehicles transporting construction materials; loss of/ interference to existing infrastructure such as roads, water pipes, telecommunication lines/ cables during excavation; increased number of accidents and injuries; increased fire risk; increased insecurity due to an increased population of people at KIHBT Ngong campus.

From the public participation the following environmental issues were anticipated to occur during the construction and operation phases: clearing of vegetation to create room for construction works; noise pollution and vibrations caused by heavy construction machinery; soil pollution from oil spillage from machinery; air pollution from exhaust fumes, dust covering surrounding buildings, and vegetation which may cause respiratory infections; increased solid waste generation caused by littering and construction material wastes; increased surface runoff and interruption to water supply.

Predicted Environmental and Social Impacts

The following are the anticipated positive and negative social and environmental impacts:

Positive Social Impacts

The proposed project will: improve quality of technical and vocational education and training in the community, nationally and regionally; enhance access to TVET programmes in highway and other infrastructure technology; increase in general enrolment of students into short- and long-term roads/highways/ other infrastructure courses; upgrade training infrastructure such as classrooms and laboratories; enhance required technical infrastructural skills in the community, nation and region at large; improve livelihoods thereby reducing community poverty; reduce the gender gap in enrolment and completion rates; increase capacity for gender friendly and responsive environments; engage the youth to reduce idleness or involvement in social vices; improve security within and around the campus; enable KIHBT operate in a safe and secure environment; hiring of skilled, semi-skilled and unskilled labour from the community; improve on the campus and community's first aid and fire management skills due sensitization workshops that will be done during the project implementation.

Positive Economic Impacts

The proposed project will: create employment opportunities; create business opportunities and growth; enhance local economic growth owing to increase in profit margins for local business ventures; increased revenue collection by government agencies/ county government.

Positive Environmental Impacts

The proposed project will: enhance visual scenery at KIHBT Ngong campus once landscaping is complete; enhance solid waste and wastewater management; enhance storm water management system by directing storm water to drainage channels; and promote environmental safety, conservation, and preservation at the KIHBT Ngong campus.

Negative Social Impacts

The project is anticipated to have the following negative social impacts: interruption to KIHBT Ngong campus activities/operations; increased social vices such as alcohol and drug abuse; increased sexual activity promoting transmission of STIs, HIV/AIDS; increased social conflicts; traffic congestion on Forest line road and within KIHBT Ngong campus due to ongoing construction works; disruption of existing infrastructure e.g. water and sewage pipes, paved areas, telecommunication cables/ lines during excavation; increased number of accidents and injuries during construction; increased insecurity and crime; increased fire risks; limited hostel accommodation; inadequate staff numbers; and interruption of water supply due to increased water demand.

Negative Economic Impacts

The project is anticipated to have the following negative economic impacts: perception by the community of bias and favouritism during shortlisting of workers and prequalification of suppliers; and loss of employment for construction workers once the construction phase is complete.

Negative Environmental Impacts

The project is anticipated to have the following negative environmental impacts: environmental pollution; dust, air pollution, fumes, spills; noise and excessive vibrations from construction works and heavy construction machinery; clearing of vegetation to create room for construction/ loss of natural habitats; increased solid waste production; and increased surface runoff.

Project Alternatives

This involved the assessment of the comparative importance of the different impacts associated with each of the alternatives. This comparison was done in a qualitative manner although importance of cited impacts had been quantified earlier by use of percentages. This ESIA achieved a selection of the environmentally and socially preferred alternative, which is construction of the Proposed KIHBT Ngong Campus Tuition Block.

Environmental Social Management and Monitoring Plan (ESMMP)

This report recommends several mitigation measures for the predicted negative impacts. Environmental and social monitoring is a requirement of development projects to check that planned mitigation measures have been implemented and to provide early warning of any adverse changes. The key objective of the ESMMP is to: assess the state of the environment; socio-economic, safety and health conditions prior to, during and after the project's implementation; precisely define environmental, social, safety and health issues most relevant to the project; define reporting and assessment procedures of collected data; and give guidelines for assessing the effectiveness of the proposed mitigation measures. The total estimated ESMMP budget for the construction, operation and decommissioning phases is KShs 3.34 million where Construction phase is KShs 1.47 million, operation phase is KShs 1.34 million and Decommissioning phase is KShs 530,000.00.

1. INTRODUCTION

1.1. Background Information

Kenya Institute of Highways and Building Technology (KIHBT) is the training Division of the State Department for Roads in the Ministry of Roads and Transport. In addition, KIHBT is a TVET registered institution, and it derives its mandate from Executive Order No. 1 of 2022. The history of KIHBT can be traced back to 1955, when it was established as Road Authority Training School to carry out training for African supervisors, plant operators and mechanics. In 1963, it was named Ministry of Works Staff Training Division (STD). Its key function was imparting skills to the indigenous workers of the Ministry. In 1969, Staff Training Division (STD) transformed to Kenya Highways Training Centre. In the year 1972, Kenya Highways Training Centre was opened to pre-service trainees. In 1982, Kenya Highways Training Centre changed its name to Department of Staff Training (DST). In the year 1997, the training expanded to include in-service, pre-service trainees, and the public. Consequently, the department was renamed The Kenya Institute of Highways and Building Technology (KIHBT).

KIHBT operates from three campuses located in Nairobi, Ngong – Kajiado County and Kisii. It specializes in equipping staff from the National Government, County Governments and the private sector with skills that are aimed at enhancing their performance in the infrastructure sector. Moreover, KIHBT trains fresh secondary school graduates at craft and technician levels.

Currently, and in the recent past, KIHBT in partnership with various Governmental and development organisations such as: Kenya National Highways Authority (KeNHA); Kenya Urban Roads Authority (KURA); Kenya Rural Roads Authority (KERRA); African Development Bank (AfDB); International Finance Corporation (IFC); Japan International Cooperation Agency (JICA); and International Labour Organization (ILO), is running various training programmes targeted at the youth, women, road contractors, road engineers and supervisors from Kenya and within the region.

The initial scoping of the EASTRIP project in respect to the sub-projects (in this case such as the Proposed KIHBT Ngong Kibiko Campus Tuition Block) suggested that the potential environmental and social impacts would be minimal to moderate, largely reversible, and site-specific due to the nature of the envisioned activities. This EASTRIP project was therefore assigned Environmental Category "B", predicated on the premise that implementation of activities under the project could trigger the Bank's Policies and Operational Policies on Environmental Assessment OP/BP4.01. Therefore, KIHBT engaged Case Architecture Ltd Team in June 2023 with the main objective of conducting an Environmental and Social Impact Assessment for the KIHBT Ngong Kibiko Campus Tuition Block under EASTRIP. The undertaking of this assignment has been guided by the consultants' understanding of the terms of reference provided by the client.

1.2. Project Origin, History and Justification

1.2.1. Introduction

KIHBT is one of sixteen institutions in Kenya, Ethiopia and Tanzania that was competitively selected to be a beneficiary of the East Africa Skills for Transformation and Regional Integration Project (EASTRIP). EASTRIP is a regional skills initiative which the World Bank in partnership with the three East African countries is implementing. The Project's development objectives are to increase the access to and improve the quality of Technical and Vocational Education and Training (TVET) programs in the selected Regional Flagship TVET Institutes (RFTIs), and to boost regional integration. The objectives and results in EASTRIP are being achieved through activities grouped under three components, whereby component I is at the Institutional level, component II is at National level and component III is at the regional level.

Under EASTRIP, KIHBT is being upgraded into a Regional Flagship TVET Institute (RFTI) and Centre of Excellence in Highway Technology. The EASTRIP project development objectives within KIHBT are to be met through the institution's Strategic Investment Plan (SIP) which was developed during the project appraisal process and which together with the financial agreement were approved for financing in 2018. The SIP is to be implemented within the course of 5 years, commencing 2019 and scheduled for completion in December 2024. The SIP has six key components, under which there are final outcomes, intermediate results, as well processes/activities and their costs. The six components are:

i) Strengthening Management and Governance.
ii) Institutionalizing industry linkages.
iii) Developing market relevant competency-based training programs.
iv) Training of Teachers and Managers.
v) Upgrading Key Training Facilities and Equipment.
vi) Outreaching and support for non-project national TVET

1.2.2. Key Objectives of KIHBT

The mandate of KIHBT is development of human resource capacity in the infrastructure sector, especially the Roads Sub-sector, and the institution plays a key role in the implementation of the National Agenda as stipulated in Vision 2030. Two of the three EASTRIP's development objectives are to increase the access to and improve the quality of Technical and Vocational Education and Training (TVET) programs in the selected Regional Flagship TVET Institutes (RFTIs) such as KIHBT.

1.2.3. Key Objectives of the Proposed Project

The overall objective of the Proposed KIHBT Ngong Kibiko Campus Tuition Block is to increase the access to and improve the quality of training infrastructure, facilities, and equipment at KIHBT.

The specific objectives include:

a. Provide additional and high-quality learning spaces for students within the campus.
b. Provide additional and high-quality office spaces for staff within the campus.

c. To boost student enrolment into short term and long-term highways related courses
d. Provide adequate training infrastructure and facilities such as classrooms and laboratories.

1.2.4. Project Justification

To meet the EASTRIP project development objective of increasing access to TVET programs in highways technology, one of the outcomes under outreaching is increase in general enrolment of students into short term and long-term roads/highways related courses. For this to happen, there needs to be adequate training infrastructure and facilities, classrooms, and laboratories. The component on upgrading key training facilities and equipment has construction of a tuition block as one of the component's final outcomes. Therefore, owing to its history and success in training artisans in roads courses and expansiveness of space, the KIHBT management directed that the tuition block be constructed within KIHBT Ngong Kibiko campus. The existing classrooms are inadequate for the current student population. It is envisioned that the proposed Tuition Block will significantly increase enrolment into the roads/highways related courses, by over 100%, due to increased number and quality of learning spaces and laboratories. These classrooms, laboratories and workshops will be equipped with modern equipment and allow for digital learning in the institute.

The Proposed Tuition Block will be fitted with fire extinguishers and firefighting hose reels placed at strategic points within the building. In addition, a water storage reserve of 1,600 litres is provided for and dedicated to firefighting. KIHBT will also prepare a community sensitization workshop on fire management once the proposed project is complete as part of its CSR activities. Good night lighting is important for the entire Ngong campus The project will light up the section between the administration block and the dining area. This will improve surveillance over this section of the institute.

1.2.5. KIHBT Ngong Campus Spaces

The Campus is headed by a Resident Instructor (R.I) who reports to the Director KIHBT. KIHBT offers diverse TVET courses in the infrastructure sector in the fields of: Building Technology; Architecture; Civil Engineering; Mechanical Engineering; Electrical Engineering; ICT and Highway Engineering. Currently, the campus has an administration block, which is a prefabricated structure, a double-storey workshop with offices, a single-storey block of classrooms, single storey library, dining hall with kitchen, student hostels, prefabricated structure staff quarters, sports fields, Plant Operator Course (POC) practice field, borehole with water tower (see figure 1). The SGR tunnel also crosses the southern part of this campus.

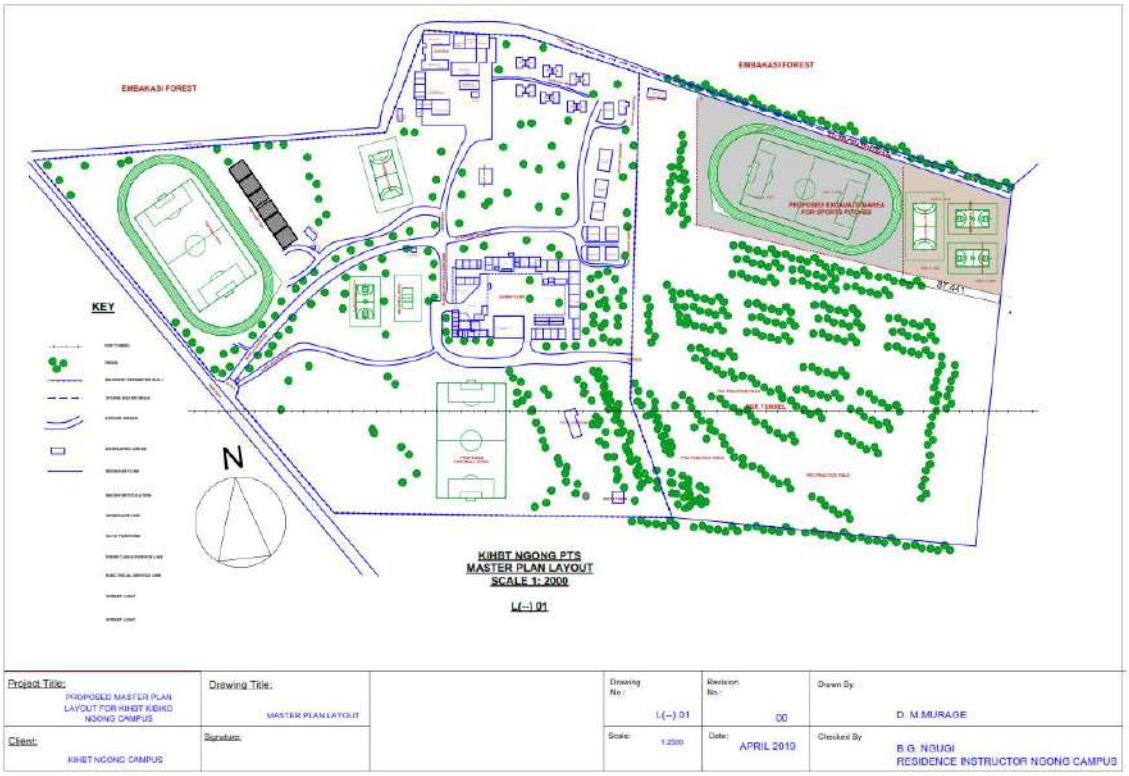


Figure 1: KIHBT Ngong Kibiko Campus Master Plan

1.2.6. KIHBT Courses

KIHBT Ngong campus hosts students in various courses including Craft Certificate in Road Construction, Plant Operator Course, Electrical Engineering (Power), Plumbing, Automotive Engineering, Building Technology (Construction), Construction Plant Mechanic (Proficiency and Grade), Refrigeration and Air Conditioning (Proficiency), Plumbing and Pipe-Fitting (Proficiency and Grade). In addition, the campus regularly hosts short-term capacity building courses such as Cobblestone Paving Technology course, Low volume seal roads course (LVSR), Performance Based Road Maintenance Contract Course (PBC) and Do-nou Technology Course. These courses are examinable by either KNEC, NTSA, NITA or KIHBT. Courses offered in the campus consist over 80 % hands- on skills in line with the CBET system.

1.2.7. KIHBT Staff and Student Population

There are 48 staff members stationed at the Ngong Kibiko campus and approximately 60 others shared with the Main Campus (Nairobi), including part time trainers. As at the end of March 2023, the Ngong Kibiko campus had a student population of approximately 764. It is projected that upon completion of the Proposed Tuition Block enrolment into the roads/highways related courses will significantly increase by over 100%, due to increased number and quality of learning spaces and labs. The Technical and Vocational Education and Training Authority (TVETA) has developed the TVET Standard (2019) that outlines requirements and guidelines for the management of VTCs AND TVCs. The standard allows staff numbers to be determined

by an institution's approved staff establishment. In section 6.1.6, the standard guidelines shall ensure effective and efficient training of the institution's courses by enforcing the trainer-trainee ratio which shall be within the provided standard guidelines as follows: (1) in practical related programmes, no trainer shall handle more than twenty (20) trainees at a time; (2) in theory based programmes, no trainer shall handle more than twenty-five (25) trainees at a time. KIHBT is hence expected to adhere to the set guidelines.

1.3. Project Components

The Proponent, Kenya Institute of Highways and Building Technology (KIHBT) is proposing to construct a Tuition Block within PDP REF NO. NRB.164.2021.01 Kibiko, Kajiado County (see figure2). The Ngong campus is located approximately 3.5km from Ngong Town on a plot of land occupying an area of 70 acres. The campus is accessed from Forest Line Road off Ngong- Suswa Road. Currently the proposed location is operational and occupied by an existing campus headed by the Resident Instructor (R.I) who reports to the Director KIHBT. A detailed description of the current campus spaces is provided in section 1.1.5 of this report.

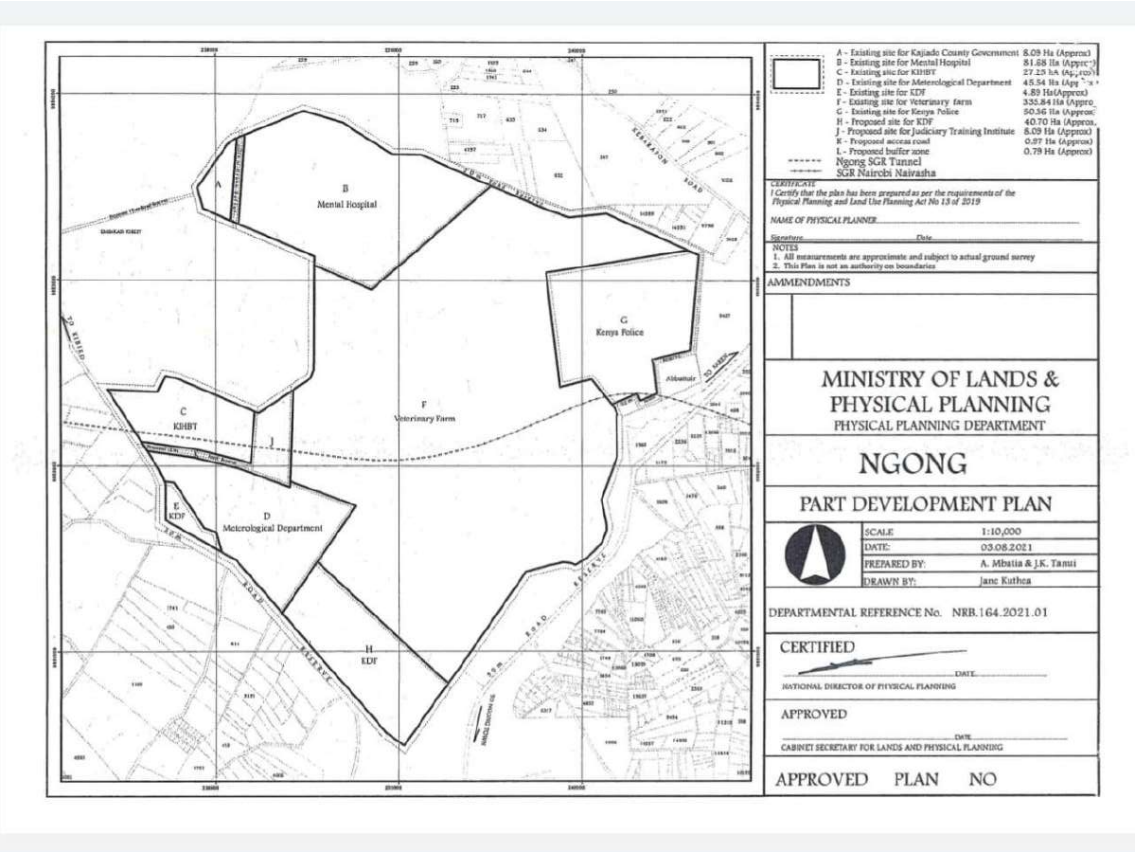


Figure 2: Part Development Plan (PDP) locating KIHBT Ngong campus

The proposed tuition block will be situated at the core of the existing campus as per the campus master plan (figure 1) and google earth satellite image (see figure 3). The site of the tuition block and related facilities covers an area of 7,982.676sm, which is approximately 1.97 acres. The proposed tuition block will be a 3-storey building with a ground floor, first floor and

second floor (See Appendix A8). The building will feature a flat roof and covers a total plinth area of 3,900sm (three floors included). It will cover a ground area of 7,982.676sm including vehicular parking, pedestrian footpaths, storm drainage features and gardens.

The Proposed Tuition block will feature the following:

1. **Ground Floor**: Entry Court and Entry Porch, A Lobby with an information desk and a security desk, 3no. laboratories each covering an area of 90.2sm, a hallway, staircases, and students' (ladies and gents) washrooms. The ground floor will also accommodate a laboratory technician's office, laboratory store, two management offices, two open plan offices, a secretaries' office, a kitchenette, and staff (gents) washrooms.
2. **First Floor:** 3no. classrooms each covering an area of 90.2sm, a hallway, balconies, students' (ladies and gents) washrooms, two management offices, two open plan offices, a secretaries' office, a lactation room, and staff (ladies) washrooms.
3. **Second Floor:** 3no. classrooms each covering an area of 90.2sm, 3no. classrooms each covering an area of 90.2sm, a hallway, balconies, students' (ladies and gents) washrooms and a meeting hall.
4. **Roof Terrace:** A hall and terrace
5. **Support Facilities and Services:** A ramp and lift that serves all the floors, fire escape, service ducts, vehicular parking for approximately 53 vehicles, and a students' passive recreational park.

1.3.1. Laboratories within the Proposed Tuition Block

The proposed project has three (3) number laboratories housed within it namely; highways, soils and concrete laboratories.

Highways laboratory

The proposed highways laboratory shall be equipped to conduct standard tests for asphalt pavement design and paving materials. The handling of bitumen in low quantities is anticipated and therefore the laboratory technicians and students will be provided with the appropriate PPEs during operation of the laboratory. In addition, the solid waste from this laboratory shall be handled in accordance with Part IV of the Environmental Management and Coordination (Waste Management) Regulations, 2006 on hazardous and toxic waste while management of the wastewater effluent generated will be handled following the EMCA (Water quality) Regulations, 2006.

Soils laboratory

The proposed soils laboratory is intended to be a training and research facility for students to undertake soil investigations for road construction. The tests are aimed at understanding the soil profile of a project site. The common soil test for road construction includes classification of soil, particle size distribution, moisture content determination, specific gravity, liquid limit, and plastic limit tests. Moisture content, particle size, and specific gravity tests on soils are used for the calculation of soil properties such as degree of saturation. The anticipated impacts to the environment during operation of this laboratory is sedimentation and blockage of drainage channels. This will be mitigated by provision of a separate wastewater channel for the

laboratory, which will be fitted with filtration devices that will sieve excess soil sediments before discharge to the building's wastewater system.

Concrete laboratory

The proposed concrete laboratory will be used to train students on investigating and characterizing concrete component materials used for highways including cement, aggregate, supplementary and alternative cementitious materials, and mixtures. The users of the laboratory shall be provided with the appropriate PPEs and the solid waste from this lab shall be handled in accordance with Part III of the Environmental Management and Coordination (Waste Management) Regulations, 2006 on industrial waste while the waste water effluent generated will be handled following the EMCA (Water quality) Regulations, 2006.

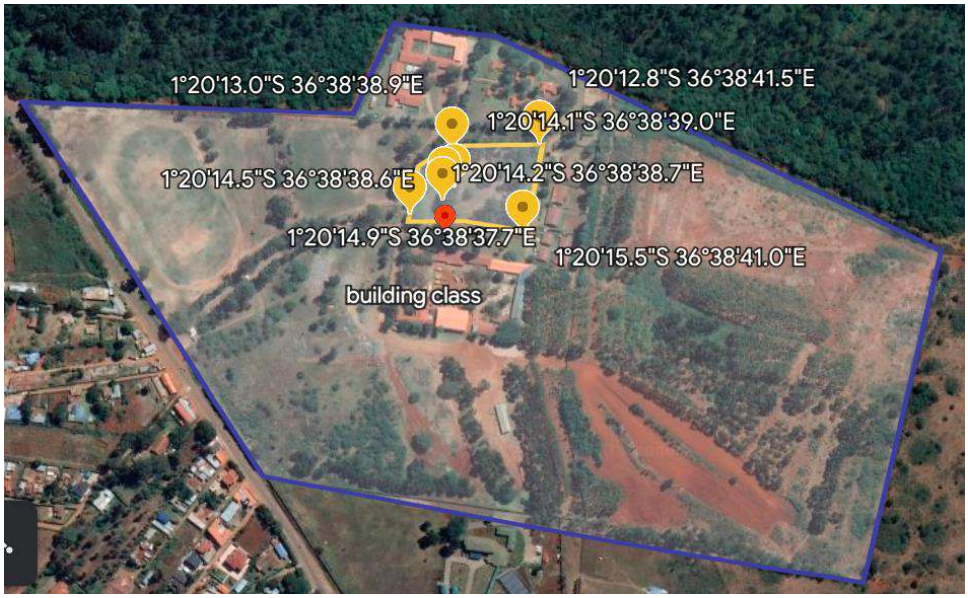


Figure 3: Google earth satellite image of KIHBT Ngong Kibiko campus with the Proposed Tuition Block indicated in yellow colour.

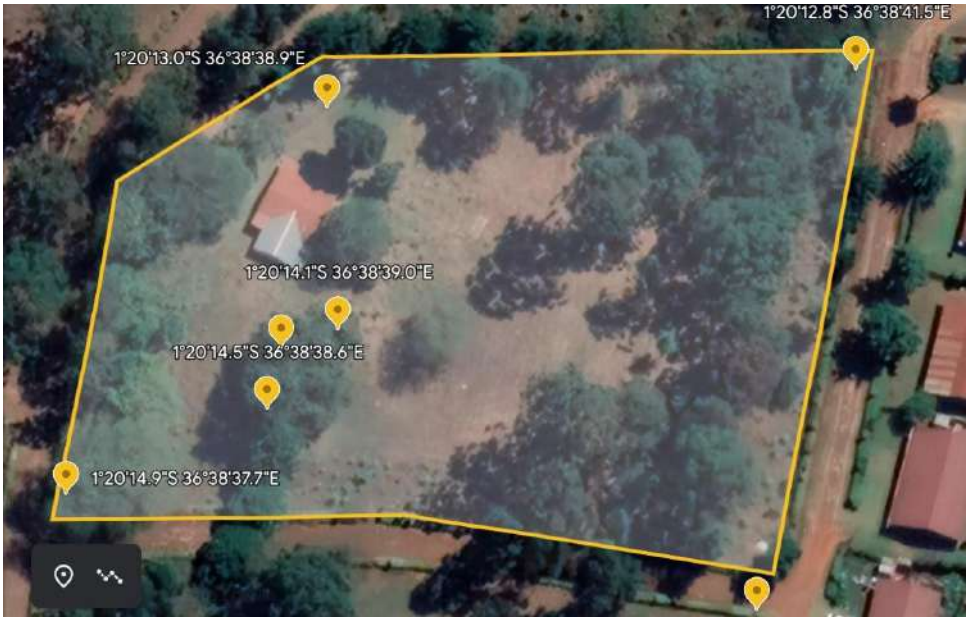


Figure 4: Google earth satellite image showing location of Proposed Tuition Block

1.4. The purpose of ESIA

The purpose of this Environmental and Social Impact Assessment (ESIA) is to systematically examine the anticipated environmental and social impacts related to the construction, operations and decommissioning of the proposed facilities and propose mitigation measures arising from the negative impacts, while enhancing the positive impacts. The report covers the following topics: description of the proposed project, components, schedules, and justification; baseline information of the project area; policy, legal and institutional framework; terms of reference of the proposed project; public participation and consultation; project alternatives and analysis; and environmental and social management and monitoring plan.

The ESIA will identify both positive and negative impacts of the project, recommended mitigation measures, and propose the environment social management and monitoring Plan (ESMMP). By doing so, this ESIA will fulfil requirements of Section 58 of the Environmental Management and Coordination Act of 1999 revised 2015(EMCA) and Part (i) and (ii) of the EIA/Audit Regulations, 2003 revised 2019.

1.5. ESIA requirements

The following are ESIA requirements in accordance with EMCA 1999 and its amendment 2015 and EIA & EA regulations of 2003 and its amendment 2019:

i. Environmental concerns must be accounted for in all development activities and the project issued with a license by NEMA or its representatives at the county level before commencement.
ii. Public participation in the development of projects and plans.
iii. Recognition of social and cultural principles traditionally used in the management of the environment and natural resources.
iv. Intra-generational and inter-generational equity.

v. Polluter- pays principles.
vi. The precautionary principle.

1.6. Objective of the ESIA study

The main objectives of the ESIA study for the Proposed Tuition Block project include to:

- Make information available to the stakeholders about the proposed project.
- Obtain background biophysical information of the site and surrounding environment.
- Obtain information about adjacent land uses.
- Obtain socio-economic characteristics of the local community.
- Assess regulatory, legislative, and institutional frameworks associated with the project.
- Consider all possible positive and adverse impacts to the project area including immediate neighbourhood, natural habitat as well as overall fauna and flora.
- Assess environmental and socio-economic hazards and risks associated with the project.
- Determine socio-economic and environmental impacts of the project.
- Design and prepare mitigation measures and action plans to address all possible significant negative environmental and social impacts.
- Formulate an ESMMP

1.7. Scope of the ESIA

The ESIA will investigate the various environmental and socio-economic aspects to be affected by the construction, operation, and decommissioning of the proposed KIHBT Ngong campus tuition block. The mitigation measures, environmental and social management plans and monitoring techniques will be in operation simultaneously with all project activities during its development, operation, and decommissioning stages.

1.8. Terms of Reference

Terms of reference (TOR) for this ESIA study (*see attached ToR Document Appendix 4*) will among other things, require that the study:

i. Determine the level of ESIA required.
ii. Describe the project components.
iii. Establish baseline conditions.
iv. Analyse requirements by relevant legislative and institutional framework for environmental management of the project
v. Assess the potential impacts.
vi. Develop mitigation measures and an environmental and social management monitoring plan with respect to:
    - Habitat and vegetation
    - Socio-economic and community impacts
    - Physical environment
    - Community public and occupational health and safety
    - Analysis of requirements by relevant legislative and institutional framework for environmental and social management of the project

- Analysis of project alternatives

vii. Propose any improvement or alternatives on environmental design of the proposal.
viii. Undertake public participation and consultation.
ix. Facilitate informed decision making.
x. Set environmental & social terms and conditions for implementing the proposal.

The TOR will be submitted together with the project report for NEMA approval.

2. ESIA METHODOLOGY

2.1. Scope of the Study

The basis of the scope of this study is the Environmental Management and Coordination Act of 1999 and its amendment 2015, and specifically the Environmental (Impact Assessment and Audit) Regulations of 2003 amended 2019. It furthermore fulfils World Bank Environmental and Social Safeguards Policies and World Bank Group Environment and Health and Safety (EHS) guidelines. The study worked closely with relevant Government Departments and members of the surrounding community to identify type and magnitude of interests of the affected parties.

This ESIA Study sets out to assess potential environmental and socio-economic impacts of the Proposed Tuition Block, as per the terms of reference provided by the proponent. Potential impacts of the construction and operation of the Proposed tuition block were assessed based on the physical, biological, socio-economic, and environmental aspects. Analysis was thereafter done to categorize the impacts as either short term or long term. Moreover, the possibility of mitigation and reversibility were also analysed.

2.2. Study Approach and Design

The ESIA study involved a desk-study and preparation of the project report. The desk study was carried out to obtain background biophysical information of the site and legal and associated regulatory issues and the terms of reference. Review of relevant literature was done to collect baseline data of the site area. Socio-economic data was collected from agencies such as KNBS and, Kajiado County CIDP.

Since ESIA is a multidisciplinary process, both scientific and social data methods were used. These included:

- Conducting a survey by use of questionnaires and a stakeholder meeting to collect public views about the project from the local community, developer, and other stakeholders.
- Carrying out field observations within the locality of the project site to establish the baseline site conditions.
- Preparation of a project report including the environmental social management plan, monitoring techniques and mitigation measures.

The baseline studies done included: habitat and vegetation analysis, assessment of settlements, various aspects of the physical environment and environmental law and policy aspects. Physical and biological environment studies concerned physical features of the project area including the topography, climatic conditions, vegetation, soils, and their physical and chemical properties.

2.3. Data Collection Tools

The study used tertiary, secondary, and primary sources of data collection. Field data was collected through observation within the locality of the project site to establish the baseline site

conditions. The study formulated a structured questionnaire which was used to collect and survey stakeholder views on socio-economic issues pertinent to the project location and surrounding local community. See *Appendix A5* for the original questionnaires. Collection of views from the public was undertaken through; participation in stakeholders' consultative meeting, which was attended by Kajiado County government officers, national government officers, local political leaders, KIHBT staff, KIHBT student leaders, community businesspersons, neighbouring institutions and Kibiko area residents. A full account of the proceedings of the stakeholders meeting held at KIHBT Ngong Kibiko campus is as provided in *Appendix A6*.

2.4. Stakeholder Analysis

The stakeholders' analysis was carried out to identify key stakeholders. The criteria used was designed to allow identification of primary and secondary stakeholders as well as long term and short-term stakeholders. The criteria also allowed identification of stakeholders who would: benefit from the project; be adversely affected during construction and operational phases; be in the proximity of the project site. The criteria also looked at the degree of knowledge on issues regarding the project and its operation.

2.5. Public Participation and Consultation Analysis

Public consultation for the Proposed Tuition Block was conducted to capture the major concerns raised by the project stakeholders. The exercise was carried out through issuance of questionnaires (between 6/06/2023 and 08/06/2023) and participation in stakeholders' consultative meeting held at KIHBT Ngong campus (Thursday 8th June 2023). The targeted stakeholders included members of the public i.e., surrounding business community; teachers; religious leaders, farmers, and other tradespersons; surrounding public institutions like ICPAC; key informants such as Kajiado County government officers, national government officers, local political leaders, KIHBT staff, and KIHBT students and their leaders. Appendix A7 provides a list of stakeholders who were present on Thursday 8th June 2023 at the meeting at KIHBT Ngong Kibiko Campus. In addition to the stakeholder meeting, questionnaires were administered to KIHBT staff, students, and members of the public to provide their views regarding the proposed project.

2.6. Potential Impacts

The TOR specified the following impacts that were to be studied:

- Existing vegetation and land degradation
- Changes in lifestyle and habits (surrounding inhabitants)
- Ecosystem changes
- Landscape visual impact
- Socio-economic impacts, positive and negative

The analysis of questionnaires ordered impacts into percentages which showed the magnitude of the anticipated impact.

2.7. Comparison of Alternatives

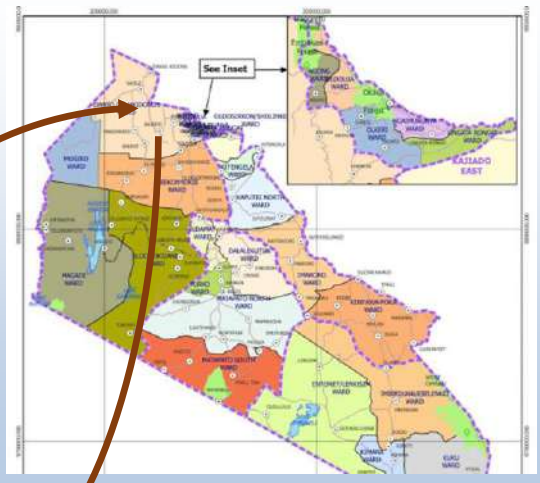
This involved the assessment of the comparative importance of the different impacts associated with each of the alternatives. This comparison was done in a qualitative manner although importance of cited impacts had been quantified earlier by use of percentages. For this ESIA, this task involved a selection of the environmentally and socially preferred alternative, which is implementation of the Proposed KIHBT Ngong Campus Tuition Block, Kajiado County.

3. PROJECT DESCRIPTION

3.1. Location details

Map 2: Map of Kenya showing Kajiado County

Map 1: Map of Kajiado County and its wards



Map 3: Map of Kajiado West Sub-County

The Proposed Tuition Block is to be situated within KIHBT Ngong Campus, Kajiado West Sub-County, Kajiado County. The campus is located on PDP NO.NRB.164.2021.01 (see Appendix A3). The land is owned by the Government of Kenya. The Proposed Tuition Block site is located on latitude $1^0$20'16.15776" N and longitude $36^0$38'38.3766" E. The site of the tuition block and related facilities covers an area of 7,982.676sm, which is approximately 1.97

acres. This includes the building, which covers a total plinth area of 3,900sm (three floors included) and vehicular parking, pedestrian footpaths, storm drainage features and gardens which cover the remaining area. (see figures 3-4).

3.2. Neighbourhood to the area

The KIHBT Kibiko Ngong Campus is located within Kibiko A sub-location, Kibiko location, Ewuaso Kedong Ward, Kajiado West Sub-County, Kajiado County. The proposed tuition block site is located within the KIHBT Kibiko Ngong Campus (Figures 1, 3 & 4). To the north of the project site are the dining hall, kitchen, and student hostels. To the east of the project site are staff quarters. To the south of the project site are classrooms and administration block. To the west of the project site are sports playing fields and the institute's fire assembly point. The SGR railway tunnel passes through KIHBT Ngong campus to the southern side. In the neighbourhood of the proposed site are the following: ICPAC Climate Prediction and Applications Centre headquarters located within Kenya Meteorological Department land, Office of the Chief, Kibiko location, Kibiko police post, and Ngong Embakasi forest.

3.3. Site & Neighbourhood photographs

3.3.1. Proposed Project Site

Plate 1: Forest line road

Plate 2: Ngong- Suswa road

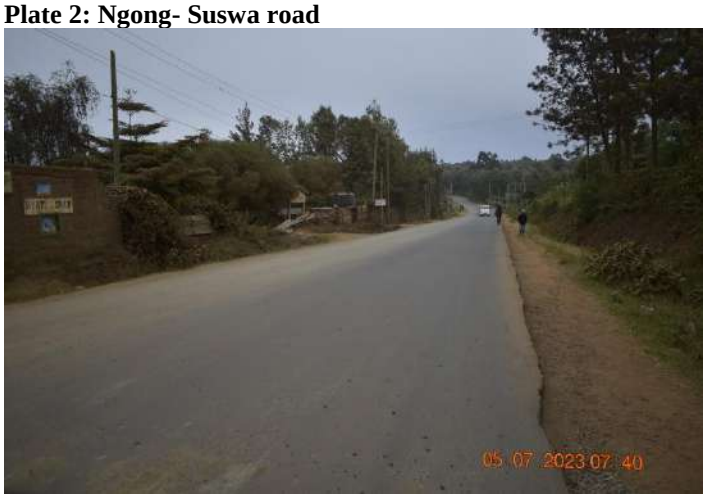


Plate 3: Access and main gate entrance into KIHBT Ngong Kibiko Campus

Plate 4: Circulation routes within KIHBT Ngong Kibiko Campus

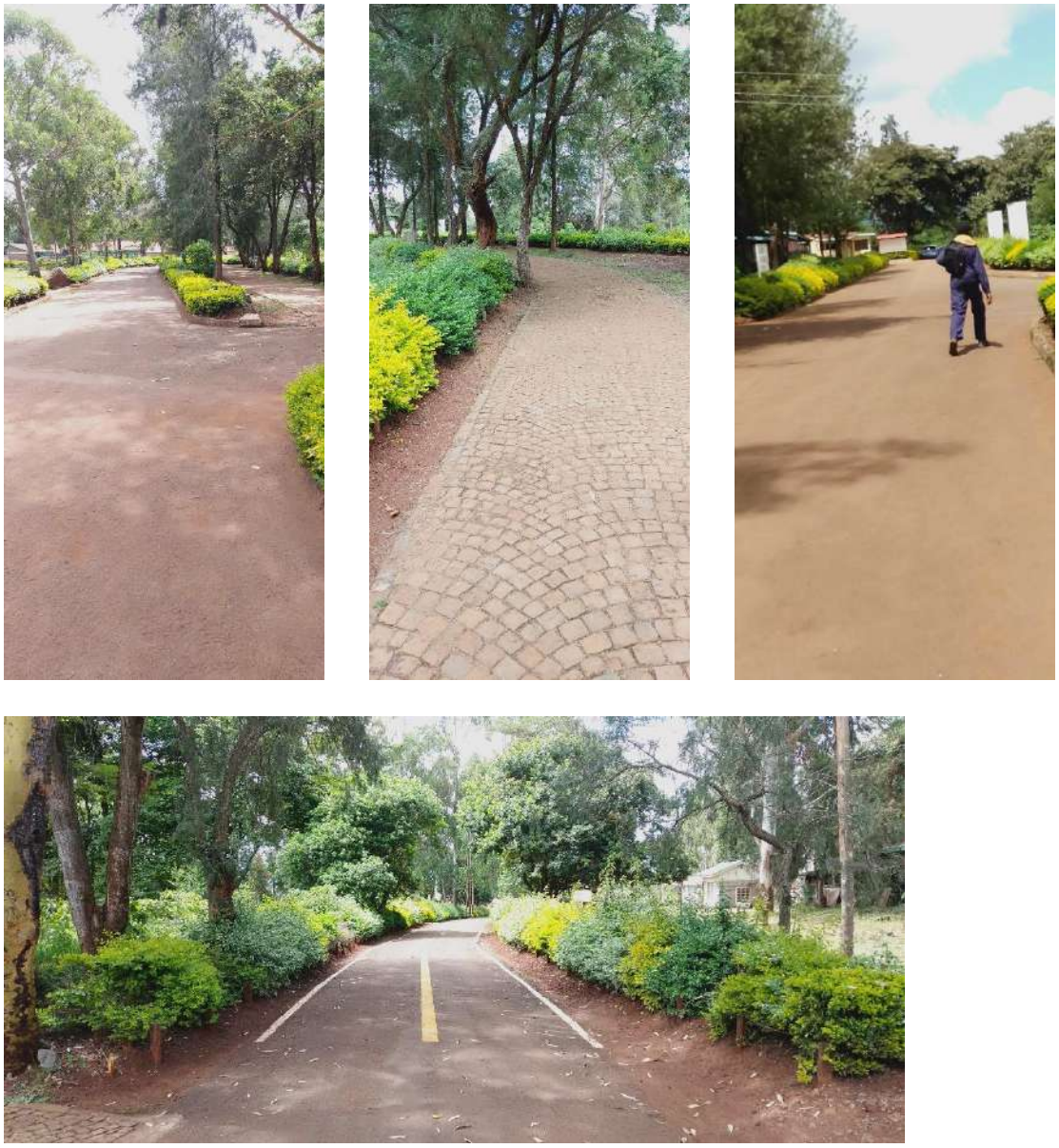


Plate 5: Proposed access into the project site

Plate 6: Proposed project site

Plate 7: Handwashing station next to the project site

Source: Field visit, June 2023

3.3.2. KIHBT Ngong Campus Spaces

Plate 8: Dining hall, kitchen, and classrooms

Plate 9: Student hostel accommodation

Plate 10: Sports playing fields

Plate 11: Fire assembly point next to the sports fields

Plate 12: Classrooms next to the administration block

Plate 13: Workshops next to the administration block

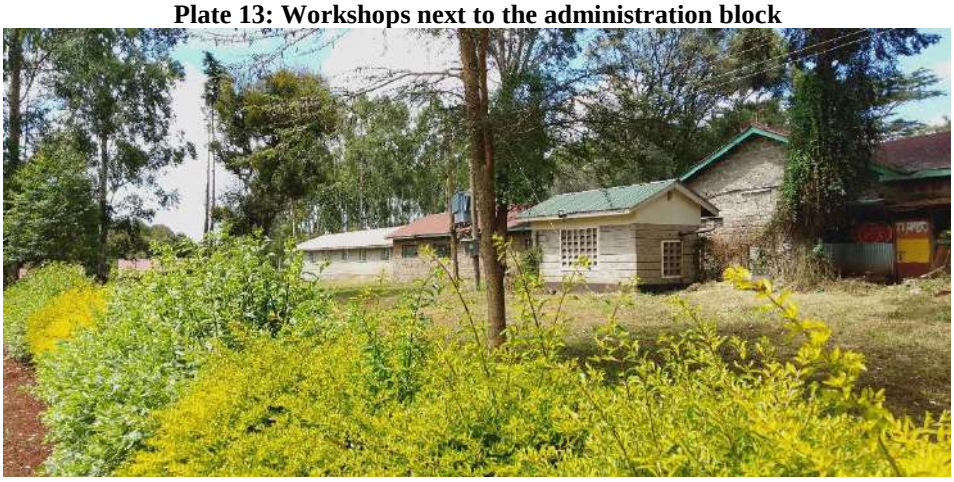


Plate 14: Staff quarters

Source: Field visit, June 2023

3.3.3. KIHBT Neighbourhood

Plate 15: ICPAC boundary wall

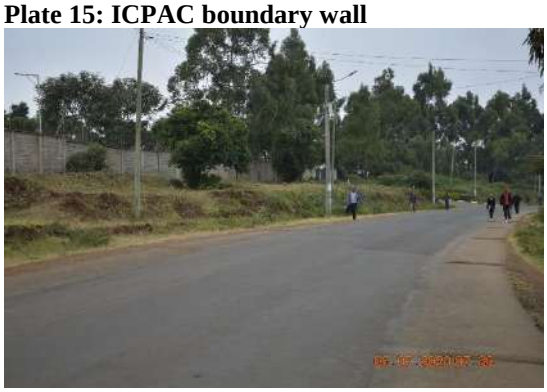


Plate 16: Shopping centre close to the campus

Source: Field visit, June 2023

3.4. Technical and Vocational Education and Training (TVET)

Technical and Vocational Education and Training (TVET) is a vital tool for the development of a country's skilled capital since it provides industries with a steady supply of trained workforce to meet demands of skilled labour, provides opportunities of employability through jobs and self-employment, and gives an opportunity for the youth to be empowered with skills for sustainable livelihood. The current National Competency Based Curriculum (CBC)

emphasises on equipping students with analytical skills, knowledge, and competencies. TVET in Kenya is under the Ministry of Education, and its State Department for Vocational and Technical Training. Technical and Vocation Education and Training Authority (TVETA) is mandated to regulate and coordinate the TVET sector in Kenya. The focus of TVETs in Kenya is in the following priority sectors of agriculture, manufacturing, construction, transportation amongst others (Technical and Vocational Education and Training Authority, 2020). The overall objective of TVET in Kenya is to produce a critical mass of well-trained human resources to implement programmes and projects identified in Kenya's Vision 2030 (State Department of Science and Technology, 2014).The TVET Act, 2013, categorizes institutions into three: (1) Vocational Training Centres (VTCs) previously called Youth Polytechnics, (2) Technical and Vocational Colleges (TVCs) which used to be Technical Training Institutes in the 1990s (TTIs), and (3) National Polytechnics (NPs).

The East Africa Skills for Transformation and Regional Integration Project (EASTRIP) has been setup in collaboration with World Bank to support the development and delivery of TVET programmes focused on key sectors in Kenya, Ethiopia, and Tanzania. The aim of EASTRIP is to transform the TVET institutes to support short-term training recognized by the industry. The following are the focus areas: transport, energy, manufacturing, and ICT (Technical and Vocational Education and Training Authority, 2020). KIHBT is one of sixteen institutions in selected to be a beneficiary of EASTRIP. Under EASTRIP, KIHBT is being upgraded into a Regional Flagship TVET Institute (RFTI) and Centre of Excellence in Highway Technology. The EASTRIP project development objectives within KIHBT are to be met through the institution's Strategic Investment Plan (SIP). To meet the EASTRIP project development objective of increasing access to TVET programs in highways technology, one of the outcomes under outreaching is increase in general enrolment of students into short term and long-term roads/highways related courses. For this to happen, there needs to be adequate training infrastructure and facilities, classrooms, laboratories, and workshops. The existing classrooms at KIHBT Ngong campus are inadequate for the current and future student population. It is envisioned that the proposed Tuition Block will significantly increase enrolment into the roads/highways related courses, by over 100%, due to increased number and quality of learning spaces and laboratories. This Proposed Tuition Block project hence meets the objectives of both EASTRIP and TVET education in Kenya.

3.5. Existing and anticipated capacities for water, power, and wastewater

The table below outlines the existing and anticipated capacities for water, power, and wastewater.

SN	TYPE	FACILITY	DESCRIPTION OF EXISTING CAPACITY	PROPOSAL	REQUIRED	REMARKS
1	Wastewater	Sewer line	Existing buildings are connected to a sewer system which comprises pipes and masonry inspection chambers. These	The proposed tuition block will be independently connected to the existing septic tank (as specified	New sewer pipes and inspection chambers to serve the new tuition block	New sewer line is provided in the bills of quantities and is to be connected to the existing septic tank

SN	TYPE	FACILITY	DESCRIPTION OF EXISTING CAPACITY	PROPOSAL	REQUIRED	REMARKS
			lead to a septic tank.	in the bills of quantities).		
2.	Wastewater	Septic tank	The existing septic tank has a (6mx17mx4.5m) 459m^3 capacity.	The current population at KIHBT Ngong Kibiko campus is approximately 800 persons. This will bring the population of the campus to about 1400 persons after completion of the tuition block.	1000 persons require a septic tank capacity of 200m^3. The new combined requirement will therefore be approximately 280m^3 capacity septic tank.	The existing septic tank is 459m^3 and is therefore adequate for the additional population
3.	Effluent discharge	Discharge Capacity	The existing septic tank has a (6mx17mx4.5m) 459m^3 capacity.	The current population at KIHBT Ngong Kibiko campus is approximately 800 persons. This brings the population of the campus to about 1400 after completion of the tuition block.	1400 persons collectively discharge approximately 98m^3 of effluent per day.	The existing septic tank is 459m^3 and is therefore capable of efficiently handling effluent discharge for the additional population
4.	Water demand and supply	Existing borehole	The campus' main source of water is a borehole, with a tank whose storage capacity is 75m^3. The campus daily usage is 23.5m^3 of water.	The proposed tuition block will require an additional 40,000 litres of water per day.	40,000litres water storage	This has been provided for within the bills of quantities.
5.	Power demand	Standby generator	Existing three phase 100 KVA standby generator serving the campus. Existing 315 KVA pole mounted transformer serving the campus and the neighbouring community.	A provisional sum has been made to liaise with Kenya power company for a dedicated transformer for the institution. Due to budget limitations, client will source for a separate budget to purchase a new standby generator for the tuition block if required.	Total electrical demand for ground, first, second and roof floors is 110 KVA.	As per bills of quantities and specifications.

3.6. Project Works Programme

The design and construction of the proposed Tuition Block is expected to take twenty (20) months: four (4) months' preparation of design drawings, Bills of Quantities, tender documentation and ESIA and study report; ten (10) months' construction and supervision and thereafter followed by six (6) months' defects liability period.

3.7. Project Requirements

The project's requirements are as indicated:

i. Construction materials:
   - Locally sourced building materials (within Kajiado County) or materials with similar specifications.
   - Materials to be involved in the Proposed KIHBT Ngong Kibiko Campus Tuition Block shall include but not be limited to; sand, gravel, cement, ceramic tiles, natural stones, steel, wood, IT5, MDF partitions, asphalt products (Tegolar), grano, marble, alucobond and glass. All these materials are adequately available locally, and nationally.

ii. Plants & equipment:
   - Dictated by the processes within the construction period, market prices, availability, and the contractor. Examples of construction equipment include excavators, truck loaders, cranes, construction rollers/ compactors, graders and scrapers, concrete mixers, pumps, vibrators, recyclers, compressors, painting machines, power trowels, and scaffolding.
   - All plants and equipment shall be inspected and approved before use.
   - A schedule of maintenance shall also be developed for all plants and machinery.

iii. Chemicals:
   - Dictated by the construction requirements, market prices, availability, and the contractor.

iv. Source of water during construction and operation project phases:
   - Borehole found within KIHBT and supplying potable water.
     During construction stage, the contractor shall use the existing institution borehole water supply. The contractor will install a temporary discharge meter to monitor water consumption and pay for the water used.
   - The contractor shall use water bowsers and tankers to bring in water for construction activities if /or when there is water shortage or during periods of high-water demand e.g. slab formation.

v. Source of energy/power:
   - Kenya Power and Lighting Company, and solar energy.

vi. Sewage disposal:
   - Septic tank found within KIHBT whose overall capacity is 459 cubic metres (6mX 17m X 4.5m)
   - In the Proposed Tuition Block, the anticipated required capacity for sewage water discharge is 80 m^3.
   - The existing 450 m^3 septic tank is adequate for the additional anticipated population from the Proposed Tuition Block once operational.

vii. Source of Manpower:

- For unskilled labour, the proposal is to have 70% of the unskilled labour be sourced locally.
- Skilled labour will be sourced based on qualifications and may therefore attract labour that is not locally available.
- Examples of skilled labourers include machine operators, masons, carpenters, plumbers, electricians, plaster works experts, painters, tiling experts, roof installers amongst others.

3.8. Project Cost

The estimated budget of Proposed KIHBT Ngong Campus Tuition Block, Kajiado County is **KES 180 million**.

4. POLICY, LEGAL & INSTITUTIONAL FRAMEWORK

4.1. Policy and Legal framework

The ESIA study was formulated to influence the proposed project to be responsive to the local environment and human needs. This was done within the Kenya policy, institutional and legislative framework which demands environmental and social impact assessment on development projects to assess impacts of a proposed project before implementation. This ESIA document has been developed with reference to the World Bank Environmental and Social Safeguard Policy 4.01 on Environmental assessment. The environmental and social assessment for this project will consider all relevant direct, indirect, and cumulative environmental and social risks and impacts of the project.

The ESIA facilitates:

i. Anticipation and mitigation of environmental and social negative impacts.
ii. Introduction and use of environmental and social issues in project's planning and decision-making process.
iii. Public participation and consultation.

The Environmental Management and Coordination Act No.8 of 1999 (EMCA) and its amendment 2015 sections 58 and 138 and the Environmental Regulations 2003, that is, Legal No. 101 of 2003 forms the basis of the legal framework. The Environmental Management and Coordination Act No.8 of 1999 and its amendment 2015 (EMCA) outlines EIA steps in Kenya, while Environmental Impact Assessment and Audit is guided by the Environmental Regulations 2003, which is Legal No. 101 of 2003.

The following section deals with other relevant legislation and policies that are relevant to the proposed project.

i. Constitution of Kenya, 2010
ii. Vision 2030
iii. Technical and Vocational Education and Training policy 2014
iv. Reforming Education, Training and Research for Sustainable Development Policy Framework 2019
v. Technical and Vocational Education and Training Act 2013 revised 2014
vi. Children's Act 2012
vii. The County Governments Act 2012
viii. The Urban Areas and Cities Act 2011
ix. Land Registration Act 2012
x. Physical and Land Use Planning Act 2019
xi. Public Health Act 2012
xii. HIV Prevention & Control Act 2006
xiii. OSHA Act 2007
xiv. Work Injury Benefits Act 2007
xv. Water Act 2016
xvi. Energy Act 2019
xvii. National Construction Authority Act 2011
xviii. Sustainable Waste Management Act 2022

xix. EMCA 1999 amended 2015
xx. TVET Standards 2019
xxi. Environmental Management and Coordination (Impact Assessment and Audit) Regulations, 2003 amended 2019.
xxii. The Environmental Management and Coordination (Noise and excessive Vibration Pollution) (control) Regulations, 2009
xxiii. The Environmental Management and Coordination (Waste Management) Regulations, 2006
xxiv. The Environmental Management and Coordination (Air Quality) Regulations, 2014
xxv. The Environmental Management and Coordination (Water Quality) Regulations, 2006
xxvi. The Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006
xxvii. Planning and Building Regulations, 2009

4.2. Constitution of Kenya, 2010

The Constitution of Kenya (2010) recognizes in article 43 (1) (f) that every person has a right to education. The CoK provides for the right of every person to achieve the highest attainable standard of education, training, and research. The CoK also assigns different aspects of education, training, and research to both the national and county governments providing for sharing of these functions. The CoK in article in article 55 (a) states that the state shall take measures including affirmative action to ensure that the youth have access to relevant education and training (Republic of Kenya, 2010). Article 56 of the CoK states that the government shall eliminate all activities and processes that are harmful to the environment. Article 56b states that the State shall put in place affirmative action programmes designed to ensure that the minority and marginalized groups are provided special opportunities in education and economic fields (Republic of Kenya, 2010).

The construction of Proposed KIHBT Ngong Kibiko Campus will enhance the right of the youth to access relevant education and training in Kenya. Environment and social measures shall be implemented to guarantee safe and healthy environment for all persons.

4.3. Policy

4.3.1. Vision 2030

The Vision 2030, Kenya's Long Term Development Blueprint aims to create a globally competitive and prosperous nation, transforming Kenya into a newly industrialising, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. Vision 2030 has three pillars, namely the Economic, Social and Political. The Social pillar recognises education, training, and research as among the components for actualising this pillar. The GoK in the Vision 2030 seeks to ensure equitable access to Technical Vocational Education and Training (TVET) that will in turn create a workforce that participates in achieving this Vision. The Vision 2030 outlines GoK efforts towards better TVET as follows: establishment of a central body to place government-sponsored students in TVET institutions (currently mandated to KUCCPS); building at least one Vocational Training Centre

(VTC) per constituency and one Technical Training Centre (TTC) per county; incorporating ise of ICT in the dissemination of education; and ensuring enhancement of quality and relevance of skills in industrial development by streamlining mangmwnt and assessment if industrial attachment.

The Proposed KIHBT Ngong Kibiko Campus Tuition Block will contribute to the realisation of Vision 2030 by providing the required infrastructural facilities in which education, training and research will be undertaken by the students enrolled within this KIHBT campus.

4.3.2. Technical and Vocational Education and Training (TVET) Policy, 2014

The Technical and Vocational Education and Training (TVET) Policy provides a framework for achieving a harmonized and coordinated approach to post school training and development of skilled manpower required by the country. Through this policy, the Government of Kenya guides and provides an enabling environment to promote capacity building including development of the requisite TVET human capital, sustainable financial mechanisms for training, ICT infrastructures and effective partnerships and linkages for knowledge generation and sharing. This TVET Policy advocates for: (1) expanding access, equity and improving quality of TVET training through rehabilitating or upgrading infrastructure, providing scholarships/ loans/ bursaries; (2) management and planning of TVET by establishing a TVET authority; (3) develop a national TVET policy and strategy promoting use of ICT as a tool for management, teaching/training, learning and research; (4) invest more in research and development; (5) strengthen partnerships with non-public stakeholders and industry and leverage more funding from the private sector; and (6) set up TVET authority facilitating linkages and coordination between the numerous actors and stakeholders in TVET.

The overall objective of TVET is to produce a critical mass of well-trained human resource. Construction of the proposed KIHBT Ngong Kibiko Campus Tuition Block will enable the achievement of the TVET Policy through upgrading of the KIHBT Ngong campus training infrastructure. The project under EASTRIP is a partnership with World Bank which fulfils one of this policy's mandate of strengthening partnerships with non-public stakeholders leveraging more funding from the private sector.

4.3.3. Reforming Education, Training and Research for Sustainable Development Policy Framework, 2019

The Sessional Paper No. 1 of 2019 a Policy Framework for Education, Training and Research recognises education, training, and research as a major platform for national socio-economic transformation. This Sessional Paper provides the framework for delivery of inclusive, equitable, quality, and relevant education, training and research that promotes lifelong learning opportunities for all. The GoK recognises education as a basic human right and as being critical for human resource and national development. This Paper aims at enhancing capacities to provide quality and relevant education, training, and research. This Sessional Paper recognises the role of TVET institutions in providing lifelong skills for industrialization and national development thereby meeting the needs of the workplace, industry and self-employment. Some of the strategies that the GoK intends to adopt to enhance access and equity to TVETs include the following: expand TVET facilities targeting national priority sectors; strengthen centralized

placement service for TVET trainees; and strengthen partnerships and linkages between national, county governments, industry and MSMEs (Republic of Kenya, 2019).

Construction of the proposed KIHBT Ngong Kibiko Campus Tuition Block will enable the achievement of this Policy Framework through expansion of training infrastructure in the KIHBT campus that will aid in the effective delivery of education, training and research for the benefit of the people of our republic.

4.3.4. National Policy on Gender and Development, 2019

The goal of the policy is to "achieve gender equality and women's empowerment in national development so as to enhance participation of women and men, boys and girls, vulnerable and marginalized groups for the attainment of sustainable development". The policy sets, legislative and administrative measures to address the existing gaps in the realization of gender equality and women's empowerment. The Policy spells out gender mainstreaming and empowerment of women as key for national development. The policy enables the achievement of SDG 5 on achieving gender equality and empowerment of all women and girls.

Gender mainstreaming is used as a strategy in this proposed project to promote gender equality, involve integration of the gender perspective and promote gender equality in all activities throughout the project cycle. KIHBT has a gender committee constituted in 2021 with a representation from all the KIHBT campuses with 50/50 gender representation within its membership. The committee is mandated to do the following: formulate and institutionalize KIHBT gender policy; reduce the gender gap in student enrolment; reduce the gender gap in student course completion; undertake external sensitisation and awareness campaigns on gender mainstreaming; engender KIHBT; ensure gender equity amongst students and staff in engagement and development; and undertake gender related CSR. KIHBT has already developed a Gender Action Plan (GAP) (see section 11.3 of this report). The contractor during project construction phase will be required to develop a Contractor's GAP and a No Sexual Harassment Policy as guided by this report.

4.4. Legislation

4.4.1. Technical & Vocational Education and Training Act, 2014

The Technical and Vocational Education and Training Act 2014 provides for: the establishment of technical and vocational education and training system, assessment, examination; and certification and institutions offering TVET in Kenya. Technical and Vocation Education and Training Authority (TVETA) is mandated is to regulate and coordinate the TVET sector in Kenya. The Board established by this Act shall: establish standards and benchmarks for training; administer developed TVET policies and guidelines; and ensure the maintenance of standards, quality and relevance in all aspects of training. Principles guiding implementation of the TVET Act include the following: training shall be availed to all qualified Kenyans without discrimination; appropriate mechanisms shall be instituted to promote access, equity, quality and relevance in training to ensure adequate human capital for economic, social and

political development; training programmes shall take into account the technical and professional skills, knowledge and levels of qualification needed in the various sectors of the economy and technological and structural changes to be expected; the trend towards integration of ICT to multiply access and improve training capacity, delivery modes and life-long employability of graduates; employment opportunities, occupational standards and development prospects at the international, national and regional levels; and the protection of the environment and common heritage of the country.

KIHBT is a TVET registered and licenced institution, and it derives its mandate from Executive Order No. 1 of 2022. Under EASTRIP, KIHBT is being upgraded into a Regional Flagship TVET Institute (RFTI) and Centre of Excellence in Highway Technology. The institute offers accredited diverse TVET courses in the infrastructure sector in the fields of: Building Technology; Architecture; Civil Engineering; Mechanical Engineering; Electrical Engineering; ICT and Highway Engineering. The Proposed KIHBT Ngong Kibiko Campus Tuition Block will enhance enrolment into the roads/ highways related courses due to increased number and quality of learning spaces and laboratories.

4.4.2. Children's Act, 2012

The Children act (2012) in article 7 (1) states that every child is entitled to education the provision of which shall be the responsibility of the government and the parent. Section 10 of this act protects every child from economic exploitation and any work that is likely to be hazardous or to interfere with the child's education, or be harmful to the child's health or physical, mental, spiritual, moral, or social development. Section 12 requires that any disabled child be given education and training free of charge or at a reduced cost whenever possible. Section 13 protects any child from physical and psychological abuse, neglect, and any other form of exploitation. Section 16 protects every Kenyan child from abuse of any drugs. Contravention of any of the identified rights to children will lead to prosecution of the contravener in a court of law. In article 23 (2) (a) (v), it is the responsibility of the parent to provide education and guidance to their child (Republic of Kenya, 2012).

The construction of Proposed KIHBT Ngong Kibiko Campus Tuition Block will boost the provision of tertiary education to Kenyan children who are of age. The contractor for this project is tasked to ensure that no children are employed within the construction site as the minimum age for undertaking hazardous work in Kenya is eighteen (18) years.

4.4.3. Persons with Disability Act, 2003

Persons with Disability Act provides for the rights and rehabilitation of the persons with disability, to achieve equalisation of opportunities for persons with disabilities, to establish the National Council for persons with disabilities and for the connected purposes. Section 25 (1) Part 111 States that, no person shall, on the grounds of disability alone, deny a person with a disability: (a) admission into premises to which members of the public are ordinarily admitted, or (b) the provision of any services or amenities to which members of the public are entitled, unless such denial is motivated by a genuine concern for the safety of the person.

The proposed project will cater for the interests of the people with disability including access to the assistive technology centre by providing ramps, ablution, and wash facilities for PWDs, as well as access to employment and healthcare services.

The employment Act declares and defines fundamental rights of employees, provides basic conditions of employment, and regulates employment of children. Key sections of the Act elaborate on the employment relationship; protection of wages; rights and duties in employment; termination and dismissal, protection of children, employment records among others. Section 4 of the act prohibits against use of forced labour. Section 5 prohibits direct or indirect discrimination in employment and promotes equal opportunity in employment. Section 6 prohibits any form of sexual harassment at workplaces. Section 10 requires employers to use written employment contracts while employing as part of employment documents. Part VII of the act prohibits employment of children below sixteen years to provide any form of labour i.e., machine operation/ industrial undertaking/ manual labour amongst others.

The contractor for this project is tasked to ensure that no children are employed within the construction site while the proponent is to ensure the same during operation stage. The contractor and proponent shall adhere to the national laws regarding employment as prescribed in the Employment Act.

4.4.4. Sexual Offences Act, 2006

The sexual offences act aims to explain sexual offences, their definition, prevention, and the protection of all persons from harm from unlawful sexual acts. The act explains in full which offences are sexual offences and the different punishment for these offences. Sections 4, 5 and 6 define rape, behaviour deemed as sexual assault and indecent acts and the punishments meted to persons contravening this act. Section 8 defines different forms of defilement and the punishment meted out to the act contraveners. Sections 23 & 24 prohibits sexual harassment by persons in authority of holding public office. Section 26 prohibits deliberate transmission of HIV/AIDS by those infected.

The contractor and proponent will adhere to the laws regarding sexual offences within workplaces and ensure compliance by all employees. Legal action shall be taken against anyone found contravening the act.

4.4.5. County Governments Act, 2012

Under the County Government Act 2012, section 87 allows citizenry timely access to information, data, documents and protection and promotion of the interest and rights of minorities, marginalized groups, and communities. Section 102 indicates that every county government is expected to serve as a basis for engagement between county government and the citizenry, other stakeholders, and interest groups. Section 103 indicates that every county government in its objectives is expected to facilitate the development of a well-balanced system of settlements and ensure productive use of scarce land, water, and other resources for economic, social, ecological, and other functions across a county.

The proponent has therefore notified the Kajiado County Government of their intention to construct the Proposed KIHBT Ngong Kibiko Campus Tuition Block in Kajiado County. Currently KIHBT is awaiting approval of the project design drawings from the World Bank infrastructure specialist which will be followed submission of the drawings to Kajiado County to seek relevant building approvals.

4.4.6. Urban Areas and Cities Act, 2011

Under the Urban Areas and Cities Act 2011, the management of an urban area is vested on the county government and administered on its behalf by a Board in whose mandate they control land use, land sub-division, land development and zoning by public and private sectors for any purpose, including industry, commerce, markets, shopping and other employment centres, residential areas, recreational areas, parks, entertainment, passenger transport, agriculture, and freight and transit stations within the framework of the spatial and master plans for the city or municipality as may be delegated by the county government.

The proponent must seek construction approval from Kajiado County to allow for the construction of Proposed KIHBT Ngong Kibiko Campus Tuition Block.

4.4.7. Land Registration Act, 2012

Section 6 of the Land Registration Act requires that all land registration units should be identified by distinct names and allows the subdivision of registration units into blocks given distinctive numbers and/or letters to provide sufficient reference to any land parcel. Section 26 of the act notes that the holder of the certificate of title is considered as the absolute and indefeasible proprietor of the land. *The site on which the Proposed KIHBT Ngong Kibiko Campus Tuition Block is located on land owned by Government of Kenya on PDP NO.NRB.164.2021.01. The PDP was prepared by the physical planning department in 2021, Refer to Appendix A3 on landownership document.*

4.4.8. Physical and Land Use Planning Act 2019

The Physical and Land Use Planning Act, 2019 endows the local authority to prohibit or control the use and development of land and buildings in the interest of proper and orderly development of the area under its jurisdiction. This is as indicated in section 3 (3) whereby a developer makes an application for development permission which should be accompanied by supporting following documents; certified copy of the title deed, certified copy of land rates clearance certificate, geo-referenced cadastral map, location plan, building plans and a copy of the receipt for the payment of the development fees.

Section 3 (5) prohibits emailing of the development application to the planning authority. This does not constitute submission of a development application. *The proponent hence must ensure that the development application is physically presented to the approving planning authority.*

Section 3 (5) requires that the consultant informs the registered owner (developer) of the development application submission and progress made in the processing of the application. *The consultant will keep the proponent updated on the progress of drawings approval after application is made.*

Section 5 (3) indicates that development application payments to the planning authority shall be made in the form that the planning authority may prescribe. *The proponent shall ensure that the required payments for building approval are made.* Section 8 (3) gives mandate to the county executive committee to grant development permission upon receipt of the development application. *The proponent shall wait for the building plans development approval from Kajiado County before commencing construction works.*

Section 13(1) requires that the property registered owner i.e., proponent to request for building works inspection at project commencement and in subsequent stages as stated in the performance condition. *The consultant, contractor and proponent shall abide with this requirement.*

Section 15(1) requires that upon completion of the property development the consultant shall on behalf of the property registered owner i.e., proponent notify the county director requesting for a final inspection of building works and prepare the completed development to standards report as stipulated in the performance conditions. *The consultant shall comply with this requirement to the Kajiado County planning section.*

4.4.9. The Public Health Act (Cap. 242), revised 2012

This Act guides the proponent and the contractor from creating public nuisance that will impact the health and safety of the community members directly (those living within the vicinity of the project area) or indirectly (those living away from the project area). The proponent, in part III is directed to report identification of infectious diseases from humans or animals, within their area of jurisdiction through the appropriate channels. The Act further directs the proponent to disinfect/sanitise any contaminated areas to avoid the spread of these infectious diseases. Adequate screening of persons has been considered in the project design to ensure that the requirements of this section are duly met. This includes the medical certificates that the food handlers selling to construction workers ought to have to operate food kiosks.

As guided by part XII of the Act, mosquito breeding areas will be identified and treated to, as far as reasonably possible, prevent the explosion of the mosquito population. The Act prevents pollution dangerous to health of any water supply. If any such pollution occurs, the local authority should purify any such supply which has become polluted. It also prevents breeding and/or multiplication of pests through eradication of breeding grounds.

The proponent is aware that any contravention to the guidelines under section 126A can lead to the demolition, removal, or alteration of any part of the project which present a health and safety risk to persons.

4.4.10. HIV Prevention and Control Act, 2006

Section 4 of this Act requires public sensitisation on causes, modes of transmission, consequences, prevention and control of HIV and AIDS by the government in collaboration with other stakeholders. Section 7 of the act requires the GoK to provide basic information and instruction on HIV and AIDS prevention and control to all employees in both public and private

sectors. Part V of the act requires confidentiality of information regarding the health status of any tested person. Part VIII of the act prohibits any form of discrimination to any person due to their HIV/AIDS status in places of employment, learning institutions amongst others.

Working in collaboration with the local government, the proponent shall actively engage in the increasing of awareness on HIV/AIDS to the residents of KIHBT Ngong Kibiko campus as well as the local community, as guided by this act. HIV/AIDS prevention and control measures will also be introduced among the construction workers to further curb the spread of infections, while preventing stigmatization of already infected employees.

4.4.11. Occupational Safety and Health Act (OSHA), 2007

The Occupational Safety and Health Act, 2007 seeks to secure the safety, health, and welfare of persons at work and those who may be affected by the activities of those at work. The Act in regard to these issues is enforced by the local authority.

The proponent shall comply with part VI and ensure that all workplaces shall be kept clean, free from wet conditions, dirt or sanitary nuisance. All workplaces shall not be overcrowded as to cause injury to the health of the persons working within it. Each workroom shall have adequate ventilation, effectively provide, and maintain sufficient lighting and have sufficient and suitable sanitary facilities. *The proponent shall provide and maintain an adequate supply of wholesome drinking water at points accessible to all employed persons as indicated in section 91.*

The proponent shall comply with part VII on Machinery safety. Section 55 of the Act requires that all plant machinery and equipment shall only be used for work they are designed for and be operated by a competent person. The contractor shall comply with section 65 of this Act with regard to use of cranes and other lifting machinery.

The proponent shall provide and maintain for use by its employees, those of which are engaged in any process involving exposure to wet, or any injurious or offensive substance, adequate, effective, and suitable personal protective equipment (PPE) during the construction and operation phase of the facility. The proponent shall ensure that all machinery, equipment, PPE, appliances, and hand tools used in all workplaces comply with the prescribed safety and health standards and be appropriately installed, maintained and safeguarded. The proponent shall further have in place clear evacuation procedures familiar to all employees to be used during any emergency and have the procedures tested at regular intervals as indicated in section 82 of this Act.

The general conditions of the contract demand the contractor to initiate, maintain and supervise safety programs, during construction. Hence precautions are taken by the contractor for the safety of and prevention of injury, and loss or damage to the workers, other persons, and other property at the site or adjacent but not scheduled for demolition during construction. *The contractor shall provide PPE to his employees during construction phase. The proponent shall provide any required PPE during the operation phase.* PPE shall include protective clothing and appliances such as suitable gloves for the hands; adequate footwear; face shields, goggles

and emergency eyewash and shower equipment for the eyes; ear plugs, canal cap, earmuffs for the ears; and head coverings. *It is recommended that a full-time environment, health and safety officer should be employed by the contractor during project construction phase to monitor and supervise on the implementation of this ESMP*.

4.4.12. Work Injury Benefits Act, 2007

Part II of the Work Injury Benefits Act requires that every employer obtains and maintains an insurance policy with an approved insurer of any liability that the employer may incur. In compliance with Part II of this Act, *the contractor will obtain and maintain an insurance policy to cover the workers in the event of an occupational injury or illness during construction. The proponent will maintain an insurance policy cover for its employees during project operation phase.* Part VI of the act entitles compensation to an employee due to contracting a disease while in the course of employment or any disease specified in the second schedule of the act. *The contractor and proponent shall keep a record of all occupational illnesses and injuries that occur at their area of operation and compensate the affected persons accordingly as stipulated in the act.* Part VII of this act requires every employer to provide medical aid to his employees including first aid services; provide conveyance services to a hospital medical facility or home to the affected employee; and defray any expenses incurred by an employee resulting from an accident occurring in the course of employment. *The contractor and proponent shall adhere to part VII of this Act regarding provision of medical aid to affected employees*.

4.4.13. Relevant Occupational Safety and Health Subsidiaries

The proponent will equally adhere to the other rules, and guidelines directed under the OSHA 2007. These are as outlined below:

1. First Aid rules, 1977
2. Fire Risk Reduction Rules, 2007
3. The Factories and other places of work (safety and health committees) rules, 2004
4. Building Operations and Works of Engineering Construction rules, 1984
5. Chemical regulations, 2013
6. Medical Examination rules, 2005

Specifically, trained First Aid personnel and an adequate number of First Aid boxes will be availed by the proponent or contractor during the implementation, and decommissioning of the project as is required of the First Aid rules of 1977. Further, the number, type, location, and inspection validity of the fire management equipment will be as guided by the Fire Risk reduction rules. The proponent will work closely with the county government to develop a working operational plan to utilize any fire engines in the event of a fire emergency. Equipment such as the scaffolds, electrical tools, other hand tools, heavy machinery among others will be identified and utilized as guided by the OSHA 2007 and BOWEC, 1984.

4.4.14. Water Act, 2016

The Water Act, 2016 provides for regulation, management, conservation, use, and control of water resources, water, and sewerage services. It enables for the monitoring, regulation and protection of water resources and sewerage services from adverse impacts and receives and determines applications for permits for water use. Section 63 indicates that every person in Kenya has the right to clean and safe water in adequate quantities and to reasonable standards of sanitation as stipulated in Article 43 of the Constitution.

Oloolaiser Water and Sewerage Company Limited (OWSC) is wholly owned by the County Government of Kajiado and operates as a Water Service Provider (WSP) under the Tana Athi Water Services Board (TAWSB). *KIHBT Ngong Campus however has a borehole which supplies potable water for use within the institution. The Proposed Tuition Block will source its water for use from this borehole.*

4.4.15. Energy Act, 2019

The Energy Act, 2019 seeks to regulate production, transport, distribution, and supply of any form of energy to the public. It promotes the development and use of renewable technologies that are environmentally friendly such as solar systems.

Currently KIHBT Ngong Kibiko Campus is already connected to the electricity grid. The project's design considerations have adopted use of solar heating to reduce over – reliance on the national grid and making use of the renewable natural energy. The design further advocates for use of natural light during the day to reduce costs on energy. The contractor will only allow the trained and certified professionals to carry out electrical works under the project.

4.4.16. National Construction Authority Act, 2011

The National Construction Authority Act 2011 seeks to regulate the construction industry and coordinate its development. Section 2 of the Act states that the NCA will amongst others promote and stimulate the development, improvement, and expansion of the construction industry; prescribe the qualifications or other attributes required for registration as a contractor under this Act; promote and ensure quality assurance in the construction industry; encourage the standardisation and improvement of construction techniques and materials; initiate and maintain a construction industry information system. Section 6 of the Act empowers the NCA to award certificates of proficiency to contractors, skilled construction workers and construction site supervisors.

When working as a contractor in any construction project the Act requires that the contractor must be registered by the Board established under this Act. *The proponent during contractor prequalification must ensure that the appointed project main contractor and sub-contractors are registered by NCA by perusing the NCA register of registered contractors. After appointment of the project's main contractor, the contractor is required to register the Proposed Tuition Block with NCA to enable tracking of the project by the authority.*

4.4.17. Environmental Management and Coordination Act 2009 and its Amendment 2015

Every Kenyan is entitled to a clean and healthy environment and has a duty to protect it. Part VI of this Act on environmental impact assessment requires a project's proponent to undertake an ESIA study in accordance with the environmental impact assessment regulations, guidelines and procedures before the project development can proceed. *Part VII of the report on environmental audit and monitoring requires that a proponent maintains accurate records and make annual reports to the Authority indicating how far the project conforms to the earlier made ESIA report*. The act prohibits the importation and /or operation of machinery and equipment that will pollute the air contravening prescribed emission standards. *The proponent should ensure that waste disposal including discharge of chemical or oil or mixture containing oil does not pollute waterways and the environment or cause ill health to any person*. The second schedule of EMCA categorises projects relating to the expansion of tertiary institutions and related infrastructure as a medium risk project. *The proponent is cognizant of the requirement to undertake an ESIA for the Proposed Tuition Block and has appointed Case Architecture Ltd do so.*

4.4.18. Sustainable Waste Management Act, 2022

The act aims at promoting sustainable waste management, improve the health of all Kenyans by ensuring a clean and healthy environment, reduce air, land, water pollution and promote the effective delivery of waste services. The general principles of this act are; to promote a clean and healthy environment, promote precaution, polluter pays and zero waste principles and achieve sustainable waste management goals

Section 12 (a) requires all public and private sector entities to segregate non-hazardous waste into organic and non-organic fractions. Section 12(2) requires that the segregated waste be placed in properly labelled and colour coded receptacles, bins, containers, or bags. Section 12(3) requires that all waste service providers collect, handle and transport segregated waste as provided in the act.

Section 19(1) requires a private sector entity to prepare a three-year waste management plan and submit an annual monitoring report to NEMA. Section 19(4) requires a private sector entity to adopt cleaner production principles, reclaim and recycle waste, collect, segregate, dispose of or cause to be disposed of the waste in accordance with the act, transfer waste to a person licensed to transport and dispose of waste and provide waste segregation receptacles at its premises for organic, plastic and general dry waste.

The proponent shall adhere to the laid-out requirements in this Act and ensure sustainable waste management practices.

4.5. Regulatory Framework

4.5.1. TVET Standard- Governance and Management of VTCs and TVCs- Requirements and guidelines, 2019

The development of the Technical and Vocational Education and Training (TVET) Standards was necessitated by the need for establishing requirements governing quality of training services in the TVET Sector. The standards were developed with reference to; TVET Regulations 2015, TVET Act 2013, and Kenya National Qualification Framework (KNQF). The standards cover the following areas: leadership, management, and governances; physical resources; human resources; training delivery; trainee support; and innovation, research, and cooperation. Every TVET institutions is required to have a strategic plan as outlined in section 4.4 and an Internal Quality Management system (IQMS) in place as outlined in section 4.5. Every TVET institution shall provide appropriate and adequate facilities to cater for the number of programmes on offer, trainee enrolment and staff establishment (section 5.1). All buildings and other physical facilities used by a TVET institution shall conform to national and county government statutory requirements approved by the respective county authorities (section 5.6). All TVET institutions shall operate in facilities and structures that are safe for use, follow the public safety requirements, have adequate provisions to cater for Persons Living with Disability (PWD), and shall have provisions for adequate fire safety. Section 5.15 requires provision of adequate laboratory and workshop facilities including minimum laboratory and workshop space per trainee to technical TVET courses. Section 6 of the standards requires recruitment of adequate and competent human resources bearing in mind trainer- trainee ratios.

The proponent shall adhere to set out standards regarding provision and design of required infrastructure in the instructional facilities with regards to the Proposed Tuition Block. The proponent shall adhere to all the guidelines set in the TVET Standard.

4.5.2. Environmental (Impact Assessment and Audit) Regulations, 2003 amended 2019.

The proponent shall prepare and submit a project report according to part II of these regulations. The EIA study shall be conducted according to the terms of reference developed during the scoping exercise and approved by the Authority. Section 7 of the regulations requires a medium risk project to submit to NEMA an ESIA report analysing the social and environmental effects of the project. *In cognizant of this, the proponent shall submit to NEMA a comprehensive project report.* The EIA study shall consider environmental, social, cultural, economic and legal considerations as indicated in section 16 of the regulations. *The proponent is expected to seek the views of persons who may be affected by the project and publicize the project and its anticipated effects and benefits as indicated in section 17 of the regulations. The proponent is expected to ensure implementation of the environmental management plan and carry out a self-auditing study as indicated in sections 34 and 35 respectively.*

4.5.3. Environmental Management and Coordination (Waste Management) Regulations, 2006

Part II of the regulations on general provisions of waste disposal requires amongst others that no waste be disposed on a public highway, street, road, recreational area or in any public place

except in designated waste receptacle. The waste generator is expected to collect; segregate and dispose waste as well as minimize waste generated by adopting cleaner production methods. In addition, he is prohibited from discharging or disposing waste in any state into the environment unless the waste is treated in a treatment facility in a manner prescribed by the authority in consultation with the relevant lead agency.

The proponent shall adhere to the laid-out requirements in these regulations to ensure appropriate waste management.

4.5.4. Environmental Management and Coordination (Noise and excessive Vibration Pollution) (control) Regulations, 2009

The Environmental Management and Coordination (Noise and excessive Vibration Pollution) (control) Regulations, 2009 prohibits, except as otherwise provided, any person from making or causing to be made any loud, unreasonable, unnecessary, or unusual and/or vibrations which annoy, disturb, injures, or endanger the comfort, repose, health or safety of others and the environment. It further lists certain factors as indicated in Regulation 2 to be considered in determining whether the noise is loud. Regulation 5 prohibits any person from making, continue or cause to be made or continue any noise higher than the noise levels set in the First Schedule of these regulations unless such noise is reasonably necessary to the preservation of life, health, safety or property.

Regulation 4 states that no person except as otherwise provided in the regulations shall make or cause to be made excessive vibrations which annoy, disturb, injure, or endanger the comfort, repose, health or safety of others and the environment; or cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source.

Regulation 11 regarding the use of machinery prohibits any person wishing to (a) operate or repair any machinery, motor vehicle, construction equipment or other equipment, pump, fan, air-conditioning apparatus or similar mechanical device; or (b) engage in any commercial or industrial activity, which is likely to emit noise or excessive vibrations, shall carry out the activity within the relevant levels prescribed in the First Schedule of these regulations. Regulation 12 regarding noise emitted from motor vehicles, no person should operate a vehicle that exceeds 84 dB(A) when accelerating.

Regulation 13, sub-regulation 1 states that regarding construction at night, no person shall operate construction equipment or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these regulations.

Regulation 16 sub-regulation 1 states that where a sound source is planned, installed or intended to be installed or modified by any person in such a manner that such source shall create or is likely to emit noise or excessive vibrations, or otherwise fail to comply with the provisions of these regulations, such person shall apply for a licence to the authority i.e.,

NEMA. As the Proposed KIHBT Ngong Kibiko Campus Tuition Block will involve use of equipment that may cause high noise levels, *the proponent while applying for this license must provide information as indicated in sub-regulation 4 of the same regulation*.

Schedule 1 of these regulations allows for a maximum sound level limit for commercial areas of 60 dB(A) during the day and 35dB(A) at night and a noise rating level of 55NR during the day and 25NR at night. The proposed project being within KIHBT Ngong campus, the proponent will adhere to set noise levels. For construction sites according to the second schedule, maximum permissible noise levels are 75 dB(A) during the day and 65dB(A). *The contractor is required to adhere to the noise limits.*

4.5.5. Environmental Management and Coordination (Air Quality) Regulations, 2014

The objective of the Environmental Management and Coordination (Air Quality) Regulations, 2014 is to provide for the prevention, control, and abatement of air pollution to ensure clean and healthy ambient air.

The regulations in part 2 sections 5 to 9 prohibit compromise of the ambient air quality levels specified in the first and second schedules of the regulations (*Appendix A11*). Section 25 of these regulations prohibits any person from causing or allowing the emission of visible air pollutants from a stationary vehicle more than fire limits set out under the prescribed standard. The section further requires the operator of a mobile emission source to control the emission of priority air pollutants as set out in the second schedule. The appointed project contractor will hence have to ensure that emissions from internal combustion engines of machinery and/ or vehicles do not exceed prescribed standards. Operators of construction machinery shall be provided by the contractor with face masks where necessary.

Section 33 of the regulation's states that no person operating construction equipment or handling construction material shall allow emission of particulate matter so as to exceed the limits set out in the first schedule. It further states that no person shall cause or allow stock piling or other storage of material in a manner likely to cause ambient air quality levels set out under the first schedule to be exceeded. The project contractor during the construction stage will hence have to abide with sections 33 to 35 of these regulations. *The project contractor during the construction stage will abide with sections 33 to 35 of these regulations and adhere to set standards of these regulations*.

4.5.6. Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006

The Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006 seek to control emission of fossil fuel into the environment. The regulations allow for NEMA to administer a system for emissions inspection of all internal combustion engines within Kenya and may require every internal combustion engine to be inspected at least once annually.

Section 4 (1) of these regulations requires that any internal combustion engine is subject to Section 4 (1) of these regulations requires that any internal combustion engine is subject to inspection under these regulations and shall, as a condition of compliance with the inspection, pass such tests as may be required to demonstrate that the internal combustion engine complies with any standards and requirements for the control of air pollution or contamination as may be prescribed. Section 4 (2) requires that emission standards to be complied with by any internal combustion engine shall be those set out in the first schedule to these regulations. Section 4 (3) requires that any person who operates or owns an internal combustion engine and permits it to be operated upon any road, street, public highway, or any premises, which emits smoke or other air contaminants in excess of emission standards set out in the first schedule commits an offence and shall be liable, upon conviction, to the penalty prescribed in section 144 of the EMCA Act. *The project contractor must therefore ensure that he complies with the regulations set on emission of fossil fuels from construction machinery.* Schedule 1 sets out permissible petrol- and diesel-powered motor vehicle emission standards.

4.5.7. Environmental Management and Coordination (Water Quality) Regulations, 2006

The Environmental Management and Coordination (Water Quality) Regulations, 2006 seek to regulate water used for domestic purposes, drinking water, industrial purposes, or any other purposes. The objective of the regulations is to also prohibit discharge of effluent into the environment contrary to established standards. Regulation 4 prohibits any person from directly or indirectly causing immediate or subsequent water pollution. Regulation 5 requires that all sources of water for domestic use comply with the standards set in the first schedule. Regulation 8 requires that all operators and suppliers of treated water, and all water vendors comply with the relevant water quality standards as promulgated by the relevant lead agencies.

The first schedule of these regulations sets the quality standards for sources of domestic water. The second schedule indicates permissible standards for water quality monitoring for domestic water sources (*Appendix A12*).

The contractor and proponent will adhere to these regulations on water quality management.

4.5.8. Planning & Building Regulations, 2009

The overall aim of the planning and building regulations is to promote and enhance planning and its enforcement at all levels; to encourage optimal use of resources; enhance safety, health, and convenience; and to improve acceptability and compliance to these regulations. These regulations cover provisions for national, regional, and local physical planning, siting, site operations, building design, building and infrastructure services, disaster risk management on construction sites and maintenance of all buildings.

The proponent is hereby required to submit to the county government the necessary plans and particulars of the proposed facility for approval before any construction commences as indicated in section AA7 and AA10. All buildings erected are expected to be in accordance with the approved plans and shall be used for the purpose specified in the approved plans. The proponent should ensure that the architectural, structural, civil, electrical, and mechanical

designs shall be done by registered professionals and their services shall be retained for the purpose of supervising the erection of the buildings. *A resident engineer and/or clerk of works or foreman shall be employed on site throughout the period of construction.*

According to section AA 33, it is stated that throughout the development work, every person responsible for the erection of the building shall ensure by suitable means the safety and protection of all persons and property liable to be affected by the work. Steel and concrete shall be tested as the work proceeds to establish consistency and strength. Refuse disposal and construction of refuse chutes shall follow the guidelines indicated in section RR17 TO RR28. According to regulation BB 10.5, the building plans shall show that an approved wholesome water, sufficient for the purposes to which the building is to be put will be provided and the supply so provided shall be connected to the fittings and ready for use before a certificate of completion will be issued by the council. An approved supply of stored water shall be provided and maintained for firefighting purposes as indicated in section SS 34. *The proponent and contractor shall hence ensure compliance with these sections on safety, construction material testing, refuse disposal, and source of potable water to be used in the Proposed Tuition Block.*

The planning and building regulations further prohibit developers from (1) connecting to the various public services without permit and (2) obstructing public services. *The proponent is expected to abide with this law. The proposed project will however be connected to the existing water supply system and liquid waste disposal system found within KIHBT Ngong campus which has been found to have adequate capacity to accommodate the proposed tuition block activities. The project electrical engineer will ascertain the capacity of the electrical transformer to determine if it can support the anticipated electrical power demand by the proposed project and advise the proponent accordingly.*

4.6. World Bank Operational Policies and Procedures on Environmental Assessment (EA) (OP/BP 4.01)

The Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision-making. EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation.

OP/BP 4.01 on Environment Assessment was triggered mainly due to planned civil works projects including construction of new infrastructure under the EASTRIP project. The World Bank classifies projects into one of three categories (A, B and C), depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts. EASTRIP was assigned project category B based on project impacts and risks.

The proposed KIHBT Ngong Kibiko Campus Tuition Block falls under Category "B" as described above. Applicable requirements as stipulated in OP4.01 shall be adhered to during implementation of the proposed project. The proposed project has complied with this policy by carrying out an ESIA.

4.6.1. World Bank Group Environment Health and Safety Guidelines (EHS Guidelines)

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. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent.

The World Bank Group Health & Safety Guidelines guide the health and safety management of WBG funded projects. The section is divided into four areas: Environmental, Occupational Health and Safety, Community Health Safety and construction and decommissioning. The main component of the project as regards health and safety include:

Occupational Safety and Health

The proponent and the contractor are required to provide all necessary precautions to protect the health and safety of their employees and students (for the proponent). This includes ensuring the buildings are of sound construction with adequate ventilation, lighting, away from bad odour, and excessive noise which impacts negatively on the health, safety, and comfort of the employees. The proponent is aware that the project area will be generally noisy owing to the movement of trucks and construction machinery while at work. During construction, the contractor will be guided to work as much as possible during the day, especially for tasks likely to emanate high noise levels. Proper ventilation, lighting and workspaces have been considered in the project design. Firefighting facilities and equipment, safe drinking water, adequate washing water and facilities, rest areas, safe access and eating facilities have been considered within the project design guided by EHS guidelines.

The proponent and the contractor will communicate the health and safety risks resulting from their tasks. They will ensure that the communication is received and understood by employees, visitors, and travellers. Chemicals, structures, equipment will be labelled to further control access and use, while communicating the hazards, risks and their mitigation. As far as reasonably possible, the employees of the proponent and the contractor shall be trained on Basic OHS as is also required by OSHA 2007.

Monitoring of the various parameters such as noise, air quality, vibration will be done by the proponent to further mitigate the impacts of these hazards on the employees and students. Accident and disease monitoring will be done to map and further mitigate high risk tasks. KIHBT staff will be adequately trained and informed on OHS risks to participate in monitoring of the OHS parameters.

Community Health and Safety

The World Bank EHS guidelines on Community Health and Safety guide the proponent on managing health and safety impacts beyond the boundaries of the project. The project aims to connect to the existing main water supply within KIHBT Ngong campus to ensure an adequate supply of water for the proposed tuition block. The water will be monitored to ensure its quality and treated to potable quality for use by the KIHBT staff and students and for cleaning and use in the sanitary conveniences.

The proponent will adequately communicate to the staff, students, and visitors the works programme through displaying awareness posters and other communication channels to make all aware of the risks of the construction works and ways to mitigate these risks. As is a requirement, the design puts into consideration the soils structures, existing structures, existing systems of operation, accessibility, fire safety, traffic safety, and neighbouring structures. An Emergency Action Plan (ERP) will be developed by the proponent and the contractor as guided. These plans will be communicated to KIHBT staff and students.

During operation, the proponent will develop and implement a hazardous material management plan which guides on the temporary holding, documentation requirements, inventory of hazardous materials passing through or stored at the Proposed Tuition Block. The proponent shall be instrumental in honouring Kenya's commitments under the Basel Convention on the control of transboundary movement of hazardous wastes and their disposal. Monitoring plan of this management plan will be developed and adhered to by both the proponent and the contractor. The proponent commits to implement facilities and structures that will, as far as reasonably possible, prevent the spread of communicable and vector borne diseases.

5. BASELINE CONDITIONS

5.1. Environment Baseline

5.1.1. Physical and Topographic Features

Kajiado County is characterised by valleys, plains, and occasional volcanic hills (County Government of Kajiado, 2018). Lake Magadi, at 500 meters above sea level, has the lowest altitude while Ngong Hills at 2500 metres above sea level has the highest altitude above sea level. The county's landscape spreads over four natural features namely: Rift Valley, Central Broken Ground and Athi Kapiti plains. The Rift Valley's steep slopes form plateaus, structural plains and scarps forming features like Lake Magadi, which characterise the region. The lake, which is around 100 square kilometres, is in an endorheic basin that was created by a graben. The elevation varies from 600 to 1740 metres above sea level. Shield volcano Mount Suswa has an unusual twin crater with a moat-like inner crater encircling a tilted block. Aside from being Nairobi National Park's dispersal area, the Athi Kapiti plains are an important wildlife concentration area. During the wet season, wildlife dispersed from the Amboseli National Park converges at this point. Additionally, wildlife from Chulu, Tsavo West and Amboseli prefer this place as their calving ground. Mbagathi and Kiserian River tributaries feed the Athi River, whose catchment area is the Ngong Hills.

The topography at the project site is generally flat with a gentle slope running a west to east direction.

5.1.2. Climatic conditions

Rainfall

Kajiado County experiences bi-modal rainfall which is unevenly distributed throughout the County (County Government of Kajiado, 2018). Long rainfalls are present from March and May, while short rainstorms fall from October to December. The rainfall amount in the Amboseli basin varies from 300mm while in the Ngong hills, it ranges from 1250 mm in Ngong hills and along the slopes of Mount Kilimanjaro.

Temperature

Temperatures in Kajiado County vary both with altitude and season. The highest temperatures of about 34^{o}C are recorded around Lake Magadi while the lowest of 10^{0}C is experienced at Loitokitok on the eastern slopes of Mt. Kilimanjaro. The coolest period is between July and August, while the hottest months are from November to April.

5.1.3. Geology & Soil Type

The County's three geological regions are Quaternary volcanic, basement rock soils, and Pleistocene. Basement system rocks which comprise of various gneisses, cists, quartzite, and crystalline limestone are found along river valleys and in some areas of the plains. Quaternary volcanic soil is found in the Rift valley. Pleistocene soils are found in the inland drainage lake system around L. Amboseli. Due to it rocky geology, widespread quarrying for building material is practiced within the County.

The soil type at the project site is red soil (see plate 17).

Plate 17: Red soil found at the project site

5.1.4. Flora & Fauna

The County's vegetation type is influenced by rainfall, soil type, and height and it has been heavily impacted both human activities such as cattle grazing, charcoal making and firewood harvesting. Vegetation is scarce in low altitude areas and increases with altitude. Ground cover throughout the county varies seasonally with rainfall and grazing intensity. Canopy cover ranges from less than 1 percent on heavily settled areas to about 30 percent on steep hills. Amboseli National Park hosts more than 400 bird species and a diverse number of African wildlife species, attracting tourists from all over and thus contributing to the increase of foreign and domestic income.

The project site is enclosed with a *Duranta repens* hedge and the vegetation within the project site is comprised of mature trees, young trees, bushes, and a grass thicket. Mature trees include the following: *Casuarina equisetifolia, Ecalyptus globulus, Acasia xanthophloea, Spathodea nilotice, Ficus sycamorus, Schinus terebinthifolius, Croton megalocarpus, Jacaranda mimosifolia, Cuppressus lusitanica, Waburgia ugandensis, Schinus molle, Euphorbia candelabrum (see plates 18-23).* Edible landscaping included *Eryobotra japonica*. Young trees found within the site included *Grevillea robusta, Waburgia ugandensis, Croton megalocarpus, Eucalyptus globulus* (plate 24).

The project's site plan and landscape design aim at retention of most of the mature trees. The building is proposed to be situated at the part of the site with a clearing and the parking areas are designed around the existing trees. Young trees found within the project site that may be removed due to the construction works will be identified and restoration of the lost vegetation will be carried out in the KIHBT Ngong campus. The landscape design further proposes the addition of new trees and shrubs that will increase the current vegetation cover.

Plate 18: Cuppresus lusitanica

Plate 19: Buddleja saligna

Plate 20: Spathodea nilotica

Plate 21: Ficus sycamorus

Plate 22: Equcalyptus globulus

Plate 23: Euphorbia calandula

Plate 24: Young trees at the project site

Plate 25: Duranta repens hedge

Plate 26: Bush and grass at the project site

5.1.5. Drainage & Hydrology

The county's groundwater range ranges from 0.01 to 35.77 cubic metres per hour. Groundwater utilised for residential usage, irrigation usage and cattle is average of good quality. High-yield springs can be found along the slopes of Mount Kilimanjaro and have an average production

of 20 to 50m3/hr. Surface water coverage varies from place to place with most rivers in the eastern part of the Rift Valley draining towards the east while those within the floor of the valley are restricted to the small depressions and lakes that have no major outlets.

It was noted that the topography is generally flat within the project site. The project civil design has factored surface drainage of the project site with surface runoff being directed towards the existing drainage channels in the Ngong campus. The retention of vegetation and landscaping will ensure on site percolation of water recharging the aquifers.

5.1.6. Environmental Degradation and Pollution

Major degraded areas in Kajiado County are Olkeriai River and its tributaries cutting across Kajiado Central and East, Toroka River in Kajiado West sub-county and Olkejuado 'Dead River' in Kajiado Central. This is mainly because of sand harvesting along the river bends which has been exploited for commercial purposes (County Government of Kajiado, 2018). In Kajiado Central, Oldepe in Mosiro ward, Ewuaso ward, Oltepesi in Lodokilani ward, Torosei, Mailua, Meto, Ilmarba, Ilpatimaro, and Lorngosua all have been highly degraded. Illegal logging and illegitimate charcoal burning have been the major causes of degradation. Flash floods are a common menace during long rains season mainly because of erosion and lack of vegetation cover.

5.2. Social Baseline

5.2.1. Population Characteristics

The project area is in Kajiado County, Kajiado West Sub-County Ewuaso Kedong Ward, Kibiko location. The county has a recorded census population of 1,117,840 persons and a population density of 51.11 persons per square kilometre (see table 1). The County is estimated to have a high population growth rate of about 5.5% (Couty Government of Kajiado, 2019). The county has an urban population of 622,622 persons and a rural population of 495,218 persons. The county has a youthful population of 662,492 persons (15-64 years), 431,555 persons as the child population (0-14 years) and 23,734 persons as the senior citizens (65+ years). To ensure inclusive and equitable quality education, there is need to ensure 100 percent retention and transition rates to technical education and university. This will require a need to expand existing tertiary education institutions to accommodate the growing youthful population. The county needs to invest in awareness creation to parents and learners on the importance of education at all levels. The County Government of Kajiado needs to support various youth programmes aimed at addressing unemployment, drug and substance abuse, and HIV & Aids.

According to the 2019 population census Kajiado's population characteristics are as follows:

Table 1: Distribution of population per sub-county

	MALE	FEMALE	INTERSEX	TOTAL
Kajiado Central	81,514	80,343	5	161,862
Kajiado North	150,675	155,908	13	306,596
Kajiado West	91,607	91,237	5	182,849

	MALE	FEMALE	INTERSEX	TOTAL
Isinya	105,607	104,860	6	210,473
Loitoktok	94,613	97,225	8	191,846
Mashuuru	33, 082	31,131	1	64,214
				1,117,840

There are 48 staff members stationed at the Ngong Kibiko campus and approximately 60 others shared with the Main Campus (Nairobi), including part time trainers. As at the end of March 2023, the Ngong Kibiko campus had a student population of approximately 764. The proposed project iss expected to enhance student enrolment numbers in the campus.

5.2.2. Housing and Settlement Patterns

As per the 2019 Kenya Population and Housing Census, the total number of households stood at 316,179 with an average household size of 3.5. Human settlement pattern in the county is divided into urban and rural, with majority of the population settling in urban areas compared to rural areas. The county has experienced intensified population pressure that has triggered land use/cover change compounded by climate change. Expansion of settlement areas due to population influx from the Nairobi City County has increased the demand for housing and other infrastructural development in the county. This has seen sprawling of settlements within and outside the boarders of major towns in the county. Major urban areas include Ngong, Ongata Rongai, Kitengela, Ngong and Loitokitok. Privatization of land tenure, subdivision and commercialization of communal rangelands have resulted to further disaggregation of human settlement in the county. There is marked variation in housing in the urban, peri-urban and rural settlements. In urban centres there are both high-end settlements and sprawling slums. The peri urban areas have mainly permanent and semi-permanent houses. While in rural areas we have semi-permanent houses and manyattas. Due to rapid urbanization and lack of formal sector to supply adequate houses especially for the low-income segment of the society, there has been proliferation of informal settlements (slums, squatter settlements and other form of shanty developments) to meet the housing gap (Couty Government of Kajiado, 2019).

Table 2: Distribution of informal settlements in Kajiado County

TOWN	INFORMAL SETTLEMENT
Ngong	Gichagi, Mathare
Kajiado town	Majengo
Ong'ata Rongai	Kware and Gataka

Source: Kajiado County Spatial Plan 2019-2029

5.2.3. Education

The literacy level in Kajiado County is lower at 65.2% compared to the national literacy level of 71.4% according to the Ministry of Education reports. This can be attributed to a combination of factors that include high school dropout rate, low transition rate and socio-cultural practices among others. Cultural practices such as early marriages and Female Genital Mutilation (FGM) are a major impediment to girl-child education and empowerment while

young boys take part in herding at the expense of education. There are about 888 Early Childhood Development (ECD) centres in the County with 2594 teachers in Kajiado County. The population stands at 61,225 for both boys and girls. Pre-primary population stands at 52,091 for both boys and girls while the total enrolment stands at 42,565. The County has a total of 771 primary schools comprising of 446 public and 325 private schools. The total population of pupils stands at 154,677 translating to a teacher / pupil ratio of 1:43. The transition rate from primary to secondary schools stood at 54% as of 2013 with most of the beneficiaries being boys. The distribution of primary education facilities is skewed with the urban areas having more facilities. The county has a total record of 121 secondary schools with 70 being public and 51 private schools; with a net enrolment of 20,122 students (54%) and 2,614 teachers hence the teacher/student ratio was 1:21.

The county is home to the Maasai Technical Training Institute (MTTI). Kajiado county has five operational polytechnics: Olekasasi in Kajiado North; Isinya in Kajiado East; Oltiasika and Namelok in Kajiado South; and Entasopia in Kajiado West. Meto polytechnic is non-operational while the county plans to open two more in Oloolua and Saikeri. Trainees acquire varied skills in courses offered including fashion design and garment making; Motor vehicle mechanic; Carpentry and joinery; Information, Communications and Technology (ICT); Building and Construction; Hair dressing and Beauty therapy; Leather work; Electrical and electronic courses among others. KIBHT Ngong Campus is a regional TVET institution in Kajiado West and it offers courses in the building technology, architecture, civil engineering, mechanical engineering, and electrical engineering. The County has five private universities and two private university campuses. These universities include Nazarene University, Adventist University, UMMA University, KAG East University, The East African University. Other training institutions include teachers training colleges and commercial colleges spread across the main towns. The county plans to establish Olkejuado University of Applied Technology (OLKUAT), a public university aimed at providing technical skills for the much-needed manpower in varied fields of the economy.

5.2.4. Economic Aspects & Livelihood Sources

Livestock rearing is the main economic activity in Kajiado County, providing a source of livelihood for many residents. The farm animals are used in producing milk and beef for the local market in the County and to the neighbouring Nairobi City County. In rural Kajiado, the major trade activities involve livestock and agricultural produce. Despite Kajiado County classification as an Arid and Semi-Arid (ASAL) area, there is a growing number of residents who practice irrigation farming in areas such as Kimana and Rombo. Commercial activities are spread out across the whole county, with high concentrations within and around urban centres. The county is home to several conservancies and tourist attraction sites which include Amboseli Conservancy, Shompole Conservancy, Mount Suswa Conservancy, Rimpa Estates Wildlife Conservancy, Ngong Hills, and Chyulu Hills National Park, among many others.

The total number of employed persons is 381,521 comprising of 55.5 percent of the entire population. The number of employed persons between the ages of 15-64 is 238,373 representing 34.7 percent of the population. The working population mainly work in formal

and informal sectors within the county and in adjacent counties. Most of the self-employed persons are engaged in livestock trade, retail and wholesale trade, horticulture and floriculture, industrial activities, Jua kali, tourism sector. However, the lack of skills and low educational attainment are major challenges affecting the residents in the County. The unemployment rate in Kajiado ranks at 9.7. There are 14 established markets with 11 markets duly completed and 3 at various levels of completion. There are 10 major manufacturing industries and factories; and 15 mining and Natural resources extractors. The factories and industries production range from plastics, glass, cosmetics, blocks, engineering, agro, among others spread across Kajiado North and Kajiado East. There are a total number of 24,453 registered and licensed businesses spread within 117 trading centres According to the Micro, Small and Medium Establishments Basic Report 2016, Kajiado County has a total of 46,100 licensed and 101,900 unlicensed MSMEs.

5.2.5. Land & Land use Patterns

The county is endowed with vast land and diverse land resources. Land in Kajiado is categorized as community land, private land or public land and registered as leasehold or freehold interest. The percentage of land with title deeds in the county is estimated at 95 percent in rural areas and 5 percent in townships. There are a few reported cases of landlessness because of irregular sale and transfer of matrimonial land particularly in rural areas. Due to increased demand on land and pressure from the Nairobi City, rapid urban development is taking place across the county. These include industrial development, massive housing developments, quarrying/mining, among others. The high demand for land for various use has significantly contributed to increased land subdivision and fragmentation of agricultural land into unsustainable portions.

The dominant land uses in Kajiado County can broadly be categorized as rural and urban land uses. The rural developments comprise of agricultural activities, both crop farming and livestock production; industrial development and primary production such as mining; rural residential developments (homesteads); and conservation and rangeland. The rural developments are arranged in a dispersed manner throughout the county with clustering of developments in nodes. The urban developments in the county include residential development; industrial developments such as manufacturing; educational/social facilities; recreational; commercial developments; Infrastructure; and urban agriculture.

5.2.6. Neighbourhood Analysis

The KIHBT Ngong campus is neighboured by: IGAD Climate Prediction and Applications Centre (ICPAC) headquarters, Office of the Chief (Kibiko location), Kibiko police post, and Kibiko shopping centre, residential settlements and Ngong Embakasi forest. The project site is located within KIHBT Ngong campus and is neighboured by the sports field, dining hall, tuition blocks and staff housing (see plates 8-16).

Source; Google Earth

Figure 5: KIHBT Ngong Campus Neighbourhood

5.2.7. Neighbourhood Social Data

Bio Data of Respondents

The respondents who were pooled from the students within the campus and the community surrounding KIHBT Ngong campus were 59% percent male and 41% female. The number of male respondents was significantly higher since a big percentage of the students within the institute are male.

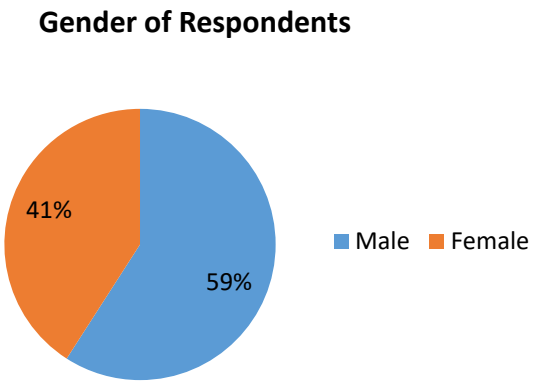


Figure 6: Gender of respondents

Majority of the respondents were between the 18-25 years age bracket, followed by 36-45 years age bracket.

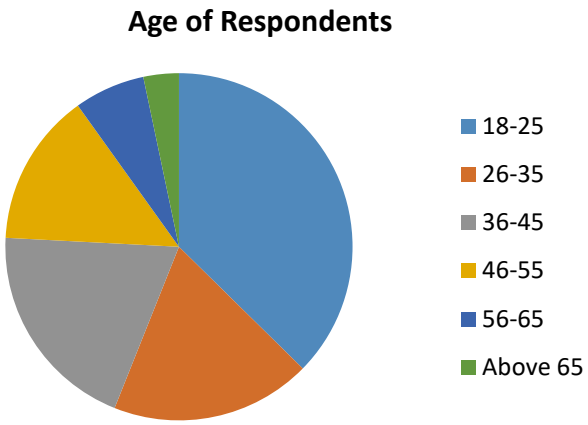
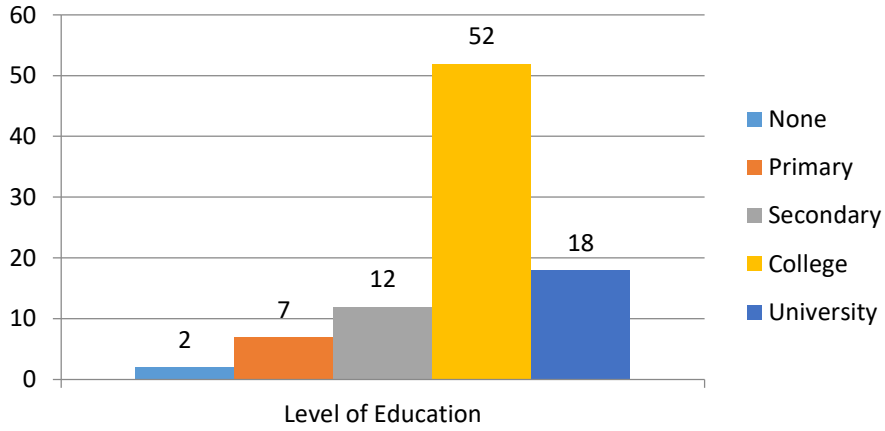


Figure 7: Age of respondents

Education Level of the Household Head

The survey results show that 7% of the respondents had primary level education, 12% secondary level education, 52% tertiary education 18% had attended university while the remaining 2% had no education at all. It is important to establish the education level as it shows the understanding capacity of the stakeholders regards to the proposed project.

Majority of the respondents had College level of education.



Area of Residence

The respondents were drawn from various areas. The community representatives who were present during the public participation meeting mainly live in Ewuaso Kedong Ward. The students' respondents' place of residence was from various parts of the country as the institute has students from across the country.

Occupation of the respondents

The survey findings established that 38% of the respondents were students, 28% were people in formal employment, 13% were businesspersons, 9% were unemployed, 8% were people in casual employment/ casual labourers while 2% were persons who had retired. The large representation of students in the survey shows that the primary beneficiaries for the proposed project had been made aware of it and their views sought.

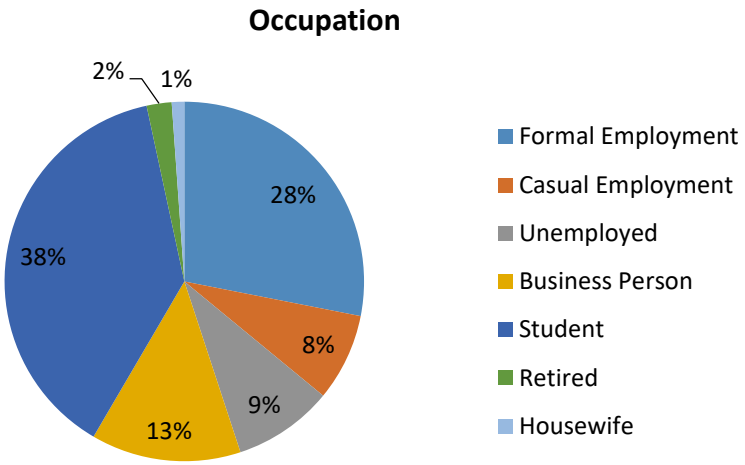


Figure 8: Occupation of respondents

5.3. Infrastructure

5.3.1. Transport Communication Network

Kajiado County has a road network of approximately 5842.36 km (Couty Government of Kajiado, 2019). This includes 1,111.9 km of earth roads, 932.3 km of murram and 375 km of bitumen (County Statistical Abstract 2015). The five major tarmac roads in the county are Emali-Loitokitok; Namanga-Kitengela, Isinya-Kiserian, Magadi-Mbagathi and Kiserian-Ngong. The County has two modern bus parks namely Kitengela and Ngong. In Kajiado County, 907.98 km of roads are under KeNHA. Of these, 416.76 km are paved while 491.22 km is unpaved. Similarly, KeRRA oversees 388.2 km of roads in Kajiado County out of which 4.54 km are paved while 383.68 km are unpaved. The Standard Gauge Railway (SGR) traverses the county through parts of Kajiado East and North with a major SGR terminus at Emali. A major underpass tunnel which covers 4.5km situated in Em-Bulbul – Ngong has been completed and it traverses across the southern part of the KIHBT Ngong campus (see figure 1). The railway is used as a means of transport for soda-ash and other by-products and as well serving residents with commuter services in towns and areas such as Singiraine, Kenya Marble Quaries (KMQ), Kajiado and Elangata-Wuas. There are seven airstrips in Kajiado County, with at least one in each Sub- County.

KIHBT Ngong campus is located along the Forest line tarmac road off the Ngong-Suswa Road, which is currently under construction. Access into KIHBT Ngong campus is by one main

entry/exit points. The internal circulation routes within the KIHBT Ngong campus feature separated motorised and non-motorised traffic.

Plate 27: Tarmacked roads within KIHBT for vehicular movement


Plate 28: Separated pedestrian and driveways within KIHBT Ngong campus

Plate 29: Pedestrian walkways within KIHBT Ngong campus


5.3.2. Electricity

Ngong Hills wind power station is connected to the national power grid with a capacity of 25.5 MW. Kipeto 1&2 wind power project, Magadi solar project and Mt. Suswa geothermal project are also underway. The major sources of lighting energy are electricity, solar, lantern and tin lamp. In Kajiado County, about 85% of schools and 75% of health facilities are connected to

the national grid through the government's last-mile connectivity program. Connectivity to the rural household is however low at only about 20%. Access to electricity by Sub County is lowest in Kajiado South at 1.2% and the highest access was in Kajiado North at 78.2% (Couty Government of Kajiado, 2019). The major sources of cooking energy are Liquefied Petroleum Gas (LPG), paraffin, firewood, and charcoal (County Government of Kajiado, 2018).

KIHBT Ngong Campus is already connected to the national electricity power grid. Currently there is an existing 315KVA pole mounted transformer serving the KIHBT Ngong campus and its immediate neighbours. A provisional sum has been made to liaise with Kenya Power and Lighting Company for the institution to have its own dedicated transformer. This will aid in decreasing power outages within the institution. The anticipated Power demand during construction is 120KVA and 110 KVE during the operation phase. The contractor will apply to Kenya Power for a power line and meter to use during the construction period. After construction of the Proposed Tuition Block, the electric power meter will be handed over to KIHBT to operate and manage. KIHBT Ngong campus has a stand-by three phase generator whose output is 100kVA and has a voltage of 430/400. The back-up generator provides electricity in the event of power black-out. Due to budget limitation for the Proposed Tuition Block, KIHBT will source for a separate budget to purchase a new standby generator for the Tuition block if required. The Proposed Tuition Block will hence be connected to the existing generator at the institution. It is advised that any alterations to the existing electrical system due to the additional works be worked on by an electrical engineer to ensure safety of current and future users. The proposed electrical power design optimises use of natural lighting as much as possible, use of low wattage, highly efficient bulbs, and other appliances to reduce power consumption. All light fittings will be converted to LEDs. In addition, the roof of the Proposed Tuition Block shall be retrofitted with solar panels for solar energy production.

Plate 30: Existing transformer next to the workshops near the project site

Plate 31: Existing Street lighting at KIHBT Ngong campus

There is Street lighting at various points within KIHBT Ngong Campus e.g., wall mounted street light and standalone street lamps along circulation routes (see plate 31). Additional street lighting shall be introduced at the Proposed Tuition Block and on its car parking area. This will illuminate this section from the administration block towards the dining hall.

5.3.3. Telephone & ICT

Mobile telephony connectivity in the county is at 60 percent with major signal instabilities in parts of Kajiado West, South and Central. Internet connectivity have been enhanced within the county headquarters due to availability of fibre optic cables but have major signal oscillations in other parts of the county. Most areas are served with radio and television services with some areas having low signal frequencies. Kajiado County has three (3) huduma Centres located within Kajiado town, Ngong and Kisamis. This has enhanced transparency, efficiency, and easy accessibility of public services to all. There are six (6) post offices situated in Kitengela, Ongata Rongai, Kajiado, Ngong, Namanga, and Loitokitok.

In the proposed design, there shall be use of fixed Telkom lines and mobile phones for communication. The proponent will apply to TELKOM to have the Proposed Tuition Block connected to the fixed Telkom lines that will ease communication within the institution. PABX is the automatic exchange line. There will also be use of mobile phones for communication. Internet connection in all KIHBT campuses is provided by Kenya Education Network (KENET). The Proposed Tuition Block shall be connected to the existing system.

5.3.4. Water supply

There are five Water Resource User Associations (WRUA) managed by the communities at the grass root levels. There are also several water service providers (WSP) within the County among them Nolturesh-Loitokitok Water and Sewerage Company in Kajiado South; Olkejuado Water and Sewerage Company (OWASCO) in Kajiado Central and Nolturesh Water and Sewerage Company Limited in Kajiado North, and Oloolaiser Water and Sewerage Company Limited (OWSC). The companies are wholly owned subsidiaries of the County Government of Kajiado. Kajiado County does not have adequate water harvesting structures. There has been low community involvement in construction and rehabilitation of water supply facilities. In

areas close to wetlands the underground water table is shallow and hence shallow wells provide adequate water supply (Couty Government of Kajiado, 2019). Water can be obtained from the riverbed of the Kajiado River. Several dams (Kiserian dam) have been constructed for both water supply and for livestock. Sand dams have been constructed in some riverbeds. The main sources of water in the rural areas are water pans, dams and protected springs with the most reliable source being boreholes. There are 1150 public boreholes which are commonly managed by communities. However, the county is still water stressed.

KIBHT Ngong Campus gets water supply from a borehole located within its premises with a storage capacity of 75 cubic metres. The existing daily usage of water within KIHBT Ngong campus is as follows: 16,000 litres for student boarders; 4,500 litres for student day scholars; and 3,000 litres for teaching and non-teaching staff. The institution hence currently has a daily water demand of 23.5 cubic metre ($25m^3$). The cold-water storage should be 20 litres per person in a technical institution as per the Plumbing Engineering Design Guide, 2002. The total daily water demand from the Proposed Tuition Block is 23,360 litres ($23.36m^3$). The Proposed Tuition Block has been allocated a 40,000lts ($40m^3$) water storage tank. The proposed water storage facilities at the Proposed Tuition Block should suffice the 5days weekly period during which the building is utilized. The proposed project water supply will therefore be from the existing borehole. Rainwater will be collected from the roof of the Proposed KIHBT Tuition Block and directed to the downpipe and rainwater tank located at ground level of the building. The sizing of rainwater tank is based on the maximum volume of the water capture from the roof area to the water harvesting tanks. A 10,000 litres plastic water storage tank is deemed as sufficient for storing roof harvested water. The water demand for fire protection services in the Proposed Tuition Block is for fire hose reel installation. British standards code of practice BS 5306: Part 1 requires that one hose reel should be provided for every 800 square metre of floor area. The standards further indicate that the required operating reel inlet pressure should be 1.2 bars for a 30m hose with 6.35mm nozzle and 3 bars for a 30m hose with 4.8mm nozzle. The length of the jet to be approximately 6m and minimum delivery rate of 0.4l/s. The total water reserve for fire protection is therefore 1,600 litres.

During the construction phase, a discharge water metre shall be installed at the project construction site to monitor usage. KIHBT and the contractor shall have agreements on water user, water supply schedule and any water supply charges. A water storage tank shall be provided to store water. The contractor shall use water bowsers and tankers to bring in water for construction activities if /or when there is water shortage or during periods of high water demand e.g., slab formation.

Water conservation measures for the proposed project include use of harvested roof water to irrigate the landscape and other non-potable water uses; installation of plumbing fittings that adhere to green building standards; installation of water conserving water taps that automatically turn-off when not in use; provide information signs or notices to sensitize on means and need to conserve water resources e.g., ‘Keep/ Leave the Tap Closed’.

5.3.5. Sewer system & Storm water management

Despite the rapid urbanisation in the County, the County lacks a robust sewer management system. Most urban centres in Kajiado do not have proper sanitation and wastewater treatment plants. There is inadequate sewerage and storm water drainage systems in most urban centres, and these centres drain their wastewater in cess tanks and small natural streams and swamps. Most households depend on ineffective wastewater disposal systems such as septic tanks or Urine Diverting Toilets (UDDDTs). Percentage distribution of persons accessing toilets/latrines is very low at 26 percent in rural areas and 47 percent in the urban areas. Open defecation is still practiced in the county with only 25 Open Defecation Free certified villages.

The wastewater at KIHBT Ngong campus is currently disposed of into a combined septic tank system which is adequate for the current population and is in good condition. The septic tank has an overall capacity of 459 cubic metres (6m X 17m X 4.5m). The existing septic tank can handle a maximum daily capacity of 2,300 persons. The current estimated average daily sewage wastewater flow is 56 cubic metre ($56m^3$). Existing buildings within KIHBT Ngong campus are connected to the existing combined septic tank system by sewer system pipes and masonry inspection chambers used to monitor the status of the system. Desludged effluent from the septic tank is released into the soak pit, and currently there is no effluent flow after the soak pit.

In the Proposed Tuition Block, the anticipated required capacity for sewage water discharge is 120 cubic metre ($120m^3$). A new sewer line to connect the Proposed Tuition Block to the existing combined septic tank system shall be constructed. The existing $459m^3$ septic tank is adequate for the additional anticipated population from the Proposed Tuition Block once operational. Storm water from the Proposed Tuition Block will be connected to the existing storm water drainage system within KIHBT Ngong campus.

5.3.6. Solid Waste management

The County lacks a proper solid waste management plan or framework. There are however seven public dumpsites managed by the County Government. The dumpsites include Kajiado, Kitengela, Bissil, Ngong, Loitokitok, Mashuuru and Isinya dumpsites. However, plans have been initiated to relocate Ngong dumpsite. The County Government has availed 8 No. garbage collection trucks and loaders which collect garbage at designated areas within the urban areas. There are several private investors mandated to collect garbage from homesteads at a fee ending at the dumpsites. The solid waste is not segregated before collection. Most urban areas have no dumping sites. The few dumping areas at Kitengela and Ngong town have degenerated to environmental and public health hazards.

The current solid waste disposal system at KIHBT Ngong campus is dumping and burning of solid waste within two designated points. It is proposed that solid waste management at the Proposed Tuition Block be guided by the Sustainable Waste Management Act 2022 and the Environmental Management and Coordination (Waste Management) Regulations, 2006. Establishment of an integrated solid waste management system which embraces the circular economy approach and 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste

management as depicted by Figures 9 & 10 shall be embraced. This option will demand a solid waste management awareness programme amongst the management, staff, and students of KIHBT. The proponent should first aim at minimizing (refuse) solid waste production within KIHBT by avoiding as much as possible one-off use of materials such as single-use plastics and non-recyclable products. The second undertaking will be to reduce use of harmful, wasteful, and non-recyclable materials thereby reducing the amount of solid waste produced. Thirdly, the proponent should diligently reuse products or materials that would extend their useful life such as replacing single-use items with permanent alternatives, share or sell re-usable items. Repurposing would be the fourth undertaking where materials or products meant for one purpose can be used for another purpose. This is also known as upcycling. Recycling is the final option where materials or products that cannot be reused undergo some form of reprocessing to produce another product. For waste that is not recyclable, it should be disposed of via incineration (not encouraged due to air pollution), or in a land fill or carried out of KIHBT by a NEMA registered solid waste handler for proper disposal at the Kajiado county designated landfills.

Figure 9: Circular economy approach in solid waste management

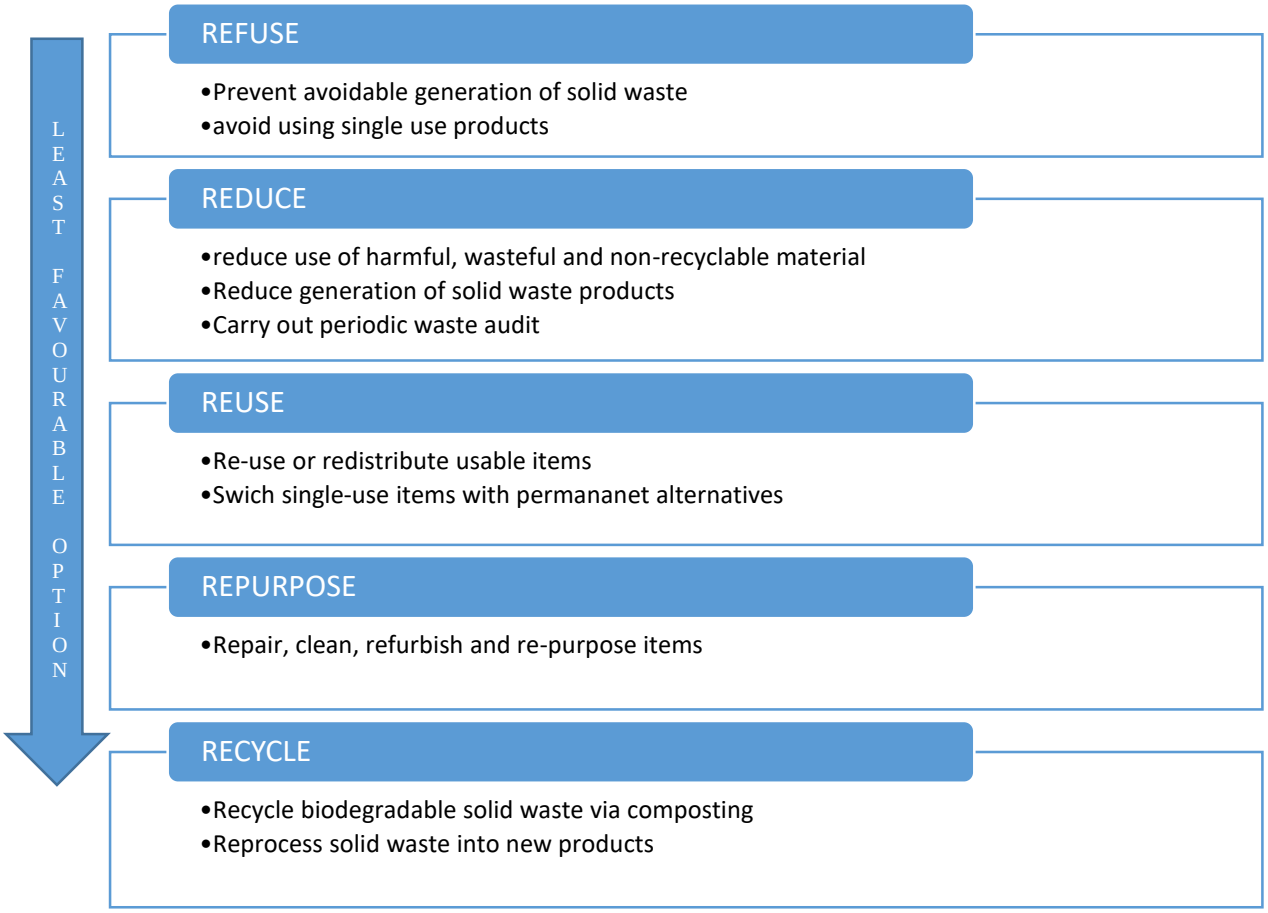


Figure 10: 5Rs of managing solid waste

Solid waste receptacles shall be stationed at various point of the Proposed Tuition Block. The proponent shall put in place source separation of solid waste by providing differently coded large and small waste bins for organic/ biodegradable material, plastics, metal and others (plate 32).

Plate 32: Differently colour coded waste disposal receptacles

5.4. Occupation Health and Safety Baseline

Occupational Health and safety focuses on hazardous sectors such as agriculture, manufacturing and construction where workers have high vulnerability to occupational injuries and diseases.

The key performance indicators for OSH are:

- Number and percentage of trained personnel from an organization with OSH training.
- Number and percentage of employers reporting to have an improved understanding of their legal duties and responsibilities related to OSH.
- Percentage of workers reporting to have an improved understanding of their rights and duties related to OSH issues.
- Percentage of workers reporting to have benefitted from the adoption of concrete and documented actions to improve OSH.
- Number and percentage of involved stakeholders that rate engagement in programme activities as being useful to improve OSH outcomes for workers.

A field study carried out by the ESIA team included a visual survey and consultation with the proponent. Through these, the consultant was able to classify the occupations at the KIHBT Ngong campus as follows (table 3):

Table 3: OHS Baseline

Actor	Tasks involved	Hazards
During Project Construction		
Contractors	Civil Works (Masonry, removal of structures, Digging trenches, Plumbers etc.)	Sharps, pricks, cuts, bruises, slips, trips and falls, crushed between objects, trench collapsing, electrocution by underground cables, crushed by falling trees, unsafe food, unsafe drinking water, biological hazards, harsh weather conditions, fall from height, trapped in enclosed spaces etc.
	Electrical works	Electrocution, slips trips and falls, unsafe food, unsafe drinking water, biological hazards, harsh weather conditions etc.
Road marshals, and drivers	Controlling construction vehicular movement, dust suppression	Dust clouds, road/ motor accidents
HIV/AIDS awareness campaign team, environmental health, social officers	sensitization on STIs and other communicable diseases, community awareness of ongoing project activities	Social unrest, crushed between objects, hit by moving objects, biological hazards, harsh weather conditions
safety officers, supervisors, managers,	Ensure adherence to occupation safety and health standards i.e., site safety	Slips, trips and falls, cuts, bruises, machinery mishaps/ accidents
security guards, food vendors	Supply of construction materials, food supply to construction team, security services to construction works	Site security, unsafe food, unsafe drinking water,

Actor	Tasks involved	Hazards
KIHBT Ngong campus staff and students	Technical training activities, institute lecturers and administration, plant machinery operations	Dust, Slips, trips and falls, cuts, bruises, machinery mishaps/ accidents
During Project Operation		
Visitors		biological hazards, unsafe food, contaminated drinking water, inadequate water
KIHBT Ngong campus students	Learning activities	Slips, trips and falls, cuts, bruises, accidents, dust, psychosocial hazards, inadequate water supply, minor/ major accidents, hit by moving objects
KIHBT Ngong campus staff	Teaching, school administration activities, water supply, food supply, school bus operation	Inadequate water and food supply, inadequate finances for institute operations, minor/ major accidents, vehicular breakdown

Some hazards will inherently co-exist with the various teams working within the KIHBT Ngong campus. However, measures will be developed to manage these hazards and reduce the risk of injuries to be as low as reasonably practicable. Occupational Health and Safety will be a high priority area during both the construction process and the operation stages due to the nature of technical training undertaken at the KIHBT Ngong campus. The project Contractor will provide OSH procedure and guidelines for the construction site. Further, the Contractor shall be required to have an environmental health and safety officer at site and a first aider. The proponent will provide OSH procedure and regulations for the Tuition block once it is operational. This will be integrated into the current OSHA procedures carried out at the campus.

5.4.1. General Occupation Health & Safety Findings

There are four (4) sub county hospitals; Kajiado, Loitokitok, Ngong and Kitengela; sixteen (16) health centres and seventy-eight (78) dispensaries run by the Kajiado county government. There are also six (6) hospitals, thirteen (13) nursing homes, seven (7) health centres, twenty-seven (27) dispensaries and one hundred and one (101) clinics which are either run by private, faith based, community based and other non-government organizations. The county has 92 community health units initiated out of which only 78 are active. The doctor population ratio is 1:26,094, Public Health Staff is 1: 7,619, and the nurse population ratio is 1: 1,068. The average distance to a health facility is 14.3 km with only 9.9 percent of the population within a distance of less than a Kilometre to a health facility. The top five most common causes of morbidity in order of prevalence are: Disease of Respiratory System (45.1 percent), Diarrhoea (9.1 percent), Skin Disease (8.1 percent), Pneumonia (6.5 percent), and Urinary Tract Infection (5.0 percent). Hunger and inadequate food supply are still affecting large parts of the County's population with serious consequences for health and well-being, especially in children.

Within KIHBT Ngong campus, the sanitary facilities are adequate, and the Proposed Tuition Block will be fitted with adequate sanitary facilities for the staff, students, and visitors including special facilities for persons with disabilities. Water supply in the campus is adequate allowing for regular cleaning of sanitary facilities. Regular/ weekly waste removal of segregated solid waste and disposal is proposed to avoid breeding of vermin.

Proper drainage channels or trenches are incorporated in the civil drawings to ensure no ponding of water occurs which would encourage breeding of disease carrying mosquitoes. Street lighting and wall lighting at the Proposed Tuition Block shall be considered to illuminate the area surrounding the proposed building and increase night surveillance of the proposed building.

6. PUBLIC CONSULTATION AND PARTICIPATION

6.1. Introduction

Public consultation and participation is a policy requirement by the Constitution of Kenya and a mandatory procedure as stipulated by the Environmental Management and Coordination Act of 1999 and its amendment 2015, and specifically the Environmental (Impact Assessment and Audit) Regulations of 2003 amended in 2019. In addition, public participation is a requirement under the World Bank Safeguard Policies OP /BP 4.01 Environmental Assessment.

6.2. Stakeholder Consultation Methodology

Both secondary and primary data collection methods were used. Primary data was collected through; site investigation, holding of a public meeting, administration of structured questionnaires. Secondary data was collected by review of literature, relevant legislation, and reports.

The public participation exercise begun with the identification of key stakeholders. The criterion used was designed to allow identification of primary and secondary stakeholders as well as long term and short-term stakeholders. The criteria also allowed identification of stakeholders who would: benefit from the project; be adversely affected during construction and operational phases; those in the proximity of project area; who have the degree of knowledge on issues regarding the project and its operation.

Collection of views from the public was undertaken through a stakeholder consultation meeting held on Thursday 8th June 2023 at the proposed project site and administration of structured questionnaires to the identified stakeholders. Architectural project drawings (Appendix A9) were presented during the stakeholder meeting to the participants by the project consultants (State Department of Public Works). Questionnaires were administered between 6/06/2023 and 08/06/2023. Prior to this exercise, two (2no.) enumerators were identified and trained on how to administer the questionnaire. The consultation exercise provided views, opinions, and suggestions on the most appropriate considerations for the construction and operation of the Proposed Tuition Block.

6.3. Stakeholder Consultation Meeting

6.3.1. Public Consultation Meeting at KIHBT Ngong Kibiko Campus

A meeting between the project consultants, the Proponent, area local administrators, area political leaders and the Kibiko community was held on Thursday 8th June 2023 (*Appendix A6 – A7*). The meeting's main agenda was to brief the community about the proposed project, expected scope of works, anticipated project impacts and to address possible questions from them. A full account of the proceedings of the stakeholders meeting and additional meeting photographs at the proposed project site is as indicated in *Appendix A6 and A8*. The list of stakeholders who were present during the public participation meeting at KIHBT Ngong Campus is provided in Appendix A7.

6.4. Stakeholder Consultation – Questionnaires administered.

In addition to the stakeholder meeting, questionnaires were administered to the public, and to KIHBT staff and students to provide their views regarding the proposed project. A sample of the administered questionnaire is provided in Appendix A5.

6.5. Critical aspects of the questionnaire

Questionnaires were administered to members of the public, surrounding business community, national government officers, local political leaders, KIHBT staff, and KIHBT students to provide their views regarding the proposed project. The questionnaires broadly covered the various anticipated socio-economic and environmental impacts during both the construction and operational phases of the proposed project.

Data authenticity

Throughout the conduct of survey period, the following approaches were employed to ensure quality assurance and management of the data collected:

- Identifying key informants that have access to the useful information and establishing a clear understanding of the channels of information sharing.
- Defining individual responsibilities and authorizations to mitigate against unsatisfactory work and communication of quality or safety concerns.
- Adherence to the provisions of the Terms of Reference and conditions of contract.
- Project checks to assess the broader status of the project intervention activities and the preparation of the ESIA report.

Quality control during data collection: To ensure quality control during the data collection exercise, the following strategies were employed:

- During the survey, there was a co-ordinator to oversee the data collection process and ensure data quality.
- Comprehensive training of the research assistants to ensure consistency in the protocols and interpretation of questions.
- 10% of data collected was subjected to additional quality checks. This includes back-checks of data.

6.5.1. Bio Data of Respondents

A total of 92 No. questionnaires were administered. Of the interviewed respondents, 34 No. were students while 20 No. were staff, and 38 No. were members of the public. An analysis of the respondents' gender was captured in section 5.2.6 of this report.

6.5.2. Occupation of the respondents

This section is as discussed in section 5.2.6 of this report.

6.5.3. Area of residence

This section is as discussed in section 5.2.6 of this report.

6.5.4. Access to KIHBT Ngong Campus Facilities

The survey findings show that 54.3% of the respondents found fees charged at KIHBT affordable (see table 4). Fifty-nine percent (59.3 %) of the respondents think that there is adequate infrastructure and staff numbers in various TVET institutions in Kajiado County while thirty percent (30.4%) think otherwise. This shows that there is need to improve and upgrade training infrastructure in TVET institutions as well as increase staff numbers. The respondents indicated that graduates from TVETs have the relevant competitive skills for the job market upon graduation (85.9%). This alludes to the importance of technical skills gained from TVET institutions for the benefit of national economic development.

Table 4: Access to KIHBT & other TVET insititutions in Kajiado

Aspect	Response		
	Yes (%)	No (%)	No Answer (%)
Are the training fees at KIHBT affordable?	54.3	37	8.7
Do graduates have the relevant competitive skills when they graduate?	85.9	8.7	
Is the Training infrastructure and staff enough? (Kajiado TVETS)	59.8	30.4	9.8

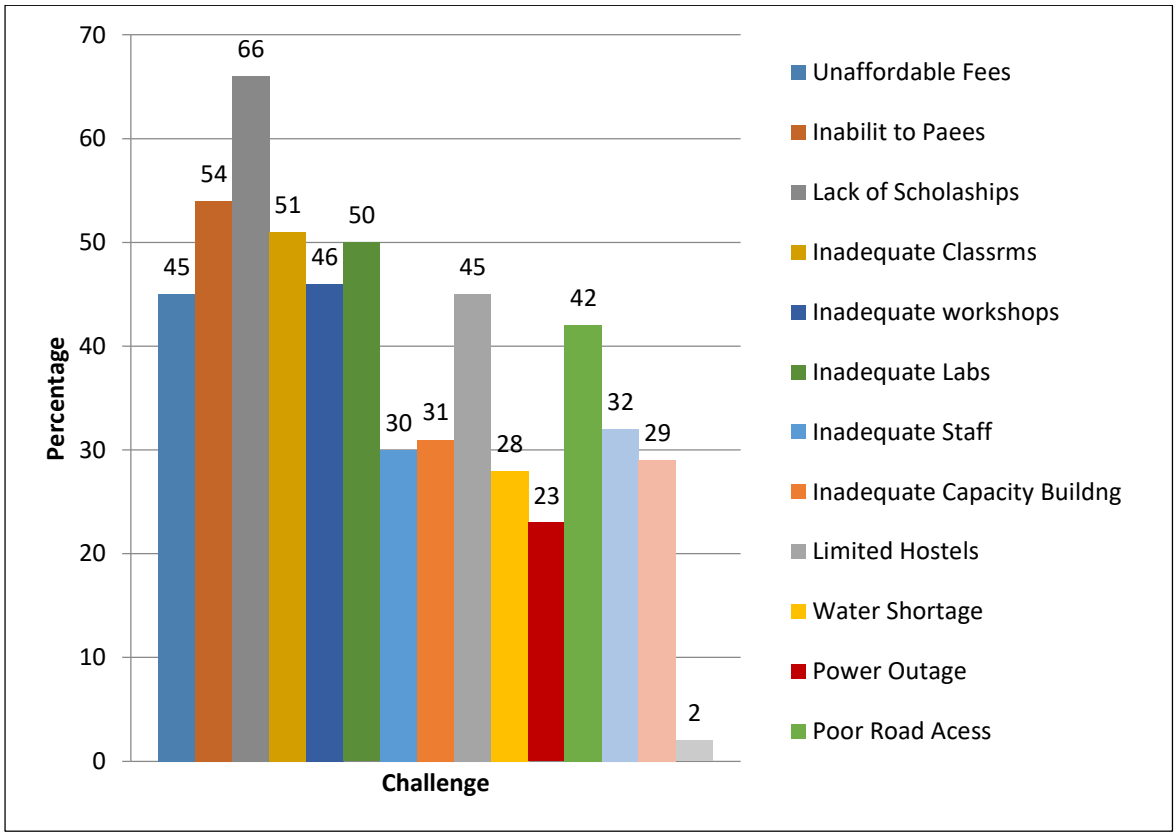


Figure 11: Challenges facing staff and students at KIHBT Ngong campus

The survey revealed (figure 11) that the main challenge of students at this KIHBT campus is a lack of scholarships to fund their educational pursuit (66%). This goes hand in hand with inability to pay school fees and unaffordability of school fees as identified by 54% and 45% of the respondents respectively. This alludes to the presence of underprivileged students learning

at this institution and the need to offer financial support. Under EASTRIP there is a proposal to have a scholarship fund to benefit marginalised students training in the identified TVET institutions. KIHBT, under EASTRIP has proposed to target female students as possible scholarship beneficiaries. This has however not been formally launched. Unaffordability of fees requires provision of student loans to help mitigate against this challenge. Currently, TVET students can access student loans via the Higher Education Loans Board (HELB).

Inadequate classrooms for learning (51%), inadequate laboratories (50%) and inadequate workshops (46%) were mentioned as challenges by the respondents. This reinforces the need to upgrade and increase the numbers of the existing learning/ training rooms, laboratories, and workshops to meet the needs of the growing student population and expanding number of programmes offered at KIHBT. Inadequate number of staff was identified as a challenge by 30% of the respondents. This calls for the institution's management board to check on the staff establishment scheme on how to have adequate staff who will be able to deliver quality training at the institution. Limited number of hostels/ student accommodation was also identified as a challenge at the institutions. The institution's management board hence needs to look at providing additional hostel facilities or make alternative arrangement for boarding facilities to the growing student population.

The road access to KIHBT was identified as a challenge by 42% of the respondents. The Ngong Suswa Road is still under construction and once complete, road access to KIHBT Ngong campus will be improved. Poor road circulation within KIHBT was also identified by 32% of the respondents. The institution should endeavour to provide distinct and adequate pedestrian and vehicular circulation routes within the campus. Other identified challenges within this campus included; inadequate capacity building of staff (31%), water (28%) and power (23%) shortage and inadequate firefighting equipment (29%). The Proposed Tuition Block has been allocated a 40,000lts ($40m^3$) water storage tank and a 10,000 litre water storage tank for harvested roof rain water. The proposed water storage facilities at the Proposed Tuition Block should suffice the 5days weekly period during which the building is utilized. During the construction phase, a discharge water metre shall be installed at the project construction site to monitor usage. KIHBT and the contractor shall have agreements on water user, water supply schedule and any water supply charges. The contractor shall use water bowsers and tankers to bring in water for construction activities if /or when there is water shortage or during periods of high water demand e.g. slab formation. The proposed project shall be fitted with the required firefighting equipment as well as have installed water harvesting tanks whose collected water can be used for flushing toilets and irrigating the landscape.

Table 5: Proposals to improve the learning environment at KIHBT.

Proposals	No of respondents
Providing more scholarships and student loans	18
Better equipment of the Workshops and Laboratories	23
Introduce a student portal	7
Install alternative sources of power e.g. solar energy	1
Prioritize the local community during student enrolment	5
Provide students with attachment opportunities	1

Proposals	No of respondents
Increase employment opportunities for both skilled and unskilled labour	1
Improve the road infrastructure access to the campus	3
Engage the local community more	1
Provision of fresh drinking water	1

The respondents were asked to give their proposals in line with improving the learning environment at KIBHT Ngong Campus (Table 5). Top on the list is offering scholarship opportunities and student loans to the students. This will enable uninterrupted learning for the students. Another proposal is to improve the equipment used in the workshop. This is in line with the institution's SIP which seeks to upgrade the existing facilities at the campus and which the Proposed Tuition Block will help in realising this objective. A proposal to introduce an online student portal will make it easier for students to quickly access information about KIHBT as well as quicken registration procedures and student management procedures by the administrators. Installation of solar lighting as an alternative source of power is also proposed as this will enhance particularly outdoor lighting in the campus. Another proposal is to prioritize the local community during student enrolment. This will require community sensitization on programmes offered by KIHBT and how to get registered at the institution. Provision of attachment opportunities to students was another proposal. Students enrolled in building related courses at KIHBT can be attached at the Proposed Tuition Block during the construction stage to enable them get practical experience of construction work. Employment opportunities for both skilled and unskilled labour was another proposal. During the construction stage, the proposed project main contractor will be urged to source manual labourers from the Kibiko community in which KIHBT Ngong campus is located.

6.5.5. Water & Sanitation

Water Sources in Kibiko area

The main source of water currently used in Kibiko location is borehole water (68%) followed by piped water at 24% then rainwater harvesting at 3% as indicated by the respondents in figure 11. KIHBT Ngong campus current source of potable water is a borehole. The proposed project will be connected to the existing water supply system in the campus. Additionally, the proposed building will be fitted with rainwater harvesting tanks of total water storage of 10,000 litres.

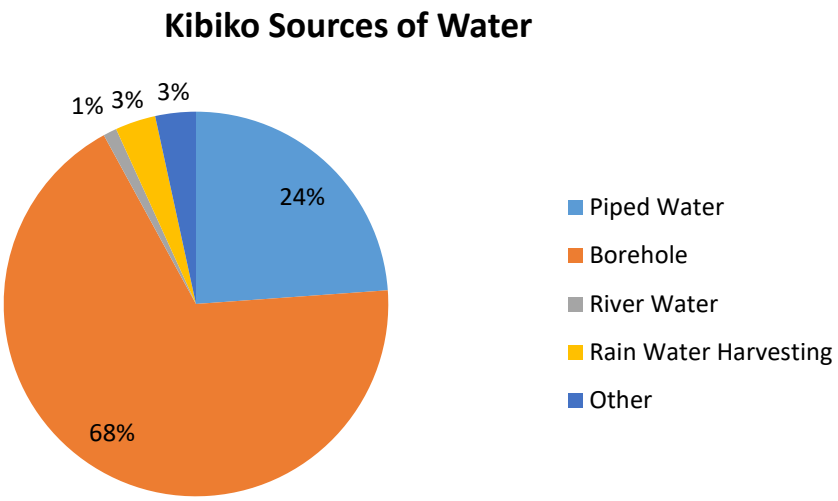


Figure 12: Source of water in Kibiko

Wastewater Disposal

Respondents were required to indicate how wastewater is disposed of within KIHBT Ngong campus and in Kibiko area. From the survey, use of septic tanks is the most popular method of liquid wastewater disposal followed by connection to the main piped sewage disposal system followed by use of wastewater treatment plants and lastly by sewage disposal on the open land (see figure 13). Kajiado County still lacks a robust sewer management system which popularises the use of septic tanks. KIHBT campus uses a septic tank to handle its sewer waste. The civil engineer assessed the capacity of the existing septic and established that it had capability to handle the sewer waste from the Proposed Tuition Block.

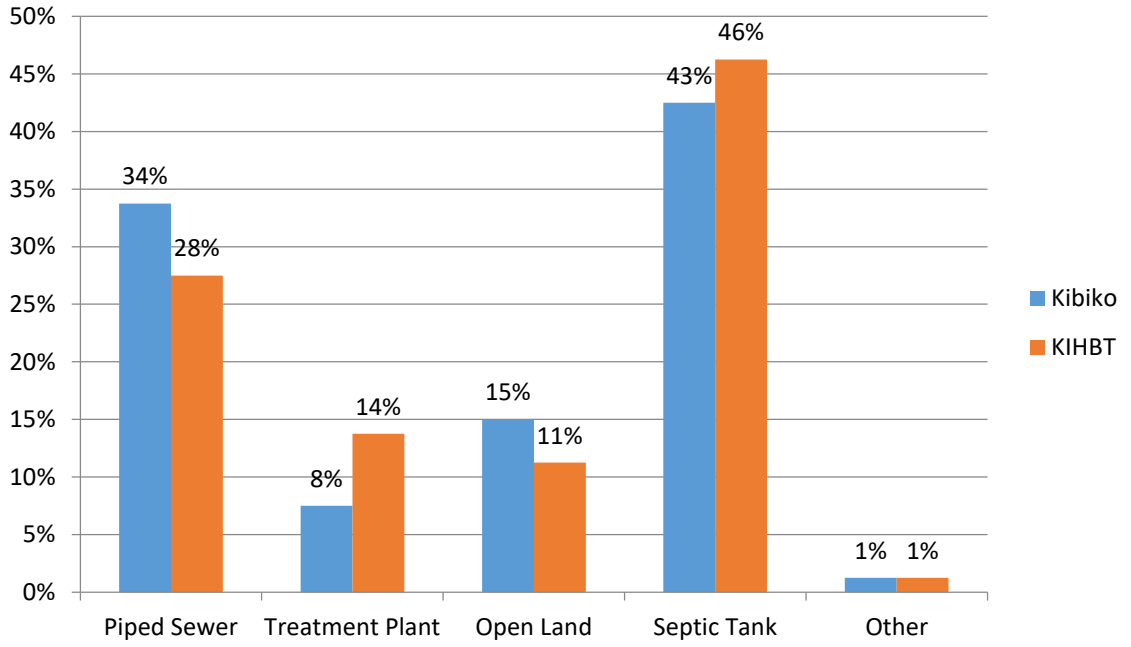


Figure 13: Wastewater management in Kibiko & KIHBT Ngong campus

Solid Waste Disposal

With regards to disposal of solid waste in Kibiko and KIHBT Ngong campus, 41% and 31% of respondents indicated they discard solid waste through composting, 45% and 51% dispose via open burning and 12% dispose solid waste on open land (see figure 14). Currently solid waste within KIHBT Ngong campus is centrally collected then disposed of via burning. However, it is proposed that KIHBT adopts an integrated solid waste management system which embraces the 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management.

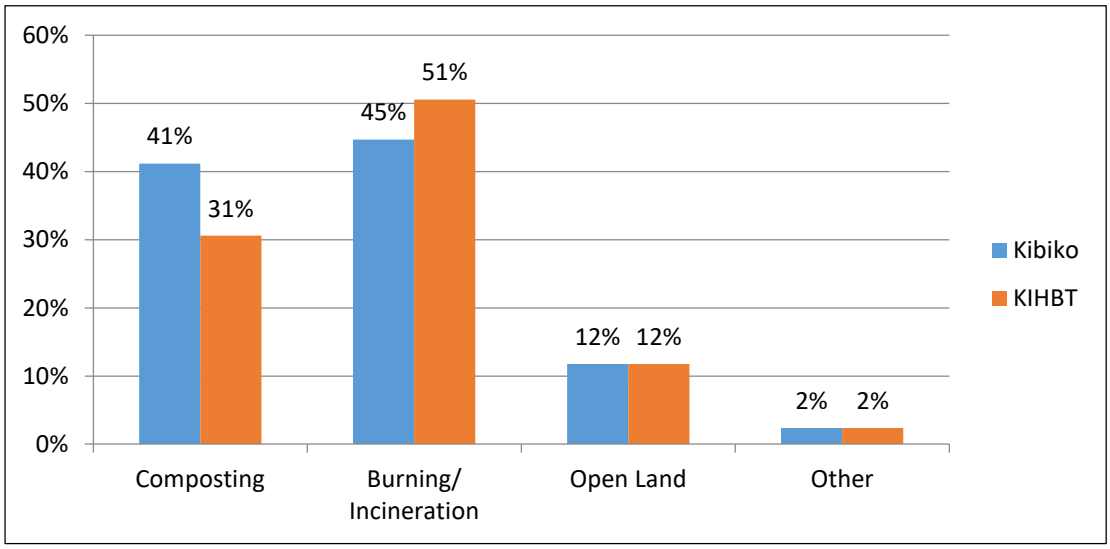


Figure 14: Solid waste disposal in Kibiko and KIHBT Ngong campus

General Sanitation Within Kibiko & KIHBT Ngong Campus

Respondents were asked to describe the general sanitation situation with regards to solid waste management. They were asked to rate on a scale ranging from Very bad to Very good. The majority of respondents rated the general sanitation as ranging between average (54%) to good (26%) in Kibiko as indicated figure 15 below. Within KIHBT Ngong campus, the general sanitation was rated as ranging between average (55%) to good (29%) as indicated in figure 16 below.

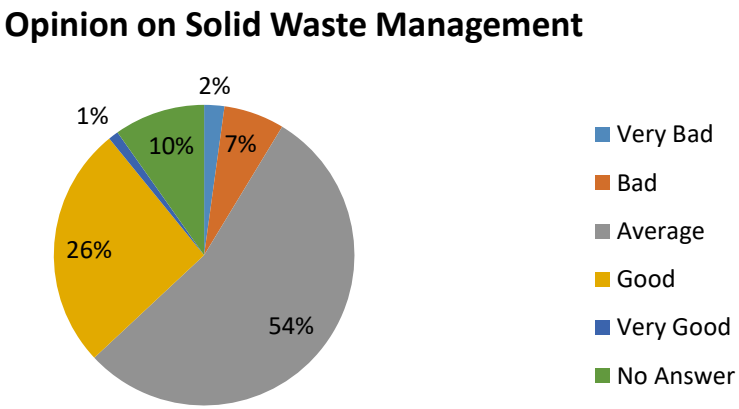


Figure 15: rating on general sanitation situation in Kibiko

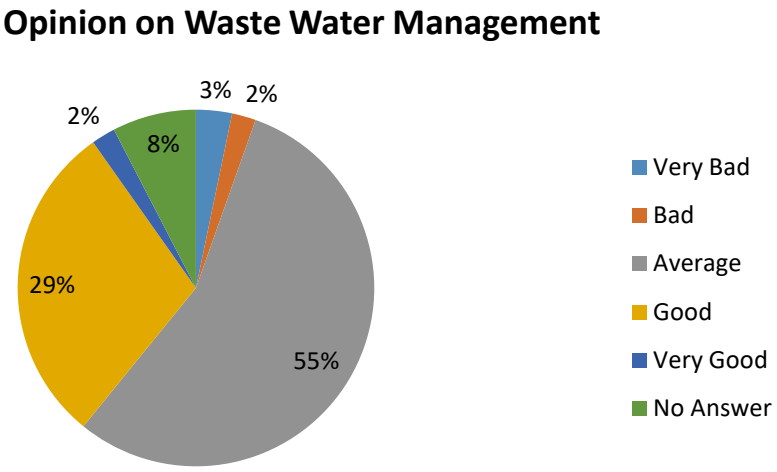


Figure 16: Rating on general sanitation situation in KIHBT Ngong campus

6.5.6 Occupational Health & Safety

Common Diseases in Kibiko

Respondents were required to indicate common diseases found in Kibiko area (see figure 17). They were allowed to provide multiple answers. The most prevalent disease in the area is Malaria (59%) followed by diarrhoea (11%) then amoeba (8%). Typhoid, cholera, amoeba, and diarrhoea are diseases arising due to poor sanitation conditions/practices. There is hence need for the proponent to enhance and ensure proper sanitation practices within KIHBT Ngong campus.

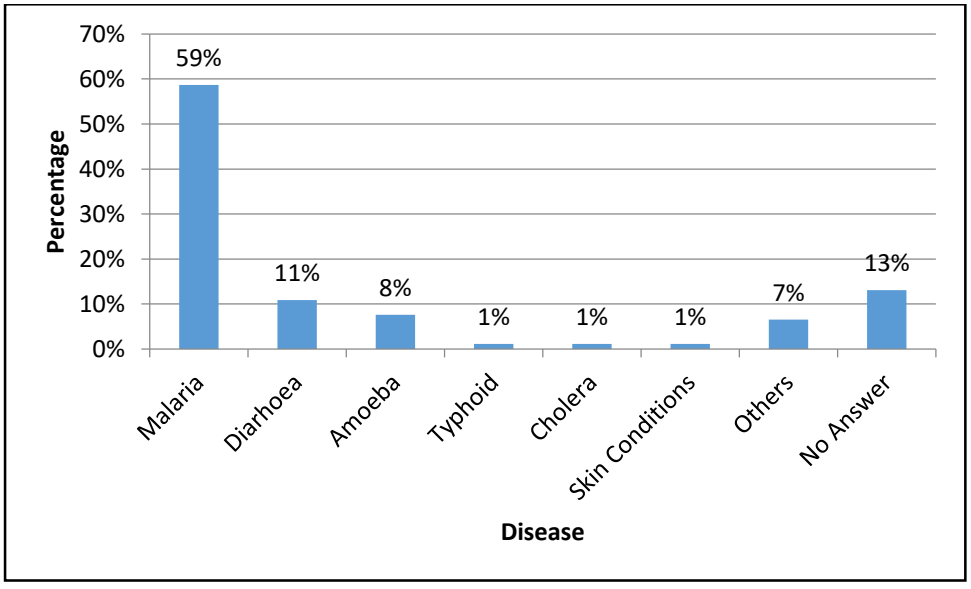


Figure 17: Common diseases experienced in Kibiko

With regards to the health centre where respondents sought treatment, 68% of the respondents indicated that they sought treatment at the Ngong Sub- County hospital. Other medical facilities from which medical treatment was sought included the following: Equity Afia Ngong branch, Kibiko Dispensary and King David Hospital.

Emergency fire response in Kibiko

Respondents were asked whether a significant fire outbreak had occurred in the Kibiko area. Most of the respondents (72%) indicated that there had been no occurrence of a major fire outbreak in the area. In comparison, the other 20% noted there had been a significant fire outbreak within the area. Further, following the question on the occurrence of the fire outbreak, the respondents were asked who extinguished fire during the fire outbreak occurrences. The respondents indicated that those who put out the fire were either the Kajiado West Sub County fire response unit or community members.

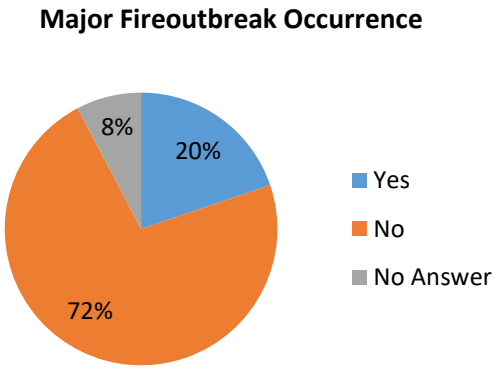


Figure 18: Fire outbreak occurrence

Regarding installation of firefighting equipment within institutions in Kibiko, the following government agencies and institutions were noted as having installed the necessary equipment: Kajiado West Sub County fire response team, Intergovernmental Authority on Development (ICPAC), Kenya Defence Forces (KDF) and Kajiado West Sub County Hospital. As regards KIHBT preparedness for fire outbreaks, 54 percent of the respondents indicated that the KIHBT Ngong campus had firefighting equipment, 41 percent of the respondents indicated that the institution had fire extinguishers while 7 percent indicate that the institution had fire alarms installed. The proposed project has in its design installation of firefighting hose reels and extinguishers at each building storey level.

Regarding sensitisation on fire management of the community within Kibiko, from the survey, it was established that such sensitisation trainings are rarely done for the community (84% of the respondents) while 9% of the respondents indicated that sensitisation is carried out on a yearly basis. Twenty-five percent (25%) of the respondents indicated that KIHBT has in place a safety sensitization programme. From these findings, it is necessary to undertake fire management training amongst the Kibiko community and increase the number of fire management sensitization trainings within KIHBT. An emergency response plan shall be established whose aim shall be to prevent or minimize loss of life and property, facilitate safe evacuation of staff, and facilitate faster rehabilitation. A detailed account of the proposed emergency response plan (ERP) is outlined in chapter 10 of this report. In addition, wall signs mounted at strategic places shall indicate the following: Site or building layout showing

emergency routes/exits, fire assembly point within the premises, fire response emergency numbers, and the evacuation procedure in case of fire.

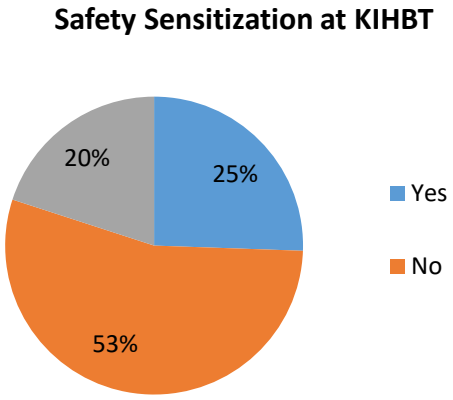


Figure 19: Fire safety sensitization trainings

Improvements to health and safety measures in Kibiko area and within KIHBT Ngong Campus

From the survey, when respondents were asked their opinion regarding improvements to health and safety management in Kibiko area, they responded as follows;

- Construct a health facility within Kibiko,
- Undertake public health and safety training and sensitization workshops with the community as CSR,
- Provide clean water to the community members,
- Construct proper sewage system to manage wastewater.

From the survey, when respondents were asked their opinion with regard to improvements to health and safety management within KIHBT Ngong campus, they responded as follows;

- Construct within the institution a health facility to attend to staff and students,
- Train staff and students on emergency response mechanisms,
- Increase the capacity of the hostels to avoid/ minimise congestion,
- Put in place better practices for managing liquid waste,
- Install fire response equipment,
- Provide clean and safe water for use.

6.5.7 Project Impacts

This section focuses on the anticipated positive and negative socio-economic and environmental and social impacts during the construction and operational phases.

Anticipated Changes from the Project Implementation

The survey required the respondents to indicate whether the proposed project would substantially change the following listed factors: quality of TVET in the community; increased access to TVET programmes in highways and others; increased general student enrolment into short/long term courses; improved training infrastructure; enhanced technical and

infrastructural skill set in the community; and improved income distribution in the area. The results from the survey is as indicated in table 6 below.

The respondents gave the following supporting reasons for the affirmative responses; the project will provide employment opportunities; the project will increase students' enrolment numbers; the project shall facilitate imparting of skills; KIHBT campus facilities required to be upgraded; the project will benefit Kajiado residents; and the project will lead to growth of the KIHBT Ngong Campus. Overall, it was established that the community anticipates that the proposed project will have a considerable positive impact on the community and therefore endorses the construction of the Proposed KIHBT Ngong Kibiko Campus Tuition Block.

Table 6: Anticipated changes from the project implementation

Impact	**Responses**		
	Yes(%)	**No(%)**	**No Answer (%)**
Improve Quality of technical and vocational education and training in the community	85	4	11
Increase access to TVET programs in highway, other infrastructure technology.	78	8	14
Increase general enrolment of students into short term and long term roads/highways/ other infrastructure courses?	76	7	16
Improve training infrastructure e.g. classes, laboratories, workshops etc.	72	10	18
Enhancement of the required technical infrastructural skills in the community and nationally	78	2	20
Improve income distribution among the area residents?	75	7	18

Positive impacts during Construction & Operational Project Phases

Respondents were asked to indicate anticipated positive impacts during the construction and operational phases of the project. Respondents were allowed to provide multiple answers to this question.

From the survey during construction stage, 87% of the respondents indicated they expect the proposed project to create jobs for the community while another 75% anticipate increased business opportunities and improved livelihoods (72%). It was further expected that the proposed project would engage the youth (78%) thereby reducing idleness. When the youth are engaged in work, incidences of crime are reduced as they have a source of income. Respondents further noted an expectation of living and working in a safe and secure environment (59%).

During operation phase 79% of the respondents anticipate improved quality of technical and vocational training while 77% expect better access to TVET programs in highway and other infrastructure technology and 73% expect better training facilities (see table 10). The proposed project will upgrade existing training infrastructure and provide required facilities for training in short- and long-term courses. Engagement of youth in acquiring TVET skills during the operation stage will empower them and set them off on self-development. From the acquired

skills, the youth can gain employment or even start their own enterprises. The proposed project is anticipated to create employment opportunities at KIHBT (67%) through engagements such as in cleaning, gardening services, equipment servicing, supply of stationery and other materials used at the institute amongst others. Business opportunities are expected by 62% of the respondents while 63% expect improved livelihoods. Those trading with KIHBT or having businesses in the neighbourhood of the institution will experience business growth due to increased number of clientele. Environmental beautification is anticipated by 60% of the respondents. Landscaping will be undertaken at the end of the construction stage to improve on environmental visual aesthetics and amelioration of ecological functions. The table 7 below indicates anticipated positive impacts during construction and operation phases as raised by stakeholders.

Table 7: Anticipated positive impacts during construction and operational stages of the proposed project

Potential Positive Impact during Construction Phase	**Percentage of concurrence**
Job Creation	87
Youth Engagement	78
Increased Business Opportunities	74
Improved Livelihoods	72
Operating in a Safe and Secure Environment	59
Increased Government Revenue	55
Improvement of KIHBIT Campus Environment	3
Potential Positive Impact during Operation Phase	
Improved quality of technical and vocational training	79
Better Access to TVET programs in highway and other infrastructure technology	77
Better training facilities	73
Youth engagement through training	71
Job Creation at KIHBT Campus	67
Improved livelihoods for the graduates	63
Business opportunities	62
Environmental beautification	60
Improved security	53
Improved waste management	53

Negative impacts during Construction & Operational Project Phases

Respondents were asked to indicate anticipated negative impacts during the construction and operational phases of the project. Respondents were allowed to provide multiple answers to this question. According to the survey results, in the construction phase, 64% of the respondents anticipate noise, and vibrations while 57% of the respondents anticipate environmental pollution in the form of dust, fumes, air and spills (see table 8). Clearing of vegetation is anticipated by 55% of the respondents while 45% expect increased solid waste generation. Interruption in water supply is anticipated by 40% of the respondents. Other mentioned anticipated negative impacts included; traffic snarl up on the access road (Forest line road)

leading to KIHBT Ngong campus (36%), interference with KIHBT activities (34%), increase in social vices (25%), increased number of accidents and injuries (22%) and damage to existing infrastructure (21%).

Table 8: Anticipated negative impacts during construction and operational stages of the proposed project

Potential Negative Impacts Construction Phase	**Percentage of occurrence**
Noise and Vibrations	64
Environmental pollution i.e. air, dust, fumes and spills	57
Clearing of vegetation	55
Increased solid waste generation and disposal	45
Interruption in Water Supply	40
Traffic snarl up on the access road leading to KIHBT Ngong Kibiko Campus	36
Interference with KIHBT activities	34
Social vices e.g. alcoholism, drug abuse, sexual immorality	25
Increased accidents, injuries & diseases	22
Lost existing infrastructure within KIHBT campus e.g. telecommunication cables, water and sewer pipes	21
Potential Negative Impacts During Operation Phase	
No negative Impacts	33
Increased solid waste disposal	32
Interruption in water supply	26
Social conflicts	24
Disruption of existing infrastructure e.g., telecommunication cables, water and sewer pipes	24
Increased insecurity	21
Irregular wastewater/ effluent disposal	21
Increased accidents, injuries & diseases	16
Social vices e.g. alcoholism, drug abuse, sexual immorality	16
Increased surface runoff	13

The mentioned anticipated negative impacts during the operations phase include the following: no negative impacts anticipated (33%), increased solid waste disposal (32%), interruption in water supply (26%), social conflicts (24%), loss/ damage to infrastructure (24%), increased insecurity (21%), irregular liquid waste disposal (21%), increased number of injuries/ accidents/ diseases (16%), social vices (16%) and increased surface runoff (13%). A landscape design plan shall be done to ensure the beauty of the landscape once construction works are complete. Effluent generated by the laboratories found within the Proposed Tuition Block will be treated before being released to the environment. Sedimentation and blockage of drainage channels from the soil testing laboratory will be mitigated by provision of a separate wastewater channel for the laboratory, which will be fitted with filtration devices that will sieve excess soil sediments before discharge to the building's wastewater system. Solid waste will also be properly disposed of as detailed in section 5.3.6 of this report. Storm water will be properly channelled to drainage channels. The table 8 above indicates anticipated negative

impacts during construction and operation phases as raised by stakeholders. Overall, the responses to the various questions indicate the local community do not expect major negative impacts and embraces the construction of the Proposed Tuition Block.

6.6. Summary of Public Consultation Deliberations

Public Participation, Consultations and Analysis

Public consultation for the Proposed KIHBT Ngong Kibiko Campus Tuition Block, Kajiado County meeting was conducted on 8th June 2023 at KIHBT Ngong campus to capture the major concerns raised by Kibiko community. A total of fifty-six people attended the stakeholder consultative meeting. The stakeholder consultative meeting provided views, opinions, and suggestions on the most appropriate considerations on the construction and use of the Proposed KIHBT Ngong Kibiko Campus Tuition Block.

The main concern for the meeting participants was about employment of labourers at the project construction site. This was mentioned by the Ewuaso Kedong MCA, Chief and various community representatives. The meeting participants urged the proponent to source both casual labourers and permanent employees from the community. It was agreed that once the proposed project main contractor is prequalified, he will be urged to source 70% of his casual labourers from the community. In addition, KIHBT management in conjunction with the Kibiko location chief will have a meeting whereby they will mobilise, identify, and enumerate potential construction workers at the project construction site. Skilled labour will be competitively sourced from those who apply. The stakeholders were told that those who would be employed at the construction site should have a good work ethic and adhere to work environment requirements such as reporting time, work durations, keep to the set standards amongst others. Another concern by the student leaders is whether KIHBT current students studying building works could get attachment and whether alumni could work at the construction site. The stakeholders were informed that the students being part of the community would be given priority during recruitment for attaches and construction workers.

KIHBT Ngong campus was commended for its exemplary work in the community in matters such as road works. Stakeholders were informed that 75% of KIHBT students originate from Kajiado County and that the county is given priority during student shortlisting. The institute was asked to consider sponsoring qualified needy students and/or community members in various courses offered at the institute. The stakeholders were informed by the chief that one scholarship had been awarded to a female of Maasai origin to undertake plant operator course. The stakeholders were also informed that the institute being a national government division operates on an approved budget and can only offer scholarships if such a budget is approved. However, under EASTRIP there is a proposal for a scholarship program which is biased to benefit needy female students. KIHBT was also asked to carry out a sensitization exercise in the community on how to use the KUCCPS online registration process in the application of KIHBT courses by interested students. The stakeholders were informed that the request had been noted and that soon KIHBT staff would venture deep into the Masai community to sensitize them on KIHBT courses/ programmes and on how to use the portal.

Another major concern was how KIHBT would prequalify suppliers of construction materials or other kinds of materials destined for the institute. Those stakeholders who were interested in supplying materials were urged to put the required business documents and certificates in place ready for use when tenders/bids are called for. The stakeholders were informed that KIHBT will follow due procurement process in shortlisting qualified businesses. The stakeholders were also concerned with how the local administration was addressing the issue of social vices e.g., excessive alcohol drinking in the community. The chief informed the gathering that they were aware of this and were working to address the issue of alcohol abuse through community sensitization.

Stakeholders were concerned with the institute's readiness in dealing with fire emergencies. The stakeholders were informed that every floor in the Proposed Tuition Block is fitted with fire extinguishers and firefighting hose reel placed at strategic points. KIHBT will also prepare a community sensitization workshop on fire management once the proposed project is complete as part of its CSR activities. In addition, there are yearly fire sensitization trainings done within KIHBT Ngong campus more so to train new students on first aid and fire management. Stakeholders wanted to know what KIHBT is doing with regards to environmental conservation. The stakeholders were informed that at the project site, clearing of vegetation will be limited to what is necessary, and that mature trees would not be cut down. Further, landscaping would be done once construction works are complete. In addition, they were informed that KIHBT undertakes tree planting every year and that there is a small component of CSR on environmental conservation whereby they shall invite the community to undertake tree planting during the project duration. Another CSR activity that KIHBT would undertake is a medical camp for the community to be done within the project implementation duration. The proposal by one of the community members for KIHBT to construct a health facility within its premises would be considered.

Stakeholders were concerned with both liquid and solid waste management at the institute. Stakeholders were informed that the proposed project will be connected to the existing sewage system in the campus which manages liquid waste via use of septic tanks. The existing septic tanks are adequate to handle the anticipated waste from the Proposed Tuition Block. Currently solid waste is disposed of through collecting at two designated points and open burning in the dump pits. Concerns with regards to dust, air, and noise pollution as well as accidents and injuries occurring considering that the proposed site is within an already occupied area were raised. The stakeholders were informed that the main project contractor would hoard off the construction site and restrict entry and movement in the construction site to only workers. Construction workers would also wear distinct overalls to identify them and be provided with the required PPE to protect them from physical bodily harm. A works programme indicating scheduling of construction work would be shared by the contractor to inform KIHBT users of any adverse occurring construction works.

A traffic plan would also be developed by the contractor and shared with concerned stakeholders to manage movement of construction vehicles and machinery. There was a proposal to open another circulation route designated specifically for construction vehicles and

equipment. However, this was yet to be agreed upon. Watering of earth roads on which construction vehicle are moving will be done to minimise dust. Another concern was the current condition of the Ngong-Suswa road which was still under construction and was in poor condition. The stakeholders were informed that once full disbursement of the funds by the national government to the road contractor were done, the road construction would be completed.

The stakeholders were also informed that there is already a Grievance Redress Committee in place for the proposed project and whose two community members were present in the meeting. The two committee members stood up to be recognised. Meeting participants were requested to channel any arising grievances or issues to this committee and find out what has so far been done by the committee. The stakeholders were concerned if the proposed project could continue without their consent. They were informed that this being a World Bank funded project and as a requirement of EMCA 1999 amended 2015 and the EIA/EA regulation 2003 amended 2019, their consent and opinions about the project must be sought and that is why the public participation forum was being held.

From the public consultation engagement, all stakeholders concurred that the Proposed Tuition Block was timely as it would enhance the access to and quality of TVET education in the country and regionally once the institute becomes a regional TVET institution. Moreover, increasing student enrolment numbers would have adequate training facilities. The community will stand to gain economically via employment and by doing business. These developments would directly improve the economic activities of Kibiko and provide a source of revenue for both the county government and National government.

Several resolutions resulted from the public consultation meeting. The project consultants will strive to make sure that the proposed mitigation measures as identified in the ESMMP are implemented by the contractor. The project stakeholders endorsed the construction of the Proposed Tuition Block noting that its operational benefits outweigh the negative impacts which can be mitigated. Minutes of the public participation meeting is provided in Appendix A6 of this report.

6.7. Summary of Identified Social, Economic and Environmental, Impacts Raised

6.7.1. Social impacts

Table 9: Summary of anticipated social impacts

S/N	Issues
	Positive Social Impacts during Construction and Operation Phases
1.	Improve Quality of technical and vocational education and training in the community
2.	Better access to TVET programs in highway, other infrastructure technology.
3.	Increase general enrolment of students into short term and long-term roads/highways/ other infrastructure courses
4.	Improved training infrastructure e.g. classes, laboratories, workshops etc.

S/N	Issues
5.	Enhancement of the required technical infrastructural skills in the community and nationally
6.	Improved livelihood thereby reducing community poverty rate
7.	Engaging the youth such as school dropouts to reduce idleness or involvement in crime or vices
8.	Improved security
9.	KIHBT operating in a safe and secure environment
10.	Hiring of skilled and unskilled labour from local community
11.	Fitting of firefighting equipment in the Proposed Tuition Block
12.	Sensitization workshops on first aid and fire management for the community
13.	Medical camp for the community
	Negative Social Impacts during Construction and Operation Phases
1.	Increased social vices such as alcohol, drug abuse
2.	Social conflicts e.g., favouritism arising and corruption during recruitment of unskilled and skilled/ technical labour and attaches
3.	Sexual immorality promoting transmission of STIs, HIV/AIDS
4.	Interruption of KIHBT Ngong campus activities due to construction works
5.	Increased number of accidents and injuries during construction phase
6.	Traffic congestion on forest line road due to construction works
7.	Limited hostel accommodation due to increased student enrolment numbers
8.	Inadequate staff numbers to cater to increased student enrolment numbers
9.	Disruption of existing infrastructure e.g., paved areas, telecommunication cables/ lines during excavation
10.	Power outages due to increased power demand by the operational Tuition Block
11.	Increased insecurity

6.7.2. Economic impacts

Table 10: Summary of anticipated economic impacts

S/N	Issues
	Positive Economic Impacts during Construction and Operation Phases
1.	Employment opportunities / job creation
2.	Create business opportunities and growth therefore increasing income of food vendors to construction workers, Kibiko shopping centre business enterprises, suppliers of construction materials, suppliers of consumable and non-consumable goods to KIHBT Ngong campus
3.	Economic growth through improved trade and jobs of local community, business community
4.	Increased wealth/ economic status/ profit margins
5.	Increased revenue collection by government agencies/ county government
6.	An increase in spending by the increasing student population
	Negative Economic Impacts during Construction and Operation Phases
1.	Bias and favouritism during shortlisting of workers affecting their income sources
2.	Loss of employment for construction workers once the construction phase is complete

S/N	Issues
3.	No negative impact

6.7.3. Environmental impacts

Table 11: Summary of anticipated environmental impacts

S/N	Issues
	Positive Environmental Impacts during Construction and Operation Phases
1.	Better visual scenery at KIHBT Ngong campus once landscaping is complete
2.	Community tree planting exercises
3.	Improved liquid and solid waste management
4.	General environmental beautification and conservation
	Negative Environmental Impacts during Construction and Operation Phases
1.	Environmental pollution- dust, air, fumes, spills
2.	Noise and vibrations from construction works and heavy construction machinery
3.	Clearing of vegetation to pave way for construction works
4.	Increased solid waste production and haphazard dumping
5.	Increased liquid waste generation
6.	Increased surface run off
7.	Interruption to water supply

7. ENVIRONMENTAL & SOCIO-ECONOMIC IMPACTS AND MITIGATION MEASURES

7.1. Environmental & Social Impacts Assessment

In this section, prediction, and analysis of possible positive and negative impacts of construction, operation and decommissioning of the proposed project is discussed. Prediction of impacts technically characterizes the causes and effects of impacts, and their secondary and synergistic consequences to the environment and the local community. Since the proposed site is already located within an already established and occupied tertiary education institution, most of the social and environmental impacts associated with this project will be direct in nature and mostly result from construction activities.

7.2. Environmental impacts

7.2.1. Positive impacts

Positive impacts on the site will be experienced during both construction and operational phases. The following positive impacts are anticipated:

Improved solid and Liquid waste management.

The Proposed Tuition Block will adopt an integrated solid waste management system which embraces the 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management. This option will demand a solid waste management awareness programme amongst the management, staff, and students of KIHBT.

Better Visual Scenery

A landscaping plan will be implemented to replace the cleared vegetation and improve natural aesthetics of KIHBT Ngong campus. Mature trees will not be cut down during construction as the building shall be located where there is a clearing with minimal vegetation. The car park shall be designed to avoid cutting down of existing mature trees.

Vegetation Restoration

A tree planting exercise will be undertaken by KIHBT in conjunction with the community as a measure towards environmental conservation.

7.2.2. Negative Impacts

Sourcing and Management of Construction Materials

The proposed project will require sourcing of construction material locally, nationally and/or internationally. The integrity of the building and civil works can be comprised during procurement of construction materials. Construction operations will generate solid wastes within the site. These wastes may include concrete, rods of metal, pieces of iron sheets, broken glasses, pieces of wood, empty containers broken stones, empty containers, sharp objects (nails), non-biodegradable materials and other assorted materials.

Potential Mitigation measures

i. All construction materials to be sourced locally from licenced suppliers who meet Kenya Bureau of Standards requirements, Plumbing Engineering Services Design Guide, 2002 and the British Standards Code of Practice BS 5306 guidelines for plumbing fittings.
ii. Prequalified suppliers shall be those who are registered and compliant with the required environmental, statutory, and legal documents.
iii. A Materials Management Plan (MMP) shall be prepared by the contractor detailing how all construction phase materials (material resources and waste) will be procured, handled, and managed in the most efficient and sustainable manner.
iv. Identification of materials management team e.g., project manager, environmental expert, OSHA expert, construction teams, sub-contractors etc.
v. The MMP to detail how all the construction wastes will be managed from waste segregation, reducing, recycling, and reusing.
vi. Undertaking of materials testing to ascertain quality standards.
vii. All construction material such as sand, ballast, stones to be sourced from within Kajiado County from licensed quarries.

Noise Pollution and Vibrations

Noise is an unwanted/undesirable sound that can affect job performance, safety, and health. Psychological effects of noise include annoyance and disruption of concentration. Physical effects include loss of hearing, pain, nausea, and interference with communications when the exposure is severe. The construction phase will be characterised by significant noise pollution, emanating from concrete mixers, excavators, workers, trucks, and other vehicles accessing the site. Noise pollution during the operation phase is not expected.

Potential Mitigation measures

i. Use of noise suppressors or silencers on noisy equipment or noise shields.
ii. Construction works should be carried out only during the specified time i.e., from 0800 hrs to 1700 hrs.
iii. Machineries should be maintained regularly to reduce noise resulting from friction.
iv. Construction workers should be provided with suitable Personal Protective Equipment (PPE) such as earmuffs when operating noisy machinery and when in a noisy environment.
v. Drivers delivering materials should avoid unnecessary hooting of the trucks/vehicles.
vi. Provision of a contractor's work programme notifying the KIHBT fraternity and the public of the construction activity and timings including activities likely to generate excessive noise.
vii. Monitor noise levels as per NEMA & NCA guidelines during both construction and operation stages.

Air Pollution

During the construction stage there will be emission of dust and gas to the atmosphere resulting in low air quality. The vehicles entering the site to deliver building materials and the machinery

used for construction generate hazardous exhaust fumes such as Carbon Oxides (COx), Sulphur Oxides (SOx) and Nitrogen Oxides (NOx). Dust particles are caused by excavation works, vibration of machinery, movement of vehicles and burning of waste on site. The dust and gases have a direct negative impact on the health of construction workers and users of adjacent facilities.

Potential Mitigation measures

i. Provide personal protective equipment such as nose masks, goggles etc. to all affected personnel at the construction site.
ii. Regular and prompt maintenance of construction machinery and equipment. This minimises generation of hazardous gases.
iii. Control over areas generating dust particles. Such areas should be regularly sprinkled with water to reduce/suppress dust. Such areas (and excavated soil) can be enclosed/ hoarded off to mitigate effects of wind on them.
iv. Ensure good housekeeping in construction areas, dust should be swept off and collected in covered containers.
v. Limit vehicle speed to a maximum of 10Km/h in the schools.
vi. Covering of vehicles transporting materials with tarpaulins to prevent spread of dust/ material falling.

Oil leaks and spills

Oil spills are prevalent in construction sites. Though this may not be common for the subject project, it is wise to control and observe leakages/spillages that may occur especially during maintenance of the involved machinery.

Potential Mitigation measures

i. All machinery should be keenly inspected not to leak oils on the ground. This can be ensured through regular maintenance.
ii. Maintenance should be carried out in a well-designed and protected area and where oils/grease is completely restrained from reaching the ground. Such areas should be covered to avoid storm water from carrying away spilled oils into the soil/water systems.
iii. Ensure proper handling, storage and disposal of waste oil, lubricants, oil filters and fuel from vehicles. Hazardous waste should be contained and properly disposed by licensed hazardous waste handlers.

Impact on Flora and Fauna

During construction, habitat destruction may occur where the vegetation is removed to make way for the new building. Plants and animals in these areas are usually directly impacted resulting in total loss or reduction of biodiversity. Mobile animals such as birds, insects, and snakes retreat into remnant part of the habitat or migrate. De-vegetation results in the generation of environmental impacts such as soil erosion, hydrological imbalance, decreased air purifiers etc. The proposed project construction will only cause clearance of vegetation where construction is earmarked.

Potential Mitigation measures

i. Minimize vegetation clearance only to areas where construction is earmarked.
ii. To the extent possible, retain some vegetative stands or avoid cutting/interfering with trees that provide micro-climate effects.
iii. Ensure strict control of construction vehicles to ensure they operate in an area only to be disturbed by access vehicles.
iv. Propose restoration programmes early e.g., landscaping and rehabilitation proposals to reinstate all sites being used for construction purpose such as spoil dumping areas, material storage sites.
v. Manage the introduced vegetation on completion of the development to restore or improve the site.
vi. Landscaping as proposed in the landscape design should be done by landscape specialists.

Soil Erosion

Soil erosion refers to the loss/removal of the top soil due to natural (wind, water), animal or human activity. In this project, soil erosion will be attributed to human activity through movement of machinery, and excavation works. However, it is important to note that soil erosion will not be a major environmental issue of concern since excavations and levelling will be restricted to points of construction only.

Potential Mitigation measures

i. Provide soil erosion control measures i.e., suppressing open surfaces with water or use of soil erosion control structures on soil-erosion prone areas within the site.
ii. Avoid unnecessary excavations and other soil disturbances that can predispose it to the agents of erosion.
iii. Ensure proper management of excavated spoil material to avoid dumping on un-designated areas. Re-use the excavated material for back filling and landscaping.
iv. Control over excavation works especially during rainy / wet conditions.
v. Re-surface open areas on completion of the project and introduce appropriate vegetation.
vi. Compact loose soil on excavated areas and introduce appropriate vegetation cover at affected areas.

Generation and Poor Management of Solid Waste

The proposed project is expected to generate significant amounts of solid waste during construction and operation phases. Waste during construction will mostly comprise of concrete, stones, wood, broken glasses, containers, rods of metal, pieces of iron sheets, sharp objects (nails), non-biodegradable materials and other assorted materials. These may cause injuries and accidents if left unattended on the site. The contractor shall provide a Materials Management Plan detailing how construction material is procured, handled, managed, and disposed of in the most efficient and sustainable manner.

The waste generated in the operation phase will be mainly organic waste and packaging waste. If not removed promptly, the waste accumulates into large heaps harbouring rats, flies etc. which disseminate germs or diseases. Non-biodegradable waste such as polythene bags may block drainage systems and choke water bodies.

Potential Mitigation measures

i. Contractor should prepare a construction waste management plan that they should follow during the works.
ii. Efficient use of building material to reduce waste and recycling where possible.
iii. Encourage the use of an integrated solid waste management system that embraces the 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management.
iv. Provide waste receptacles at source that encourage waste segregation.
v. Sensitize the construction workers on site on appropriate waste handling and disposal of all construction related waste at the designated areas.
vi. To the extent possible, restrict open burning of waste generated at sites.
vii. Engage the services of registered waste handlers to transport waste to designated Kajiado County solid waste disposal sites.
viii. Contractor should keep record of waste disposal for proper management of waste as designed.
ix. To manage waste in line with the Environmental Management and Coordination (Waste Management) Regulations, 2006 and Sustainable Waste Management Act, 2022

Wastewater Effluent Production

Effluent/sewage resulting from areas such as sanitary facilities, kitchen and laboratories is of significant concern with respect to the environment. Laboratory effluent can comprise the quality of wastewater due to the presence of chemicals and may cause sedimentation and blockage of drainage channels. Effluent from sanitary facilities should never come into contact with the surrounding i.e., water, soil, air etc. to avoid disease outbreak such as cholera, diarrhoea. The effluent should always drain effectively into the sewerage systems via well designed (closed) and laid pipe networks. For this project, the proponent will use a combined system of septic tanks. The proposed project will be connected to the existing sewer system.

Potential Mitigation measures

i. Connection of the Proposed Tuition Block to the main sewerage system line.
ii. The design of the internal sewerage system should consider the estimate discharges from individual sources and the cumulative discharge of the entire project i.e., it should have the capacity to consistently handle the loads even during peak volumes.
iii. All drainpipes passing under building, driveway or parking should be of heavy-duty PVC pipe tube encased in concrete surround. All manholes on driveways and parking areas should have heavy-duty covers set and double sealed airtight as approved by the services engineer.
iv. Sanitary facilities should be kept clean always, through regular washing/cleaning.

v. Frequent monitoring of the internal drainage system within the institution to discourage mosquito breeding grounds.
vi. Treatment of effluent for the three laboratories located within the Proposed Tuition Block before discharge to the building's wastewater system.
vii. To avoid sedimentation Providing a separate wastewater channel for the soil testing laboratory, which will be fitted with filtration devices that will sieve excess soil sediments before discharge to the building's wastewater system.
viii. System blockages and damages should be fixed expeditiously.

Increased Surface Runoff

There will be a significant amount of surface run-off during the operation stage. The drainage of the general site comes in handy to enhance effective flow of the anticipated surface run-off emanating from the roof catchments, car parks and other impermeable areas within the project site. The expected storm water is however manageable. Surface water from the subject plot will be directed to flow into the existing drainage channel.

Potential Mitigation measures

i. Construct drainage channels on the property to direct surface run-off to landscaped areas.
ii. Rainwater harvesting gutters and storage tanks shall be installed to reduce the amount of rainfall reaching the surface.
iii. Semi permeable materials shall be used for construction of pavements.
iv. After completion of construction, the proponent shall embark on comprehensive landscaping to increase softscape cover on the plot.

7.2. Socio-economic Impacts

7.2.2. Positive impacts

Improved access to quality TVET programmes

The proposed project is expected to improve the quality of TVET in KIHBT through the upgrade of training facilities that shall be domiciled in the Proposed Tuition Block once operational. This will enhance better access to TVET programmes in highway and other infrastructural courses and increase general student enrolment numbers.

Reduction of gender gap in enrolment and completion rates

Women (and girls) will benefit from affirmative action during admission to reduce the enrolment gap and an enabling learning environment including provision of accommodation for women to be enhanced.

Increased capacity for gender friendly and responsive learning environments

Development, implementation and monitoring a gender action plan by both the proponent and contractor.

Employment and business opportunities

It is expected that the proposed project will create employment of casual and permanent labourers during both construction and operational stages. During the construction phase, the project will employ a large workforce including masons, plumbers, electricians, carpenters, and food vendors among others. For the operation phase, the project will employ a small work force including cleaners, security guards and gardeners among others. Business opportunities are expected amongst suppliers of consumable and non-consumable goods to KIHBT Ngong campus, and Kibiko shopping centre business enterprises.

Provision of market for supply of building materials

During the construction phase, the project will consume a lot of building materials sourced both locally and in other parts of the country. Prequalified suppliers shall be those who are registered and compliant with the required environmental, statutory, and legal documents. This will have a positive impact towards the economic status of the suppliers and to the national economy through V.A.T rates for goods. Due diligence will be undertaken to verify the source of construction materials e.g., stone quarry site, and whether these material sources have complied with statutory requirements.

Gains in the local economy

The economy of the neighbourhood will receive a boost especially during the construction phase due to the activities of the workers, buying food, drink, and commodities. Kajiado County government will gain through revenue collection from approval of building drawings.

Community Medical camp

As part of CSR, KIHBT will undertake a medical camp in the community to address arising health issues.

7.2.3. Negative Impacts

Interference with KIHBT Ngong campus Activities

During the construction phase movement of construction trucks and machinery will impede normal operations of KIHBT Ngong campus.

Potential Mitigation measures

i. The contractor shall be directed to schedule their operations at the least inconveniencing time.
ii. The contractor shall share the traffic management plan and works schedule with all stakeholders indicating periods when materials movement is anticipated.
iii. All damages done to water pipes, cable lines and power lines during construction will be fixed immediately to ensure minimum interference. Rerouting program by the contractor on all affected service lines will be conducted immediately or before construction on the said sections begin.
iv. Provide a Complaints/Complementary Box into which written complaints would be deposited.

Traffic snarl ups on Forest line road and within KIHBT Ngong campus

During the construction stage, there will be an increase in movement of delivery vehicles and construction machinery. The contractor will implement measures to minimise impacts on traffic.

Potential Mitigation measure

i. The contractor and project consultants develop and share with stakeholders a works programme that schedules different construction works and construction material delivery.
ii. Development of a traffic management plan by the proponent in conjunction with the contractor to alleviate any delays or traffic snarl ups that may be experienced on the roads due to movement of both construction vehicles and machinery.
iii. The contractor to notify the public of possible disruption of traffic during movement of construction materials and machinery.

Insecurity & Crime Management

Insecurity may arise during the construction phase since intruders may try to steal the building materials deposited on the site.

Potential Mitigation measures

i. The project site should be hoarded off/ enclosed to beef-up security and to control movement within the site.
ii. A manned guard house at the gate shall always monitor the gate of the facility together with the horded area to keep away the intruders and to control movement within the site.
iii. The contractor shall provide adequate security during the construction period when there are no ongoing works on the site.
iv. The guards stationed at the gate(s) should document movements in and out of the site/property.
v. All construction workers shall wear properly branded overalls and/or reflector jackets to distinguish them from other users of KIHBT Ngong campus.
vi. Security lights shall be provided to increase surveillance of the project area at night.
vii. The contractor shall make provision for the storage of building materials.
viii. Register in a log all events of a criminal nature that occur at the worksite or are associated with the civil works activities.
ix. report all activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up. Crime reports should include nature of the offense, location, date, time, and all other pertinent details.
x. Sensitize all workers, locals, and security to be on the lookout on suspicious activities near the construction site of KIHBT.

Social Conflicts

Social conflict and favouritism are expected especially during shortlisting of labourers and attaches during the construction stage.

Potential Mitigation measures

i. KIHBT management in conjunction with the Kibiko location chief will have a meeting whereby they will mobilise, identify, and enumerate potential construction workers at the project construction site.
ii. Skilled, semi-skilled and unskilled labour will be competitively sourced from those who apply.
iii. Priority will be given to available local labour, especially KIHBT students and alumni during recruitment for attaches and construction workers.
iv. A workers' grievance redress mechanism shall be constituted for record keeping, processing, and resolution of complaints.
v. Facilitate workers to form a committee through which their grievances will be received attended to or channelled to the contractor and KIHBT management.

Social vices

Alcohol and drug abuse is rampant amongst the youth in the area. HIV/AIDS remains a national concern.

Potential Mitigation measures

i. Undertaking of sensitization workshops on alcohol and drug abuse in the community by local leaders.
ii. Undertaking of sensitization workshops on alcohol and drug abuse within KIHBT by the management.
iii. Prohibiting alcohol, drugs, arms, and ammunition on the construction site and among personnel operating plant machinery.
iv. Develop an awareness and education program on HIV prevention and response.
v. HIV and AIDS and STIs prevention and response campaigns should be extended beyond the construction phase and into the operational phase.
vi. Establish a partnership with local wellness centres including hospitals, VCT and ARV centres and NGOs near the project area for implementing an HIV/AIDS prevention and response program.
vii. Mapping of substance abuse service providers, with their contact information.

Limited hostel accommodation

Available bed capacity in the KIHBT Ngong campus hostels might become strained due to increased student numbers that are anticipated after the construction of the Proposed Tuition Block. This might lead to congestion occurring and/or some students missing accommodation within the institution.

Potential Mitigation measures

i. KIHBT management to mobilise funds for construction of additional hostel accommodation.
ii. KIHBT management to work with the surrounding neighbourhood community to put up student hostel accommodation.

iii. KIHBT management to provide bus shuttle services to collect students residing outside the campus.

Limited staff numbers

Once the Proposed Tuition Block is operational, it is anticipated that student enrolment numbers shall increase by over 100%, due to increased number and quality of learning spaces and laboratories. Increased student numbers will require provision of adequate staff to train the students.

Potential Mitigation measures

i. Every TVET institution shall provide appropriate and adequate facilities to cater for the number of programmes on offer, trainee enrolment and staff establishment (section 5.1 of the TVET Standards).
ii. Enforcement of the Technical and Vocational Education and Training (TVET) Standards (2019) to ensure effective and efficient training of the institution's courses by enforcing the trainer-trainee ratio which shall be within the provided standard guidelines as follows: (1) in practical related programmes, no trainer shall handle more than twenty (20) trainees at a time; (2) in theory based programmes, no trainer shall handle more than twenty-five (25) trainees at a time.

Power outages/ inadequate power supply

Power blackouts and outages which hinder or interfere with KIHBT Ngong campus activities have been identified as occurring. The Proposed Tuition Block is expected to increase the power demand. KIHBT Ngong campus has a stand-by three phase generator whose output is 100kVA and has a voltage of 430/400.

Potential Mitigation measures

i. Source for a separate budget to purchase a new standby generator for the Tuition Block
ii. Installation of power guard stabilizer(s) to detect when voltage is out of range and protect electronic equipment against over/under voltage ensuring their longer use-life.
iii. Installation of smart electrical fittings such as smart switches, plugs and bulbs. Smart lighting fixtures should be able to control the amount of illumination needed in each room/space and automatically switch off when there is no one present.
iv. Provide adequately sized windows for the building to optimise use of natural light as much as possible.

Gender equity, Gender Based Violence

It is important to ensure that there is no discrimination by gender during employment both at construction and operation stages. All persons who seek employment at the construction site and later when the tuition block is operational shall be prequalified based on their skills and ability to execute the work at hand. The contractor and proponent shall adhere to the national labour laws and ensure that both men and women have access to employment opportunities and are paid equally for work of the same value. All Workers shall sign employment contracts that stipulate salary amount and mode of payments. All employed personnel shall sign a code

of conduct with either the contractor or the proponent during the construction and operation stages respectively to guide their expected behaviour during their period of employment.

Potential Mitigation measures

i. Ensure that women are given adequate employment opportunities during recruitment and job postings.
ii. Regular sensitization and awareness campaigns to the workers should be done to promote gender equity in employment during the construction works and during operation.
iii. Every worker while in employment at both construction and operational stages of the project should also sign a code of conduct (CoC) as an annex to the employment contract – covering issues such as zero tolerance of unacceptable conduct in the community, GBV, sexual harassment, sexual exploitation, and abuse of children, etc.
iv. Remove any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment.
v. Contractor and implementing agency to prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity for employment,
vi. The proponent and contractor to prepare and enforce a No Sexual Harassment Policy in accordance with national law where applicable.
vii. All workers and nearby communities and stakeholders should be educated on preventing and responding to sexual harassment and GBV ahead of any project related works.
viii. Establishment of partnerships will be established with relevant government agencies and NGOs to ensure survivors of GBV and sexual offenses access survivor centred services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary.

Child Labour and Protection

In accordance with article 53 of the Constitution of Kenya, every child has a right to be protected from abuse, neglect, harmful cultural practices, all forms of violence, inhuman treatment, and punishment and hazardous or exploitative labour. The children's Act 2012 defines a child as any person below eighteen years of age. The Employment Act defines a young person as a child who has attained the age of sixteen (16) years but has not attained eighteen (18) years of age. Under the provisions of Employment Act 2007 revised 2012, a child under the age of 16 years cannot be employed. The Children's Act protects every child from economic exploitation and any work that is considered as hazardous or interferes with the child's education. The minimum age for hazardous work is eighteen (18) years. The contractor and proponent shall adhere to the national laws regarding child labour.

Potential Mitigation measures

i. Ensure no children are employed on construction site or at the Tuition Block once operational in accordance with national labour and child laws.
ii. Ensure that any child sexual relations offenses among workers are promptly reported to the police.
iii. The proponent and the contractor shall adopt a 'Child Protection Code of Conduct' which sets stringent standards for personal behaviour to avoid child exploitation and abuse.
iv. The proponent and the contractor shall require his employees, sub-Contractors and any personnel thereof engaged in any works to individually sign and comply with this Code of Conduct.

7.3. Health and Safety Impacts

7.3.2. Negative Impacts

Occupation Health & Safety during Construction Phase

In construction, workers perform a great diversity of activities, each one with a specific associated risk. The worker who carries out a task is directly exposed to its associated risks and passively exposed to risks produced by nearby co-workers. Potential hazards for workers in construction include falls (from heights); trench collapse; scaffold collapse; electric shock and arc flash/arc blast; failure to use proper personal protective equipment; and repetitive motion injuries. Moreover, during construction, there will be increased dust, air, and noise pollution. These are considered harmful to human health. KIHBT Ngong campus current users, construction workers, neighbours and other stakeholders will be subjected to these environmental hazards putting them at high risk. Furthermore, waste material such as pieces of glass and nails left lying on the ground may cause injuries/ accidents to the workers.

Food for the construction workforce is usually provided by mobile individuals most of who operate without licenses. This can compromise the health of workers especially if such foodstuff is prepared in unhygienic conditions.

Proposed Mitigation measures

i. Contractor shall prepare an OSH plan for the construction works and should include input from the institution on existing health and safety measures.
ii. Contractor shall restrict access to active construction sites, including establishment of a fence to hoard the area under construction, with the recommended material, iron sheets.
iii. Warning signs shall be displayed to warn students/staff from coming close to the construction site.
iv. The Contractor shall ensure compliance with statutory requirements on registration of sites/works with the Directorate of Occupational Health and Safety (DOSHS) and National Construction Authority (NCA).
v. Incidents and accidents logs should be maintained on on sites.

vi. Ensure all vehicles, equipment and machine are inspected, repaired, and maintained before use, and machine operators are trained on machine use and safety.

vii. Scaffold used must be sound, rigid, and sufficient to carry its own weight plus four times the maximum intended load without settling or displacement. It must be erected on solid footing. Scaffold must be equipped with guardrails, midrails and toeboards. The scaffold platforms must be tightly planked with scaffold plank grade material or equivalent.

viii. All construction workers prior to employment should provide a certificate of medical fitness to undertake construction works. This will mitigate against falls /accidents from height especially for those with underlying medical conditions.

ix. To prevent falls, erect guardrail systems with toe boards and warning lines or install control line systems to protect workers near the edges of floors and roofs. Cover floor holes.

x. Use the correct ladder for the assigned task. Never load ladders beyond the maximum intended load or beyond the manufacturer's rated capacity. Avoid using ladders with metallic components near electrical work and overhead power lines. Three-point contact must always be maintained by the workers using ladders.

xi. Check all crane controls to ensure proper operation before use. Inspect the crane's wire rope, chains, and hook for any damage. Know the weight of the load that the crane is to lift and ensure that the load does not exceed the crane's rated capacity. Cranes operators must have valid operating licenses and the cranes must have valid thorough inspection certificates.

xii. Maintain a Material Safety Data Sheet (MSDS) for each hazardous material/chemicals on the construction site. Always make this information accessible to employees in a language or formats that are clearly understood by all affected personnel. Train employees on how to read and use the MSDS. A hazardous material/chemical register should be developed and maintained to track quantities beyond which a license must be obtained.

xiii. Ensure all the electrical works are carried out by trained professionals.

xiv. Implement a worker's grievance redress mechanism to allow workers raise safety issues and propose improvements on site.

xv. Appropriate PPE must be work based on the type of health and safety risk that an employee is exposed to. A PPE audit should be carried out to match the tasks to appropriate PPE such as hard hats, steel toe boots, aspirators, and harnesses among others. Reflective vests should be made mandatory due to the active nature of the project site. PPEs should also be matched to the individual that is using them (anthropometry).

xvi. First Aid Kits should be provided within the site and during construction and operation phases of the tuition block. This should always be fully equipped and should be managed by duly trained personnel (First Aid Rules, 1977). An adequate number of personnel and first aid boxes are to be availed at the worker's camp area and the active work front. A fully equipped ambulance should be considered given the distance between the project site and the nearest hospital.

xvii. Develop a suitable site-specific emergency preparedness and response plan to manage occurrence of anticipated hazards during the construction phase.

xviii. Safety awareness may be gained through regular safety meetings, health and safety campaigns, awareness posters, toolbox talks, safety training or personal interest in safety and health. A safety committee shall also be constituted to address and coordinate safety matters guided by the Safety and Health Committee Rules, 2004.

xix. The contractor should maintain valid Contractors All Risk (CAR) and Workers Injury Benefits Injury (WIBA) Insurance covers, as well as other ordinances, regulations, and union agreements.

xx. Sanitary facilities, separate for both male and female workers, should be provided and maintain standard cleanliness of the facilities. Potable water and appropriate handwashing posters should be availed at each washroom.

xxi. Local individuals preparing food for the workers at the site should be controlled, monitored, and evaluated to ensure that food is hygienically prepared. Sensitization campaigns could be held to increase Food Safety awareness among the food vendors, staff, students, and visitors to ensure food safety.

xxii. All stakeholders should constantly be sensitized on social issues such as drugs, alcohol, respiratory diseases, sexually transmitted diseases such as HIV/AIDS and other STIs, water borne diseases, safe road use etc. Additionally, effort should be made by the contractor to communicate effectively on the reports of communicable diseases among their employees and should put immediate measures to curb spread of these diseases. The contractor should liaise with the nearby ambulances and fire engines to respond in the event of an emergency.

xxiii. Ensure provision of safe drinking water for the proponent and contractor employees, during the construction phase.

xxiv. Adequate signage that alerts the contractors' employees and the project implementation team, road users and KIHBT staff and students on the ongoing tasks and the hazards they are exposed to should be clearly displayed. Road works signage and appropriate diversion signage where applicable should also be displayed in English, Swahili, and appropriate local languages where applicable (Maa). Speed limit signs should be erected strategically to manage motor speeds and reduce risk of injuries due to motor vehicles and motorcycles.

xxv. Project drivers should all possess valid driving licenses and where possible, vehicle tracking, and speed limiters are to be installed to curb traffic incidents.

xxvi. Watering of the active work fronts should be frequently done, especially given that the project site is an active operation site which is in the middle of a busy tertiary institution.

xxvii. Construction shall only be done during daytime to manage noise and to ensure there is good visibility as the construction continues. In the event the contractor wishes to work in the night, the contractor should engineer noise mufflers, communicate effectively to the neighbours, and ensure adequate light to reduce strain and reduce risk of injury to the workers.

xxviii. Occupational injuries, illnesses, near misses, dangerous occurrences, unsafe acts, and unsafe situations must all be recorded in order improve the risk ranking and identify hazardous areas that need more urgent measures to address.

xxix. Hand tools, electrical tools, and other equipment should be safely kept, and an effective tool management plan developed and implemented. This will avoid unauthorized and untrained personnel handling tools that will result in an injury.

xxx. Apprentices must all be managed by an experienced supervisor. Effective frequent training should be administered. A training calendar and a training matrix shall be developed, implemented, and maintained through the construction phase. Effective training is a way to further reduce risk of injury.

Community Health and Safety

During construction there are diverse activities which could cause harm to the surrounding community. Such activities include damage to existing public amenities such as water system, sewerage system, power or telecommunication cables, storm water drainage systems; noise generated by construction works or equipment; Respiratory distress from dust, fumes, or noxious odours; Exposure to hazardous materials.

· **Proposed Mitigation measures**

i. Ensure that water sources are not contaminated during the construction and operation phases of the project. In the event of accidental contamination through oil spills, overburden from the construction, concrete wastes or wastewater, contractor or, should take all possible measures to clean up the spill or contamination as far as is reasonably possible.

ii. All spills must be reported to the relevant authorities through the contractor or proponent contact persons in the prescribed formats. Communication to the downstream users should be effectively done to alert the community members of the contamination, possible impacts to their health and safety, and grievance reporting structure.

iii. Inclusion of buffer strips or other methods of physical separation around project sites to protect the public from major hazards associated with hazardous materials incidents or process failure, as well as nuisance issues related to noise, odours, or other emissions. Watering of dusty tasks should be consistently done to reduce dust impact to the community members. Through the grievance redress mechanism, the community members will be able to display their dissatisfaction with the dust suppression methods which will further guide the contractor or proponent to improve their strategies. Tools and equipment of good quality shall be used to reduce noise emissions, while those that are excessively noisy, producing excessive fumes, shall be decommissioned from the project.

iv. Reducing off-site impacts of releases through measures intended to contain explosions and fires, alert the public, provide for evacuation of surrounding areas, establish safety zones around a site, and ensure the provision of emergency medical services to the public.

v. Have suitable signage clearly indicating areas undergoing construction. Early communication of the intended tasks and associated discomforts will avert grievances from the community. Communication can be done through awareness posters, administrative and political leaders of the area, public meetings, mass media etc.

vi. Provide a Works programme to stakeholders to know the schedule of construction works and update it as needed.
vii. Adapt a suitable emergency response plan to manage occurrence of anticipated hazards during construction phase. This should be developed in line with the local emergency service providers such as the fire engines and the ambulances.
viii. Engage construction workers as well as the surrounding community on safety awareness measures through regular safety meetings.
ix. Sensitize the local community on social issues such as drugs, alcohol, diseases such as HIV/AIDS and STIs through awareness campaigns working with political leadership and sub-county leadership. Other key stakeholders identified through the stakeholder mapping need to be included in such communication. Additionally, sensitize the foreign workers (foreign to the project area) of these issues and increase awareness on responsible behaviour. Develop disciplinary measures to curb alcohol and drug abuse during work periods.
x. Develop and maintain a project specific traffic management plan that will guide the drivers on safe driving when traversing community areas such as towns, schools, markets and other public institutions and facilities. Disciplinary measures to rogue drivers should be developed and implemented to reduce risk of injury to community members because of project traffic.
xi. Identify and appoint road marshals that will guide traffic, guide movement of heavy machinery such as excavators to reduce the risk of vehicle collision with other vehicles, pedestrians, or structures. The road marshals could also be tasked with sensitizing the community on traffic hazards, and alerting the project management, through the supervisors or EHS personnel, on highly hazardous sections of the roads, especially during the project development phase.

Fire

Fire risk is significant both during the construction and the operation phases of the project. During construction, hot works and electrical installation and commissioning, storage of bulk flammable chemicals and transfer of bulk fuel present a risk of an accidental and hazardous fire. During operation, open burning of wastes, poor electrical connections and maintenance of the institute all present a fire risk that need to be managed.

Proposed Mitigation measures

i. Hire a competent and properly authorized electrical contractor to do the wiring and other electrical works.
ii. Conduct a fire risk assessment which will highlight areas that need more attention as far as fire management is concerned.
iii. Regular fire drills that involve all contractor employees need to be done to sensitize the community of the fire action plan, improve awareness on how to identify and use appropriate firefighting equipment and how to act in the event of a fire for those untrained to handle a fire emergency.
iv. Develop and adapt an (fire) emergency response plan for the project during construction and operation stages. The response plan should be communicated to the relevant institutions (Police department and, referral hospital). As a minimum, the employees

need to know where they can assemble in the event of a fire. The emergency assembly point therefore should be clearly marked.

v. Ensure that all firefighting equipment are regularly maintained and serviced.
vi. Provide fire hazard signs such as no smoking sign, direction to the fire exits in case of any fire incidence and emergency numbers.

Increased Water demand

Water is an integral material for construction hence during this phase, a high amount of water will be required. During the operation phase, the demand for water will also be high; mostly for institutional use. Lack of adequate water during occupation phase may result to dirty surfaces exposing the institution's residents to disease.

The proposed site will be connected to the existing water supply system of the institute.

Potential Mitigation measures

i. The contractor should have agreements with the KIHBT on water use, on the quantities, time, and charges from the sources,
ii. Install a discharge meter at water outlet to monitor on usage.
iii. The contractor should use water bowsers and tankers to bring in water for construction activities i.e., during periods of high water demand (e.g. during slab formation).
iv. Install water conserving taps that turn-off automatically when water is not in use.
v. Encourage water reuse/recycling during construction and occupation phases.
vi. Roof catchments of building blocks shall be provided with rainwater harvesting systems (gutters, down pipes, and water storage facilities) to enhance collection and storage of the resulting run-off. Such water can be used in watering planting beds, general cleaning.
vii. Provide notices and information signs to sensitize on means and needs to conserve water resource i.e., 'Keep/Leave the Tap Closed'. This will awaken the civic consciousness of the construction workers, KIHBT staff, students, and other users regarding water usage and management.

8. ANALYSIS OF PROJECT ALTERNATIVES

8.1. Comparison of Alternatives

This involved the assessment of the different impacts associated with each of the project alternatives. This comparison was done in a qualitative manner although importance of cited impacts had been quantified earlier by use of percentages. For this ESIA, this task involved a selection of the environmentally and socially preferred alternative, which is construction of the Proposed KIHBT Ngong Kibiko Tuition Block in Kajiado County.

8.2. Project Environment

8.2.1. Natural environment

The proposed design plan is formulated to:

i. Acknowledge existing activities and users of KIHBT Ngong campus,
ii. Incorporate new outdoor and indoor plantings where necessary to moderate the micro-climate and enhance the visual aesthetics of the landscape,
iii. Environmental conservation through tree planting exercises in the community,
iv. Effectively manage liquid and solid waste.

8.2.2. Economic environment

The proposed project plan is formulated to:

i. Create employment of casual and permanent labourers during both construction and operational stages,
ii. Enhance income for businesses in the area,
iii. Enhance business opportunities to suppliers of construction materials, consumables and non-consumable products.

8.2.3. Social/ cultural environment

The proposed project plan is formulated to:

i. Improve quality of TVET in KIHBT, nationally and regionally,
ii. Upgrade of training infrastructure and facilities such as classrooms, laboratories, and workshops,
iii. Increase access to highway and other infrastructural courses thereby increase general student enrolment numbers,
iv. Provide attachment opportunities to KIHBT students,
v. Improve community health by holding a medical camp as part of CSR by KIHBT.

8.3. Alternative 1: No Project Scenario

'No project scenario' would mean that the Proposed KIHBT Ngong Kibiko Tuition Block will not be implemented. By adopting this alternative, the community would be foregoing the following: Improved quality of TVET in the county, nationally and regionally, upgrade of training infrastructure and facilities, better access to affordable highway and other infrastructural courses, employment opportunities for the community, business opportunities for neighbouring businesses, revenue to the county government, environmental conservation through tree planting.

However, the 'No project scenario' may result into some positive impact on the immediate and surrounding environment. It would mean that: physically, the site is unlikely to undergo any major changes; biologically, the existing ecosystem is not disturbed; there will be no production or dumping of construction waste on the surrounding project site area; moreover, there will be no environmental pollution and earth vibrations resulting from the construction activities; furthermore, the existing soil profile shall not be disturbed thereby avoiding soil erosion and degradation.

'No project scenario' would mean County Government of Kajiado will not be able to; get revenue from approval of building plans and land rates; achieve development of Kibiko shopping centre locality, Kajiado county and the country. The maintenance of the project site in its current state without constructing the proposed tuition block would serve to benefit no one.

8.4. Alternative 2: Development of Proposed KIHBT Ngong Kibiko Campus Tuition Block

The proponent emphasized the need to have a design that shall be functional, formulated to facilitate proper flow of activities and functions within KIHBT Ngong campus, which will involve education and training in technical and vocational programmes. They equally stressed that the designed spaces should be readily accessible, inviting in character and environment, well equipped, humanely administered and an integral part of the existing structures within KIHBT Ngong campus.

The proposed development shall be designed to accommodate the following spaces in a three (3) storey building; entry court, lobby, laboratories (3 number), classrooms (6 number), offices, lactation room, kitchenette, washrooms (staff and students) meeting hall, roof terrace with a hall, car park, students' passive recreational park, and external works i.e. car park, pavement and walkways. Furthermore, service installations will consist of; electrical, and mechanical works. A more detailed description of project components is as indicated in section 3.5.1 on the Clients brief/ Project Brief.

8.5. Alternative Construction Materials and Design Technology

8.5.1. Design Technology Alternatives

The design emphasizes on use of natural light during the day to reduce energy costs. It further emphasizes on orienting buildings with the longer elevations facing off the East-West axis to avoid direct western and eastern sun getting into the habitable space thereby reducing on mechanical ventilation costs. The buildings are designed to maximize on natural ventilation. The design furthermore lays emphasis on rainwater harvesting whereby a total of 10,000 litres will be harvested. In addition, use of solar energy in street lighting has been proposed as an alternative to reduce on reliance on electricity from the national grid and make use of the renewable natural energy.

8.5.2. Construction Materials Alternatives

The proposed project will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. The civil and construction works will be made using locally sourced materials that meet the Kenya Bureau of Standards requirements. Mechanical works will be cognisant of the guidelines given in the Plumbing Engineering Services Design Guide, 2002 and the British Standards Code of Practice BS 5306. Furthermore, all building materials shall be sourced both locally and in other parts of the region. Prequalified suppliers shall be those who are registered and compliant with the required environmental, statutory and legal documents. This will have a positive impact towards the economic status of the suppliers and to the national economy through V.A.T rates for goods.

8.6. Solid waste management alternatives

Solid waste will be generated from the proposed project during both the construction and operation phases. Solid waste management at the Proposed Tuition Block be guided by the Sustainable Waste Management Act 2022 and the Environmental Management and Coordination (Waste Management) Regulations, 2006. During the construction phase the contractor will handle all construction wastes generated. All Materials Management Plan (MMP) and solid waste management plan shall be prepared by the contractor detailing how all construction phase materials (material resources and waste) will be procured, handled, and managed in the most efficient and sustainable manner.

An integrated solid waste management system which embraces the circular economy approach and 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management shall be embraced. A solid waste management awareness programme amongst KIHBT staff and students shall be undertaken. Solid waste receptacles shall be stationed at various points of the Proposed Tuition Block. The proponent shall put in place source separation of solid waste by providing differently coded large and small waste bins for organic/ biodegradable material, plastics, metal, and others. This gives priority to reduction at source, re-use and recycling. The proponent will ensure regular waste removal and disposal in an environmentally friendly manner. In this regard, a NEMA registered solid waste handler will be engaged.

8.7. Preferred Alternative

All stakeholders concurred that the Proposed KIHBT Ngong Kibiko Campus Tuition Block was timely as it would enhance the access to and quality of TVET education in the country and regionally once the institute becomes a regional TVET institution. Moreover, increasing student enrolment numbers would have adequate training facilities. The community will moreover stand to gain economically via employment and by doing business. These developments would directly improve the economic activities of Kibiko and provide a source of revenue for both the county government and National government. Maintaining the status quo therefore means foregoing the stated opportunities. The project stakeholders endorsed the construction of the Proposed Tuition Block noting that its operational benefits outweigh the negative impacts which can be mitigated.

9. ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING PLAN (ESMMP)

9.1. Scope of ESMMP

The Environmental and Social Management and Monitoring Plan is developed to allow integration of environmental and social management considerations in the construction, use and maintenance of the project as well as associated amenities and public interests within the site area. This ESMMP will also provide a basis for codes of conduct with the contractor in terms of responsibilities.

Factors that need to be considered include:

- Enhanced integration of environmental, health and safety, social and economic functions in the project design and implementation plans including safety provisions in the site design and construction.
- All the players in the construction activities including the contractor are prevailed upon to implement the ESMMP in liaison with the proponent.
- Maintenance of the natural beauty of the immediate surroundings to the project site

9.2. Aims of ESMMP

The ESIA study has identified some negative impacts that need to be mitigated for the success of the project. ESMMP is a necessary tool to provide measures relevant to address these impacts. The effectiveness of this tool relies on its clarity on assigning responsibility of actions, financial implications and the time frame required.

9.3. Monitoring

Environmental and social monitoring rationally completes the process that began with establishing environmental and social baseline conditions, carrying out the ESIA, implementing mitigation measures and ultimately monitoring success of those measures during construction, operation, and decommissioning of the project.

It is not possible to foresee all socio-economic and environmental impacts arising from the project to the biophysical and social environment. For this reason, it is critical for this project to incorporate a long-term monitoring and management plan that would serve these purposes:

- to enforce adherence by the contractor during construction phase and the proponent during the operational phase to the set minimum environmental and social standards,
- measure the attainment of the laid down mitigation measures to ameliorate foreseen impacts and spot unexpected impacts,
- to suggest immediate mitigation measures

In addition to normal data, a photographic record should be made with precise identification of locations. This photographic record should be taken prior to commencement of construction works, during construction and finally after project commissioning/ operation. This provides

an archive that should stimulate action if serious environmental degradation is evident by comparison of the views over time.

The ESMMP prepared by this ESIA should form part of the contractor's tender/bidding documents to ensure that all issues regarding environment, social, health and safety requirements are incorporated during project implementation. The contractor is furthermore expected to develop a contractor specific ESMMP which shall be followed as recommended in the ESIA report.

An effective monitoring mechanism is created with adequate funding to ensure compliance to the suggested mitigation measures and that unforeseen impacts are effected. The costs associated with the environmental and social management should be included in the project construction costs estimates and the supervising Project Manager/Clerk of Works should ensure that the recommended mitigation measures are implemented.

9.4. Institutional Arrangements for the ESMMP Implementation

During the construction phase the contractor will be under the supervision of the Project Consultants' field team comprising of Clerk of Works, Project Manager and an Environmental Health and Safety officer on a full-time basis. They will ensure that the contractor implements the environmental and socio-economic mitigation measures. The process of preparing and approving the ToRs for the supervising consultants by the proponent is currently ongoing.

9.4.1. Key Players' Roles in ESMMP Implementation

Proponent

The proponent is expected to:

- Implement and operate the proposed project and ensure that all project-related activities are carried out in compliance with the environmental and social requirements/ safeguard policies.
- Ensure compliance to established ESMMP and ensure contractor has appropriate environmental and social controls and systems in place.
- Provide access to land to the contractor prior to main construction; monitor the state of the receiving environment that could be affected by the project activities.
- Regularly inform the immediate KIHBT community and the larger public of project activities and impacts and address issues raised by the community,
- Ensure a functioning grievance redress mechanism and follow-up on all environmental asocial health and safety issues.
- Share quarterly safeguards reports with the World Bank.
- Report immediately to the World Bank upon occurrence of any significant environmental, social, or health and safety incidents and accidents.
- Undertake an environmental and social audit study based on baseline information and the Environmental Social Management Plan provided in the initial environmental audit study, project report.

Supervising/ Environment Consultant

- Ensure compliance to established ESMMP by the Contractor and Proponent,
- Ensure that the proponent regularly informs the local community and the larger public about project activities and impacts and addresses issues raised by the community,
- Renew and approve the contractor's ESMMP and monitor its implementation,
- Provide monthly and quarterly environmental and social impact project progress reports.

Contractor

The contractor is expected to:

- Prepare a detailed contractor CESMMP Plan including OHS plans, waste management plans among other plans based on the ESMMP in this ESIA report,
- Ensure validity of statutory requirements including registration of construction works with the National Construction Authority (NCA); registration of sites as workplaces with the Directorate of Occupational Safety and Health Services (DOSHS); and obtainment of Work Injury Benefit Act (WIBA) and Contractors All Risk (CAR) Insurance policy covers.
- Schedule construction works in a way that avoids/minimizes adverse environmental social, health and safety impacts,
- Work with the proponent and project Design Team/ Consultants to improve and adapt the project's design to minimize potential adverse impacts,
- Retain an environmentalist and sociologist to prepare and ensure implementation of CESMP and implementation of project's ESIA ESMMP,
- Conduct activities in accordance with mitigation measures listed in this ESMMP,
- Maintain accidents and incidents logs on site. Report immediately on any occurrences to the proponent.
- Maintain grievance log sheets, receive, respond and timely resolve complaints at sites,
- Share monthly and quarterly safeguards reports with the supervising consultants.

External monitoring

External monitoring of the proposed project shall be done by the following institutions: NEMA, County government of Kajiado, National Construction Authority and World Bank,

NEMA

NEMA shall be responsible for review the ESIA project report and ensure its compliance with statutory environmental legislative framework; primarily EMCA 1999 amended in 2015 and her subsidiary legislations and issuance of license authorizing commencement of the project following review and approval of the ESIA project report., NEMA will also conduct periodic inspection of the project site to monitor adherence with the ESMP developed during the ESIA process. An initial audit will be conducted in the first year of operation to confirm the efficacy/ adequacy of the ESMMP and submitted to NEMA.

County Government of Kajiado

The Department of Occupational Safety and Health Services (DOSHS) will check on the registration and status of the workplace while the county public health department will check on compliance with public health and safety requirements.

CGK shall undertake reviews and approvals of the project architectural and structural plans/drawings, supervision of compliance of the building construction to the approved project design and laws relevant to the project implementation.

The National Construction Authority

NCA will ascertain that the appointed main contractor and sub-contractors are registered with NCA. Registration of the proposed project site by the contractor. NCA shall ascertain whether the main contractor has registered the proposed project with NCA. NCA will also undertake quality assurance of the proposed project activities and check record for compliance with relevant legislation and standards.

World Bank

World Bank will undertake overall supervision of the project to ensure alignment with the project's objectives and terms of reference. WB will also review of the ESIA document to ensure conformance with the Bank's Environmental and Social Safeguards. They will furthermore undertake periodic monitoring of the project to ensure conformance with WBG guidelines, and the safeguard instruments prepared for the project.

Tables 13-15 below form the core of this ESMMP for the design and construction, operational and decommissioning phases of the proposed project respectively. In general, the tables outline the potential safety, health, environmental and social risks associated with the project and detail all the necessary proposed mitigation measures, their associated costs, as well as the persons responsible for their implementation and monitoring. The ESMP will be used as a checklist in future environmental, social and safety and health audits.

9.5. The recommended ESMMP

9.5.1. Construction Phase

Table 12: ESMMP for the construction phase

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
A. SOCIAL IMPACTS						
1. **Impacts on disruption of activities/operations**						
Disruption of deliverance of operations and services at KIHBT Ngong campus	Develop and share with stakeholders'/ community representatives a works programme that schedules different construction works.	Construction	Contractor and Design team	Observation, continuous	Works programme,	100,000.00
Delays in traffic movement and vehicular parking during construction	Develop a traffic management plan by the proponent in conjunction with the contractor to alleviate any delays experienced within KIHBT Ngong campus due to movement of both construction vehicles and machinery.		Proponent and Contractor		Traffic management plan,	
	The contractor to notify the KIHBT Ngong campus staff and students and the public of possible disruption of traffic during movement of construction materials and machinery.		Contractor		Public notices,	
Public complaints on construction works	Presence of a complaints/complementary box into which written complaints are deposited and grievances reviewed bi-weekly.		Contractor		Complaints made to the Grievance resolution Committee	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
2. Traffic snarl ups on Forest line road and within KIHBT Ngong campus						
• Increase movement of delivery vehicles and construction machinery. • Traffic snarl ups on Forest line road and within KIHBT Ngong campus	Develop and share with stakeholders a works programme that schedules different construction works and construction material delivery. Development a traffic management plan to alleviate any delays or traffic snarl ups that may be experienced on the roads due to movement of both construction vehicles and machinery. Notify the public and KIHBT community of scheduled movement of construction materials and machinery.	Construction	Contractor & Proponent	Observation, continuous	Works programme Traffic management plane	30,000.00
3. **Immorality, Social Vices, and health issues**						
Sexual immorality promoting transmission of STIs and HIV/AIDS Drug and alcohol abuse	Undertake sensitization workshops on alcohol and drug abuse in the community by local leaders. Undertake sensitization workshops on alcohol and drug abuse within KIHBT by the management. Prohibit alcohol, drugs, arms, and ammunition on the construction site and	Construction	Contractor	Observation, continuous	Number of sensitisation workshops Number of condom dispensers, Visits to see counsellors	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	among personnel operating plant machinery. Develop an awareness and education program on HIV prevention and response. Provide condom dispenser loaded with condoms in the sanitary facilities. HIV and AIDS and STIs prevention and response campaigns should be extended beyond the construction phase and into the operational phase. Establish a partnership with local wellness centres including hospitals, VCT and ARV centres and NGOs near the project area for implementing an HIV/AIDS prevention and response program. Map substance abuse service providers, with their contact information				at Kibiko dispensary/ Ngong sub-county hospital.	
Infectious diseases such as respiratory infections, water borne diseases etc.	Put in place mitigation measures to curb the spread of infectious diseases such as hand wash stations, practice social distancing, and hold sensitisation workshops on the same.	Construction	Contractor	Observation, continuous	Infectious diseases management plan	30,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Provision of clean well-lit sanitation facilities and drinking water to workers The proponent to have within KIHBT Ngong campus health practitioners to deal with any disease outbreaks.				Number of health practitioners	
4. Gender based violence (GBV) & Sexual harassment						
Discrimination by gender during employment and payment of construction workers	Ensure that women are given adequate employment opportunities during recruitment and job postings. Regular sensitization and awareness campaigns to the workers be done to promote gender equity in employment. Every worker while in employment to sign a code of conduct (CoC) as an annex to the employment contract – covering issues such as zero tolerance of unacceptable conduct in the community, GBV, sexual harassment, sexual exploitation, and abuse of children, etc. Remove any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract,	Construction	Contractor	Observation, continuous	Number of sensitisation workshops Employment & salary payment records, Number of Reported GBV cases Employment code of conduct Gender Action Plan	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. Prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity for employment, Prepare and enforce a No Sexual Harassment Policy in accordance with national law where applicable. All workers and nearby communities and stakeholders should be educated on preventing and responding to sexual harassment and GBV ahead of any project related works. Establishment of partnerships with relevant government agencies and NGOs to ensure survivors of GBV and sexual offenses access survivor centred services.				No Sexual Harassment Policy	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
5. Child protection						
Employment of children	Adherence to employment and children acts and other labour laws. No employing underage persons at construction site The proponent and the contractor shall adopt a 'Child Protection Code of Conduct' which sets stringent standards for personal behaviour to avoid child exploitation and abuse. The proponent and the contractor shall require his employees, sub-Contractors and any personnel thereof engaged in any works to individually sign and comply with this Code of Conduct.	Construction	Contractor	Observation, continuous	Data records of employees	50,000.00
6. Arising social conflicts						
Conflicts amongst construction workers, KIHBT staff, students, and other users	KIHBT management in conjunction with the Kibiko location chief will have a meeting whereby they will mobilise, identify, and enumerate potential construction workers at the project construction site.	Construction	Proponent and Contractor	Observation, continuous	Complaints made to the Grievance Resolution Committee	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Skilled semi-skilled and unskilled labour labour will be competitively sourced from those who apply. Priority will be given to KIHBT students and alumni during recruitment for attaches and construction workers. A workers' grievance redress mechanism shall be constituted for record keeping, processing, and resolution of complaints. Put in place a workers' grievance resolution committee to address workers' grievances					
Public complaints on construction works or on payments	Develop conflict resolution mechanisms and indicate who handles conflict management within their institutions. Put in place a GRC that will address issues concerning workers at construction stage. Workers should sign employment contracts that stipulate salary amount and mode of payments. Workers should be allowed to join labour unions and be sensitised on required statutory deductions as required by law.	Construction	Proponent and Contractor	Observation, continuous	Complaints made to the Grievance Resolution Committee Complaints deposited in the complaints box	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Presence of a complaints/complementary box into which written complaints are deposited and grievances reviewed bi-weekly.					
7. Security and crime management						
Increased crime rates, Increased workers' population Idleness and loitering	Hoard off/ enclose project construction site to beef-up security and to control movement within the site. Establish a manned guard house at the gate to always monitor the gate of the facility together with the horded area to keep away the intruders and to control movement within the site. The contractor shall provide adequate security during the construction period when there are no ongoing works on the site. The guards stationed at the gate(s) should document movements in and out of the site/property. All construction workers shall wear properly branded overalls and/or reflector jackets to distinguish them from other users of KIHBT Ngong campus.	Construction	Contractor	Observation, continuous	Reports to the Kibiko Police Post	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Security lights shall be provided to increase surveillance of the project area at night. Make provision for the storage of building materials. Register in a log all events of a criminal nature that occur at the worksite or are associated with the civil works activities. Report all activities of a criminal nature on the worksite (whether on or off the worksite) to the police and undertake the necessary follow-up. Crime reports should include nature of the offense, location, date, time, and all other pertinent details. Sensitize all workers, locals, and security to be on the lookout on suspicious activities near the construction site of KIHBT.					
8. Impacts on disruption of existing infrastructure						
Disruption or vandalism of existing infrastructure within KIHBT Ngong campus	Clearly mark out and arrange for rerouting of existing infrastructure that may be damaged by construction works.	Construction	Proponent and Contractor	Observation, continuous	Disruptions for power, water supply (water	30,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
					shortage), internet etc., sewage leaks Complaints made to the Grievance Resolution Committee	
9. Power Outages						
Frequent power blackouts Short-circuiting of electronic equipment	Install backup generator to supplement power during blackout. Use low wattage highly efficient smart bulbs, plugs and switch and other appliances to reduce power consumption. Install power guard stabilizer(s) to detect when voltage is out of range.	Construction	Proponent and Contractor	Observation, continuous	Power outages Electronic equipment failures	30,000.00
10. Safety risks						
Road safety risks Accidents and injuries	Provide adequate signage clearly indicating zones undergoing construction works.	Construction	Contractor & Proponent	Observation, continuous	Number of accidents/ injuries reported to	70,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Presence of a First Aid Kit available for use when need arises which should be managed by qualified persons. Every construction worker is provided with construction apparels and required PPE. Contractor to have Contractors All Risk Insurance (CAR) covering his employees. Develop an accident Emergency Response Plan (ERP) as well as an Occupational Health and Safety (OHS) committee and plan.				the contractor's office or logged into the grievance log book	
Fire safety risks	Locate a fire assembly point(s) and install firefighting equipment at strategic locations at the construction site and in KIHBT. Conduct regular firefighting sensitization training with construction workers, KIHBT staff and students. Ensure that all firefighting equipment are regularly maintained and serviced.	Construction	Contractor & Proponent	Observation, continuous	Signage of the fire assembly area. Number of fire incidences logged into the accident logbook. Number of fire	30,000

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Develop and adapt an (fire) emergency response plan for the project during construction stage. Provide fire hazard signs such as no smoking sign, direction to the fire exits in case of any fire incidence and emergency numbers.				sensitization training undertaken	
B. ENVIRONMENTAL IMPACTS						
1. Sourcing & management of construction materials						
• Comprised integrity of the building and civil works • Generation of construction solid wastes within the site	i. Source construction materials locally from licenced suppliers ii. Prequalified suppliers should be registered and compliant with the required statutory and legal documents.	Construction	Contractor and Design team Contractor and Design team	Observation, continuous	List of licenced construction materials suppliers Material delivery records,	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	iii. Preparation of a Materials Management Plan (MMP) by the contractor iv. Identification of materials management team. v. Undertaking of materials testing to ascertain quality standards		Contractor Contractor and Design team		Materials management Plan Material testing records,	
2. Compromising on air quality						
Vehicular emission impacts	Vehicle emission standard checks as well as inspection and maintenance of vehicles and construction machinery. All diesel fuel in use should be ultra-low sulphur diesel. Regular and prompt maintenance of construction machinery and equipment.	Construction	Contractor	Observation, continuous	Check compliance of contractor with equipment and vehicle maintenance	30,000.00
Dust generation impacts	Water dusty areas to suppress dust occurring due to construction works or vehicular operations. Haulage trucks must be covered with tarpaulins, or the aggregates sprayed with water before loading.	Construction	Contractor	Observation, continuous	Check compliance of contractor, report, and record in site meetings	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
Upper respiratory diseases in humans	Provide PPE e.g., nose dust masks to staff working in dust generating activities e.g., site preparation, excavation, concrete mixing, stone dressing Ensure good housekeeping in construction areas, dust should be swept off and collected in covered containers. Limit vehicle speed to a maximum of 10Km/h in the institution. Provide health practitioners within KIHBT Ngong campus to serve construction workers, staff and students.				Complaints made to the Grievance resolution committee by the public. Upper respiratory infections Reports at Kibiko dispensary/ Ngong Sub-county Hospital.	
3. Noise and excessive vibrations						
Impacts on human welfare and health e.g., source of annoyance, communication problems, elevated stress levels, auditory fatigue, temporary or permanent lessening of hearing ability	Route construction machinery away from noise sensitive areas Provide hearing protective devices such as ear plugs and earmuffs particularly where noise levels exceed 85-90dBA. For mobile machinery, fit machine noise silencers and mufflers and enclose engine compartments in vehicles.	Construction	Contractor	Observation, continuous	Check compliance of contractor with equipment and vehicle maintenance	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Use of noise suppressors or silencers on noisy equipment or noise shields. Monitoring and coordination to ensure noise levels do not exceed stipulated levels. For fixed plants, isolate noise source by enclosure in acoustic structure Construction works should be carried out only during the specified time i.e., from 0800 hrs to 1700 hrs. Notify public of construction activities perceived as noisy and intrusive prior to starting construction. Ensure that noise levels are within permissible levels as per the provision of EMCA (Noise and excessive vibration pollution control regulations 2009. Which is 60dB(A) during the day and 35dB(A) in the night. Machineries should be maintained regularly to reduce noise resulting from friction. Drivers delivering materials should avoid unnecessary hooting of the trucks/vehicles. Provision of a contractor's work programme notifying the KIHBT fraternity				Conduct noise survey audit Noise complaints from public to the Grievance resolution Committee	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	and the public of the construction activity and timings including activities likely to generate excessive noise.					
Vibrations induced by operation of construction machinery have detrimental effects to nearby structures	Monitoring of structural integrity of adjacent structures during vibrations and necessary strengthening measures to be taken where structures are showing signs of failure. Ensure that excessive vibrations are within permissible levels as per the provision of EMCA (Noise and excessive vibration pollution control regulations 2009. Vibrations should not exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source.	Construction	Contractor	Observation, continuous	Check compliance of contractor with equipment and vehicle maintenance Vibrations complaints from public to the Grievance Resolution Committee	100,000.00
4. **Solid waste generation and poor management**						
Haphazard solid waste stock piling	Contractor to prepare a construction waste management plan that they should follow during the works.	Construction	Contractor	Observation, continuous	Check compliance of contractor, report, and	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
Presence of vermin Blockage of drainage systems by accumulated solid waste	Efficient use of building materials to reduce waste and recycling where possible. Identify a location where construction waste shall be stock piled and managed. Development of a Materials Management Plan (MMP) Avoid open burning of solid waste. Let piled solid waste be carted away to designated sub-county dumpsite by a registered waste handler. Encourage the use of an integrated solid waste management system that embraces the 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management. Provide waste receptacles at source that encourage waste segregation. Sensitize the construction workers on site on appropriate waste handling and disposal of all construction related waste at the designated areas. Contractor should keep record of waste disposal for proper management of waste as designed.				record in site meetings	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Manage waste in line with the Environmental Management and Coordination (Waste Management) Regulations, 2006 and Sustainable Waste Management Act, 2022					
5. Oil leaks and spills						
Oil spills and leaks	All machinery should be keenly inspected not to leak oils on the ground with regular maintenance. Maintenance should be carried out in a well-designed and protected area and where oils/grease is completely restrained from reaching the ground. Such areas should be covered to avoid storm water from carrying away spilled oils into the soil/water systems. Proper handling, storage and disposal of waste oil, lubricants, oil filters and fuel from vehicles. Hazardous waste should be contained and properly disposed by licensed hazardous waste handlers.	Construction	Contractor	Observation, Continuous	Check compliance of contractor, report, and record in site meetings	50,000.00
6. Flora and fauna impacts						
Loss of vegetation to create room for construction.	Planting of trees and other plants (landscaping) after the construction works are over.	Construction	Contractor	Observation, continuous	Extents of cleared areas	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Minimise vegetation clearance only to earmarked areas. Transplant young trees to other parts of KIHBT Ngong campus Avoid cutting down mature trees. Site the building where there are minimal mature trees					
7. Soil erosion and land degradation						
Loss of productive soil	Minimize ground area cleared for construction. Carry out soil amendment to improve its physical and chemical properties	Construction	Contractor	Observation, continuous	Extent of area lost. Withered plants	30,000.00
Soil erosion as natural soil is modified through construction process and stock piling	Only clear vegetation from areas that construction is set out. Landscaping and tree planting to restore the soil composition to optimal levels.	Construction	Contractor	Observation, continuous	Changes in grassed vegetation Scouring	30,000.00
Contamination of soil due to accidental oil/chemical	Development of oil spill prevention plan and accident Emergency Response Plan	Construction	Contractor	Observation, continuous	Check compliance of contractor	30,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
spills and pollutants settling in soils	Preparation and implementation of chemical/ oil handling and storage procedures and train employees on their use Regular inspection of hazardous material/oil storage areas Oil absorbent material, tarps and storage drums to be used to control and contain any minor releases of engine and other equipment oil. Proper service of equipment and machinery as per manufacturer's specifications				with equipment, storage area, containers; labelling and vehicle maintenance Reports and records of oil spillage instances	
Soil compaction by moving machinery	Restrict vehicles to specific areas to prevent unnecessary soil compaction. Rip compacted areas and re-vegetate where necessary.	Construction	Contractor	Observation, continuous	Changes in grassed vegetation	30,000.00
8. Wastewater and Effluent production						
Discharge of wastewater into water sources and surrounding land	Ensure that water sources and storage tanks are not polluted by wastewater. Ensure stock piling areas are above the sufficiently separated (depth wise) from the ground water table except in areas of fills in swampy zones.	Construction	Contractor	Observation, continuous	Sewage pipe leaks Water pipe/ tanks leaks	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Connection of the Proposed Tuition Block to the main sewerage system line at the institution. All drainpipes passing under building, driveway or parking should be of heavy-duty PVC pipe tube encased in concrete surround. All manholes on driveways and parking areas should have heavy-duty covers set and double sealed airtight as approved by the services engineer. Sanitary facilities should be kept clean always, through regular washing/cleaning. Frequent monitoring of the internal drainage system within the institution to discourage mosquito breeding grounds. System blockages and damages should be fixed expeditiously.					
9. Increased surface runoff						
Surface runoff interference and contamination	Follow proper oil spillage prevention measures to avoid contamination.	Construction	Contractor	Observation, continuous	Oil spillage reports	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	All construction machinery and equipment be regularly maintained and serviced to avoid oil leaks. Maintenance and servicing of vehicles/ machinery/ equipment must be carried out in a designated area (protected service bays) and where oil is completely restrained from reaching the ground. Ensure stock piling areas are above and sufficiently separated (depth wise) from the ground water table except in areas of fills in swampy areas. Open construction materials stockpiles be covered with tarpaulin or similar fabric during rainy season. Develop proper drainage system to collect and manage storm water and surface runoff				Drainage system design	
10. Water supply impacts						
Reduced water supply Interruption of water supply	Map out routing of existing water supply piping system and avoid damaging them. Install water storage tanks dedicated for construction works water. Contractor should have agreements with the	Construction	Contractor	Observation, continuous	Reported water shortage instances.	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	KIHBT on water use, on the quantities, time, and charges from the sources. Install a discharge meter at water outlet to monitor on water usage on construction works. The contractor should use water bowsers and tankers to bring in water for construction activities i.e., during periods of high-water demand (e.g., during slab formation). Encourage water reuse/recycling during construction and occupation phases. Provide notices and information signs to sensitize on means and needs to conserve water resource.				Water rationing schedule. Number of water storage tanks	
11. Aesthetics and landscape impacts						
Visual clutter Degradation of visual quality	Tidy up hoarded/shored area. Store construction material in designated area Avoid unnecessary stockpiling of solid waste with solid waste removal.	Construction	Contractor	Observation, continuous	Haphazard Waste stockpiles. Complaints from the public	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Ensure signage and architecture conforms to statutory requirements. Ensure proposed architectural design has aesthetic value. Professional landscaping of the proposed project by introduction of ornamental and flowering plants					
					Total Cost	**1,470,000.00**

9.5.2. Operation Phase

Table 13: ESMMP for the operation phase

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
A. SOCIAL IMPACTS						
1. **Immorality and health issues**						
Sexual immorality promoting transmission of STIs and HIV/AIDS Drug and alcohol abuse	Undertake sensitization workshops on alcohol and drug abuse in the community by local leaders.	Operation	Proponent	Observation, continuous	Number of sensitisation workshops	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
Gender based violence (GBV)	Undertake sensitization workshops on alcohol and drug abuse within KIHBT by the management. Prohibit alcohol, drugs, arms, and ammunition on the construction site and among personnel operating plant machinery. Develop an awareness and education program on HIV prevention and response. Provide condom dispenser loaded with condoms in the sanitary facilities. HIV and AIDS and STIs prevention and response campaigns should be extended beyond the construction phase and into the operational phase. Establish a partnership with local wellness centres including hospitals, VCT and ARV centres and NGOs near the project area for implementing an HIV/AIDS prevention and response program. Map substance abuse service providers, with their contact information				Number of condom dispensers, visits to see counsellors at Kibiko dispensary/ Ngong sub-county hospital. employment code of conduct	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
Infectious diseases such as respiratory infections, water borne diseases etc.	Put in place mitigation measures to curb the spread of infectious diseases such as hand wash stations, practice social distancing, and hold sensitisation workshops on the same. Provision of clean well-lit sanitation facilities and drinking water to workers The proponent to have within KIHBT Ngong campus health practitioners to deal with any disease outbreaks.				Infectious diseases management plan Number of health practitioners	50,000.00
2. Gender based violence (GBV) & Sexual harassment						
Discrimination by gender during employment, enrolment, and payment of staff	Ensure that women are given adequate employment opportunities during recruitment and job postings. Regular sensitization and awareness campaigns to the workers be done to promote gender equity in employment. Every worker while in employment to sign a code of conduct (CoC) as an annex to the employment contract – covering issues such as zero tolerance of unacceptable conduct in the community, GBV, sexual harassment, sexual exploitation, and abuse of children, etc.	Operation	Proponent	Observation, continuous	Number of sensitisation workshops Employment & salary payment records, Number of Reported GBV cases Employment code of conduct	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Remove any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. Prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity for employment, Prepare and enforce a No Sexual Harassment Policy in accordance with national law where applicable. All workers and nearby communities and stakeholders should be educated on preventing and responding to sexual harassment and GBV ahead of any project related works. Establishment of partnerships with relevant government agencies and NGOs to ensure survivors of GBV and sexual offenses access survivor centred services.				Gender Action Plan No Sexual Harassment Policy	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
3. Child protection						
Employment of children	Adherence to employment and children acts and other labour laws. No employing underage persons at construction site The proponent and the contractor shall adopt a 'Child Protection Code of Conduct' which sets stringent standards for personal behaviour to avoid child exploitation and abuse. The proponent and the contractor shall require his employees, sub-Contractors and any personnel thereof engaged in any works to individually sign and comply with this Code of Conduct.	Operation	Proponent	Observation, continuous	Data records of employees	50,000.00
4. **Arising social conflicts**						
Conflicts amongst community, KIHBT staff, students, and other users	Skilled semi-skilled and unskilled labour labour will be competitively sourced from those who apply.	Operation	Proponent	Observation, continuous	Complaints made to the Grievance Resolution Committee	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Priority will be given to KIHBT students and alumni during recruitment for attaches and staff. A workers' grievance redress mechanism shall be constituted for record keeping, processing, and resolution of complaints. Put in place a workers' grievance resolution committee to address workers' grievances					
Public complaints on KIHBT operations or on payments	Develop conflict resolution mechanisms and indicate who handles conflict management within their institutions. Put in place a GRC that will address issues concerning workers at construction stage. Workers should sign employment contracts that stipulate salary amount and mode of payments. Workers should be allowed to join labour unions and be sensitised on required statutory deductions as required by law. Presence of a complaints/complementary box into which written complaints are	Operation	Proponent	Observation, continuous	Complaints made to the Grievance Resolution Committee Complaints deposited in the complaints box	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	deposited and grievances reviewed bi-weekly.					
5. Security and crime management						
Increased crime rates, Increased workers' population Idleness and loitering	Put in place security measures e.g., circulation control points at the KIHBT gate entry/ exit points and street lighting as well as CCTV surveillance to curtail any form of theft or other crimes from occurring. Security guards' patrols of the campus The guards stationed at the gate(s) should document movements in and out of KIHBT. Security lights shall be provided to increase surveillance of the project area at night. Register in a log all events of a criminal nature that occur at KIHBT. Report all activities of a criminal nature at KIHBT to the police and undertake the necessary follow-up.	Construction	Contractor	Observation, continuous	Reports to the Kibiko Police Post	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Sensitize all workers, locals, and security to be on the lookout on suspicious activities near KIHBT.					
6. **Energy consumption & Power Outages**						
Increased energy consumption	Sensitise building users/ occupants to switch off electric equipment and appliances when not in use. Install energy saving smart bulbs, plugs and switches. Incorporate renewable energy systems to complement existing electricity supply e.g., solar panels	Operation	Proponent	Observation, continuous	Electric meter readings	30,000.00
Frequent power blackouts Short-circuiting of electronic equipment	Install backup generator to supplement power during blackout. Install power guard stabilizers to protect electronic equipment	Operation	Proponent	Observation, continuous	Power outages Electronic equipment failures	30,000.00
7. Safety risks						
Road safety risks Accidents and injuries	Provide adequate signage clearly indicating circulation within KIHBT Ngong campus.	Operation	Proponent	Observation, continuous	Number of accidents/ injuries reported to the contractor's office or logged	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
Fire safety risks	Presence of a First Aid Kit available for use when need arises which should be managed by qualified persons. provide staff and students with right plant operation apparels and required PPE. Develop an accident Emergency Response Plan (ERP) as well as an Occupational Health and Safety (OHS) committee and plan. Locate a fire assembly point(s) and install firefighting equipment at strategic locations at the construction site and in KIHBT. Conduct regular firefighting sensitization training with KIHBT staff and students. Install smoke detectors in fire prone areas such as laboratories, workshops, kitchens offices etc. Ensure that all firefighting equipment are regularly maintained and serviced. Develop and adapt an (fire) emergency response plan for the project during construction stage.				into the grievance log book. Number of fire incidences logged into the accident logbook. Number of fire sensitization training undertaken	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Provide fire hazard signs such as no smoking sign, direction to the fire exits in case of any fire incidence and emergency numbers.					
8. **Increased student enrolment numbers**						
Limited hostel accommodation	Construction of additional hostel accommodation to meet demand. KIHBT management to work with surrounding community to put up student hostel accommodation. Bus shuttle services to collect students residing outside the campus	Operation	Proponent	Observation, continuous	Hostel accommodation records within KIHBT and in the neighbourhood	50,000.00
Inadequate staff numbers	KIHBT management to adhere to trainer-trainee ratios as guided by TVET Standards KIHBT management to put in place appropriate staff establishment monitoring mechanisms.	Operation	Proponent	Observation, continuous	Staff establishment records	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
B. ENVIRONMENTAL IMPACTS						
1. Compromising on air quality						
Vehicular emission impacts	Vehicle emission standard checks as well as inspection and maintenance of vehicles and plant, workshops, and laboratories machinery. All diesel fuel in use should be ultra-low sulphur diesel	Operation	Proponent	Observation, continuous	Check compliance of with equipment and vehicle maintenance	30,000.00
2. Noise and excessive vibrations						
Impacts on human welfare and health e.g., source of annoyance, communication problems, elevated stress levels, auditory fatigue, temporary or permanent lessening of hearing ability	Route plant machinery operations works away from noise sensitive areas. Provide hearing protective devices such as ear plugs and earmuffs particularly where noise levels exceed 85-90dBA. For mobile machinery, fit machine silencers and mufflers and enclose engine compartments in vehicles. Monitoring and coordination to ensure noise levels do not exceed stipulated levels.	Operation	Proponent	Observation, continuous	Check compliance of contractor with equipment and vehicle maintenance Conduct noise survey audit Noise complaints from public to the Grievance resolution Committee	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	For fixed plants, isolate noise source by enclosure in acoustic structure Maintain plant operation machinery regularly to reduce noise resulting from friction. Ensure that noise levels are within permissible levels as per the provision of EMCA (Noise and excessive vibration pollution control regulations 2009. Which is 60dB(A) during the day and 35dB(A) in the night.					
3. Solid waste generation and poor management						
Haphazard solid waste stock piling Presence of vermin Blockage of drainage systems by accumulated solid waste	Prepare a solid waste management plan. Efficient use of materials to reduce waste and recycling where possible. Identify a location where solid waste shall be stock piled and managed. Avoid open burning of solid waste. Let piled solid waste be carted away to designated sub-county dumpsite by a registered waste handler. Encourage the use of an integrated solid waste management system that	Operation	Proponent	Observation, continuous	Check compliance of contractor, report and record in site meetings	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	embraces the 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management. Provide waste receptacles at Tuition Block that encourage waste segregation. Sensitize the KIHBT students and staff on appropriate waste handling and disposal of all solid waste at the designated areas. Manage waste in line with the Environmental Management and Coordination (Waste Management) Regulations, 2006 and Sustainable Waste Management Act, 2022					
4. Flora and fauna impacts						
Degeneration of vegetation at the Tuition Block	Regular maintenance of entire landscape Planting of additional vegetation where necessary Undertaking tree planting annually Avoid cutting down mature trees.	Operation	Proponent	Observation, continuous	Extents of degenerated vegetation Number of trees planted	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
5. Soil erosion and land degradation						
Loss of productive soil	Minimize ground area cleared for construction. Carry out soil amendment to improve its physical and chemical properties	Operation	Proponent	Observation, continuous	Extent of area lost. Withered plants	30,000.00
Soil erosion as natural soil is modified through construction process and stock piling	Only clear vegetation from areas that construction is set out. Landscaping and tree planting to restore the soil composition to optimal levels.	Operation	Proponent	Observation, continuous	Changes in grassed vegetation Scouring	30,000.00
Contamination of soil due to accidental oil/chemical spills and pollutants settling in soils	Development of oil spill prevention plan and accident Emergency Response Plan Preparation and implementation of chemical/ oil handling and storage procedures and train employees on their use Regular inspection of hazardous material/oil storage areas Oil absorbent material, traps and storage drums to be used to control and contain any minor releases of engine and other equipment oil.	Operation	Proponent	Observation, continuous	Check compliance of contractor with equipment, storage area, containers; labelling and vehicle maintenance Reports and records of oil spillage instances	30,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Proper service of equipment and machinery as per manufacturer's specifications					
Soil compaction by moving machinery	Restrict vehicles to specific areas to prevent unnecessary soil compaction. Rip compacted areas and re-vegetate where necessary.	Operation	Proponent	Observation, continuous	Changes in grassed vegetation	30,000.00
6. Wastewater and effluent production						
Wastewater generation	Connection of the Proposed Tuition Block to the main sewerage system line. Ensure sewerage discharge pipes are not blocked or damaged. Minimize entry of solid waste into the wastewater stream Any chemical waste from the labs should be first neutralized with appropriate reagents then flushed into the sewer system. Treated effluent being discharged to the sewer line should conform to limits	Operation	Proponent	Observation, laboratory tests continuous	Check compliance of marine school with EMCA (water quality) regulations 2006 Quarterly effluent tests of water quality Efficient wastewater management	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	provided under EMCA (water quality) regulations 2006, Fifth Schedule Sanitary facilities should be kept clean always, through regular washing/cleaning. Frequent monitoring of the internal drainage system within the institution to discourage mosquito breeding grounds. Treatment of effluent for the three laboratories located within the Proposed Tuition Block before discharge to the building's wastewater system. To avoid sedimentation, provide a separate wastewater channel for the soil testing laboratory, which will be fitted with filtration devices that will sieve excess soil sediments before discharge to the building's wastewater system. System blockages and damages should be fixed expeditiously.				Wastewater recycling	

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
7. Surface and storm water run off						
Increased surface/ storm water runoff generation	Ensure no surface wastewater is directed into the sewer system to avoid over loading. Monitor effluent quality regularly to ensure stipulated discharge rules and standards are not violated. Harvest rainwater from roof for non-portable uses e.g., cleaning and watering plants	Operation	Proponent	Observation, laboratory tests, continuous	Frequency of exhaustion of septic tanks	30,000.00
8. Water demand						
Increased water demand	Determine expected water demand and evaluate whether provided water storage tanks are adequate. Monitor water use. Implement water saving devices e.g. dual flush toilets, automatic shut-off taps Portable water should not be used for irrigation purposes and landscapes be designed to absorb rainwater run-off	Operation	Proponent	Observation, meter readings, continuous	Pipe leaks Water meter readings records Frequency of watering landscapes and their records	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	rather than routing all to off-site storm water drains. Planting design to incorporate hardy plants requiring little watering. Maintain proper pressure within fire water systems to limit water use. Practice rainwater harvesting. Conduct regular water systems audits to identify and rectify any possible water leaks. Implement a system for proper metering and measurement of water use to enable proper performance review and management					
9. Aesthetics and landscape impacts						
Visual clutter Degradation of visual quality	Maintain landscaping works by following provided maintenance manual	Operation	Proponent	Observation, continuous	Withering plants	50,000.00
					Total Cost	**1,340,000.00**

9.5.3. Decommissioning Phase

Table 14: ESMMP for the decommissioning phase

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
A. SOCIO-ECONOMIC IMPACTS						
1. Safety and health						
Safety and health risks	Decommissioning works workers be issued with appropriate PPEs and the decommissioning contractor to enforce their use. Restrict onlookers/ scavengers from site. Develop safe work procedures for demolition works	Decommissioning	Contractor	Observation, continuous	Wearing of PPEs Contractor's All Risk Insurance cover	50,000.00
2. KIHBT staff & student						
Displacement of KIHBT staff and students	Provide adequate notice on the pending decommissioning to Interested and Affected Parties (IAP) to enable them to make alternative arrangements.	Decommissioning	Proponent	Observation, continuous	Decommissioning notices	100,000.00
3. Livelihood and economic income						
Loss of livelihood and economic incomes	Businesses associated with the development should be notified of intention to decommission in good time so as to make relevant adjustments.	Decommissioning	Proponent	Observation, continuous	Decommissioning notices	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Redeployment of KIHBT staff where feasible to be undertaken Transfer of KIHBT students to alternative campuses				Staff Redeployment notices Student transfer notices	
B. ENVIRONMENTAL IMPACTS						
1. Solid waste						
Solid waste generation	All solid waste be collected at a central location and stored temporarily until removal by a licensed solid waste handler. Adopt selective demolition method as much as possible to enable removal of similar category waste at a go thus facilitating recycling of wastes for beneficial reuse and minimizing burden on dumpsites. No dumping within the surrounding area. General waste to be collected by the county government or via a licensed waste disposal contractor. The frequency of collections should ensure waste containment receptacles don't overflow.	Decommissioning	Contractor	Observation, continuous	Check compliance of appointed waste handler licence, reports, and records Building rubble stockpiles.	100,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
	Waste generated at site be categorised by contractor and disposed of in a suitable manner into different waste streams. Litter generated by demolition crews be collected in rubbish bins and disposed of weekly at registered waste disposal sites. All rubble must be removed from site to an approved disposal site as approved by the Engineer. Burying rubble on site is prohibited.					
2. Wastewater and effluent production						
Wastewater generation	Ensure any wastewater generated during decommissioning is exhausted by a licenced exhauster. Storm water should be managed in that no overland flow is possible on to the site from adjacent area. Storm water drains in the area should be routinely inspected for solid waste to avoid blockages and associated problems.	Decommissioning	Contractor & Proponent	Observation, continuous	Check compliance of contractor	30,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
3. Air pollution						
Increased air pollution	Active earth works, stockpiles, and loads of soil being transported must be watered to reduce dust. Diesel exhaust emissions from heavy machinery on site be controlled and minimised by regular checks and servicing of vehicles.	Decommissioning	Contractor	Observation, meter readings, continuous	Check compliance of contractor with earth watering, equipment and vehicle maintenance and servicing	50,000.00
4. Soil erosion						
Soil erosion increase	Re-vegetate site with grass and trees of indigenous species. All areas disturbed during closure of site must be re-vegetated.	Decommissioning	Contractor	Established vegetation		50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
5. Noise and excessive vibrations						
Increased noise and excessive vibrations	Route construction machinery away from noise sensitive areas Provide hearing protective devices such as ear plugs and earmuffs particularly where noise levels exceed 85-90dBA. For mobile machinery, fit machine silencers and mufflers and enclose engine compartments in vehicles. Monitoring and coordination to ensure noise levels do not exceed stipulated levels. For fixed plants, isolate noise source by enclosure in acoustic structure Notify public of demolition activities perceived as noisy and intrusive prior to starting demolitions. Ensure that noise levels are within permissible levels as per the provision of EMCA (Noise and excessive vibration pollution control regulations 2009. Which is 60dB(A) during the day and 35dB(A) in the night.	Decommissioning	Contractor	Observation, continuous	Check compliance of contractor with equipment and vehicle maintenance Conduct noise survey audit Noise complaints from public to the Grievance resolution Committee	50,000.00

Impact	Mitigation Measures	Phase	Responsible Party	Monitoring means	Monitoring Indicators	Cost Estimates (KSHs)
6. Leaks and spillages						
Accidental leaks and spillage	Ensure employees are aware of the procedure for dealing with spills and leaks. Spill sources should be isolated, and spillage contained using sand berms, sandbags, sawdust, and any absorbent material. Accident areas be cordoned off and secured. Notify relevant authorities of any occurring spills. Ensure necessary materials and equipment for dealing with spills and leaks are always available on site.	Decommissioning	Contractor	Observation, continuous	Reported spillage cases	50,000.00
					Total cost	**530,000.00**

10. EMERGENCY RESPONSE PLAN, GRIEVANCE RESOLUTION MECHANISM & GENDER MANAGEMENT PLAN

10.1. Emergency Response Plan (ERP)

The Purpose of this Emergency Response Plan (ERP) is to ensure that during both the construction and operation stages of the proposed project, there is adequate preparedness for any emergencies to minimize loss of life and property and KIHBT activities' interruption and to facilitate recovery and rehabilitation. Emergencies and disasters can occur any time without warning especially on a construction site as well as at KIHBT. It is hence important for the proponent to prepare for them and be in a good position to act to minimize panic and confusion when they occur. Emergency Response Plan (ERP) will have to be instituted throughout the project cycle.

10.1.1. ERP During Construction Stage

The following elements of a conventional Emergency Response Plan are recommended for the construction stage as summarized in table 16 below.

Table 15: Emergency response plan during construction phase

EMERGENCY RESPONSE PLAN COMPONENTS	ACTION/REQUIREMENTS	RESPONSIBILITY
Potential emergency	Identification of all potential emergencies associated with the proposed project at the project site including fires, accidents, incidents, and insecurity	● Contractor during construction and decommissioning phases
Emergency Operations Coordinator (EOC)	Designate a primary and secondary contact person	● Contractor during construction and decommissioning phases
Emergency contact numbers	Give and display contacts for fire station, ambulance, police, and hospitals/ health centres	● Contractor during construction and decommissioning phases
Installation of emergency equipment	● Fire sensors and Fire alarms ● Fire extinguishers ● Fire hose ● Panic alarm button ● Provision and enforcement of the use of PPE	● Contractor during construction and decommissioning phases

EMERGENCY RESPONSE PLAN COMPONENTS	ACTION/REQUIREMENTS	RESPONSIBILITY
	• Emergency communication equipment e.g., phone and alarm bells	
Training of staff for emergency response	• Regular training and drills in emergency response	• Contractor during construction and decommissioning phases
Training in the use of emergency equipment	• Employees training in the use of emergency response equipment	• Contractor during construction and decommissioning phases
First aid	• Provision of first aid kits • First aid management training to workers	• Contractor during construction and decommissioning phases
Signage	• Fire sensors • Signage, action posters, alarm bell or panic button • Fire assembly point	• Contractor during construction and decommissioning phases
Procedure for rescue and evacuation	• Evacuation plan • Warning system • Assembly site • Shelter in place	• Contractor during construction and decommissioning phases
Occupants' emergency contact information	• List of all occupants, staff, and their activities	• Contractor during construction and decommissioning phases
ERP review	• Annual ERP review	• Contractor during construction and decommissioning phases

10.1.2. ERP During Operation Stage

KIHBT recognises that it is exposed to potential risks touching on TVET quality and plant operations safety, civil unrest, structural collapse, natural catastrophes among other

emergencies hence the need to have in place appropriate mitigation measures. The emergency response procedure covers all the operations at the KIHBT Ngong campus. The Resident Instructor shall be responsible for the implementation of the ERP. The reference documents for this ERP are; the KIHBT Ngong campus master plan, list of first aiders and fire marshals, emergency routes, list of firefighting equipment and the OSHA.

Procedure for emergency response

The following mitigation measures have been put in place:

- KIHBT Ngong campus master plan that shows the emergency routes.
- Compliance with OSHA on equipment installation, operation, and maintenance.
- Provision of firefighting equipment.
- Adequate signage and zoning to create safety awareness among staff, students, visitors, and contractors.
- Highly trained and motivated staff who will always work in an orderly manner and ensure a clean and safe work environment.
- An effective emergency response team driven by hearty desire to save lives and property and to protect the institution's image. The team shall be prepared to handle any emergency where its intervention is required.
- Posting of emergency numbers for fire station, ambulance, police station and hospitals/ health centres in strategic locations of KIHBT Ngong campus especially within workshops, laboratories, and classrooms.
- Having telephone contact numbers for all key staff and students within KIHBT Ngong campus.

Table 16: Emergency Response Plan during Operation stage

EMERGENCY RESPONSE PLAN COMPONENTS	ACTION/REQUIREMENTS	RESPONSIBILITY
Potential emergency	Identification of all potential emergencies associated with the proposed project at the project site including fires, accidents, incidents, and insecurity	• Proponent during operation phase
Emergency Operations Coordinator (EOC)	Designate a primary and secondary contact person	• Proponent during operation phase
Emergency contact numbers	Give and display contacts for fire station, ambulance, police, and hospitals/ health centres	• Proponent during operation phase

EMERGENCY RESPONSE PLAN COMPONENTS	ACTION/REQUIREMENTS	RESPONSIBILITY
Installation of emergency equipment	• Fire sensors and Fire alarms • Fire extinguishers • Fire hose • Panic alarm button • Provision and enforcement of use of PPE • Emergency communication equipment e.g. phone and alarm bells	• Proponent during operation phase
Training on emergency response	Regular training and drills in emergency response to staff and students	• Proponent during operation phase
Training in the use of emergency equipment	Employees training in the use of emergency equipment	• Proponent during operation phase
First aid	• Provision of first aid kits • First aid management training	• Proponent during operation phase
Signage	• Fire sensors • Signage on fire assembly area, action poster, alarm bell or panic button	• Proponent during operation phase
Procedure for rescue and evacuation	• Evacuation plan • Warning system • Assembly site • Shelter in place	• Proponent during operation phase
Occupants' emergency contact information	• List of all occupants, visitors and their activities	• Proponent during operation phase
ERP review	• Annual ERP review	• Proponent during operation phase

10.2. Grievance Resolution Mechanism (GRM)

A community engagement meeting was held at KIHBT Ngong campus in May 2022 under the stewardship of the KIHBT safeguards specialist. The aim of the community engagement meeting was to sensitize the public on the project and the anticipated environmental and social impacts arising from the proposed project. The meeting also elected two community representatives to the Grievance Redress Committee (GRC), which consists of eight (8) members. The other members of the GRC were nominated by their various institutions/offices.

All the members were formally appointed by the Director KIHBT. The main role of the committee will be arbitration through mediation and negotiation when complaints arise to ensure that cases are resolved quickly and fairly. The committee shall meet on need basis.The GRC tasks are:

i. Receive and address grievances that are un-resolved at the first-tier level i.e., PIU level.
ii. Request further information to clarify issues and share that information with relevant parties.
iii. Ensure that KIHBT takes appropriate administrative action to deal with any complaint arising from proposed construction of the Tuition Block project.
iv. Hold necessary meetings with affected party/ complainant and attempt to find a solution acceptable at all levels.
v. Forward unresolved issues to the third-tier level.
vi. Determine whether a reported grievance is within or outside the scope of the GRC and refer it to the appropriate grievance handling entity.

A grievance redress logbook is available at the EASTRIP secretariat in hard copy. The Proposed Tuition Block project has a dedicated e-mail address, mobile telephone number which is handled by the KIHBT safeguards officer.

10.2.1. Composition of Grievance Redress Committee

The GRC committee members comprise of the following:

Table 17: Grievance Resolution Committee members for the construction stage

S/N	Designation	Organization
1.	Deputy County Commissioner	Kajiado West sub-county
2.	Chief	Kibiko Location
3.	Environment officer	NEMA County Director of Environment Kajiado County
4.	Sub-county works officer	Kajiado North/West
5.	Community representative	Local Community
6.	Community representative	Local Community
7.	Dean of Students Ngong campus	KIHBT Staff
8.	RFTI Safeguard Specialist	KIHBT-EASTRIP Project Implementation Unit (PIU)

The prequalified project main contractor will be included into the GRC once construction works begin. It is also expected that the during the construction stage, the contractor will set up a worker's grievance log to allow the workers to raise workplace concerns related to the proposed sub-project during the construction phase.

During project operation stage, KIHBT grievance resolution mechanisms will be in force. The sub-project GRC will include representation from KIHBT staff and students, local government administrators, the contractor, and other stakeholders.

10.2.2. Steps in dealing with grievances.

i. Complaint received in writing from affected person or at the grievance desk within the site office.

ii. Recording of grievance in grievance redress logbook.

iii. Grievance is received at PIU level for resolution and logging in of grievance resolution status or cascading to the next tier of grievance resolution. The logbook shall be updated at each stage of the grievance redress.

iv. Grievance received at GRC level for verification, investigation, and resolution.

v. Grievance received at third-tier level for resolution.

TASK	ACTION/REQUIREMENTS	RESPONSIBILITY
Receipt of Complaint	Complaint is received in writing from affected person	RFTI Safeguard Specialist & PIU
Grievance recording	Recording of grievance in grievance redress logbook	RFTI Safeguard Specialist
Grievance resolution 1	Grievance is received at PIU level for resolution	PIU
Grievance resolution 2	Grievance received at GRC level for resolution.	GRC
Grievance resolution 3	Grievance received at third-tier level for resolution	KIHBT, NPCU & RFU

10.2.3. Complaints/ Complementary Box

A Complaints/ Complementary Box shall be strategically located next to the project site office (construction phase) and at identified locations within KIHBT Ngong campus for staff, students, and visitors (operation phase). Any written complaints would be deposited here. This box will be opened bi-weekly to address any grievances placed here.

10.2.4. Updating of GRM Records

The records of the grievance logbook shall be updated every working week with the current status of the grievance. Once the grievance is resolved, and the same has been communicated

to the complaint, the grievance shall be closed in the grievance logbook. The grievance logbook shall also showcase the way the grievance was resolved. These instances shall then serve as references for any future grievances of similar nature.

10.3. Gender Management Plan (GMP)

EASTRIP project ESMF identifies increased capacity for gender friendly and responsive learning environments and a reduction of gender gap in enrolment and completion rates as some of the project positive impact. Gender equality (SDG 5) is not only a fundamental human right but a necessary foundation for a peaceful and sustainable world. It is hence vital to give both women and men equal rights to education and work as a measure towards ending poverty in all its forms and improving livelihoods (SDG1). Gender mainstreaming is used as a strategy in this project to promote gender equality, involve integration of the gender perspective and the promote gender equality in all activities throughout the project cycle.

This Gender Management Plan (GMP) is aimed at ensuring that both men and women have equal opportunities to participate in and benefit from this Proposed KIHBT Tuition Block project. The plan is achieved through progressive and efficient mainstreaming of gender dimensions throughout the project cycle. This GMP will ensure that any gender-related adverse impact in the project is avoided, minimised and/or mitigated. This GMP therefore seeks to outline actions that will be specifically taken within the project's duration.

The GMP identifies 5 steps that will ensure effective gender mainstreaming during the project duration namely, (1) gender analysis, (2) project policy preparation and design, (3) gender-responsive budgeting, (3) implementation, and (5) monitoring and reporting.

Gender analysis shall be done to determine the different roles, needs and knowledge of men and women thereby setting a baseline. This will enable the development of a gender-responsive project-design including allocation of an appropriate budget, roles, and responsibilities. For this project, it has been established that the entry point for gender issues is during project staff hiring where deliberate efforts will be made to ensure that there is no skewed project staffing of one gender and that their roles and responsibilities should be equal.

Project policy preparation and design identifies key gender goals and specific entry points for gender considerations with the purpose of identifying intervention measures, activities, target groups and outputs. The gender goal of the project is to have appropriate gender mix in the project whose roles and responsibilities are well balance in reporting for transparency.

Gender-responsive budgeting enables adequate financial resource allocation to enable achievement of all steps in the GMP. This project will identify resources required to mainstream gender during construction and operational stages.

Implementation of the GMP involves strengthening gender expertise involved in the project to ensure longevity of gender responsiveness following completion of the project. The project will build gender capacities amongst KIHBT staff, partners, and stakeholders.

Monitoring and reporting of both qualitative and quantitative gender-sensitive targets and indicators is key in the implementation of the GMP. Gender-responsive indicators are established at project design stage. The indicators should conform to monitor impacts and progress relating to the gender goals and targets and be integrated throughout the monitoring plan. This will identify good practices and lessons learned that promote gender equality and/or empower women and incorporate remedial action that will redress gender inequalities that may arise during the project duration.

Gender indicators are outlined in the table 18 below.

Table 18: Gender indicators

Indicator	Data type	Frequency of Reporting	Responsibility
Participation	Number of men and women that participated in the project activities (e.g., meetings, workshops)	Monthly	Project coordinator
Project benefits	Number of men and women that received benefits (e.g., employment, income generating activities, training, leadership roles) from the project	Quarterly	Project coordinator
Project planning considerations	Number of strategies, plans and policies derived from the project that include gender considerations	Quarterly	Project coordinator
Impacts on livelihood	Share of women and men as direct beneficiaries of project	Quarterly	Project coordinator
Activities	Measures which have been incorporated to ensure women's inclusion and participation in project planning and implementation (e.g., interviewing women separately from men to get their views; reach out to women groups; skill building training for women)	Quarterly	Project coordinator
Existing gender capacities	Existence of organizational gender focal point on staff. Availability of resource material on gender for staff	Annually	Project coordinator

Indicator	Data type	Frequency of Reporting	Responsibility
Gender conscious workplace	Promotion of gender balance at workplace with antidiscrimination and sexual harassment policies	Annually	Project coordinator
Gender balance of staff	Balanced gender at both management and staff levels and all levels of project	Annually	Project coordinator

11.3.1. KIHBT Gender Action Plan

KIHBT has a gender committee constituted in 2021 with a representation from all the KIHBT campuses with 50/50 gender representation within its membership. The chairperson of the gender committee is the RFTI safeguards officer. KIHBT also has a draft gender mainstreaming policy, draft sexual harassment policy and a Gender Based Violence policy.

The KIHBT Gender Action plan is as outlined in the table below:

Table 19: KIHBT Gender Action Plan

MAIN ACTIVITY	SUB ACTIVITIES
Formulation and Institutionalization of a KIHBT Gender Policy	• Undertake stakeholder consultation on gender related issues within KIHBT. • Preparation of a draft gender policy • Review of the draft gender policy • Preparation of the final gender policy • Internal sensitization of the gender policy by pinning on notice boards, awareness talks, e-mails, social media, etc. • External communication on KIHBT gender policy
Reduction of gender gap in enrolment	Undertake awareness activities within high schools, with the aim of changing perceptions on subjects that enable entry into technical courses e.g., physics: • Enlighten the teachers to guide their students. • Use creative and innovative means in sharing the information about technical courses – videos, robotics. • Peer Mentors to give talks i.e. young ladies already in technical areas • Industry Mentors i.e. mature females in the technical areas

MAIN ACTIVITY	SUB ACTIVITIES
	Introduction of Bridging and Remedial courses – in liaison with DP Academic/Registrar's office/RI Kisii/RI Ngong
	Prepare strategies to internally bridge the information gap on KIHBT courses e.g. RBCC transition to DHE – continuous process.
	To prepare a proposal for gender-responsive student admission process: • Students being enrolled in courses that they are over-qualified. • Two representatives of gender committee should sit in the admissions committee. • lowering admission cut off points for female students.
	To undertake career guidance soon after student admission
	To propose and implement incentives for female students to encourage enrolment. • Scholarships and Bursaries • Prioritisation of institutional student accommodation for female students
Reduction of gender gap in completion	To propose and implement incentives for female students to encourage completion. • Scholarships and Bursaries • Prioritisation of institutional student accommodation for female students
	To regularly monitor the progress of female students during their studies
	Guidance, Counselling & Spiritual Support: • Institutional Support for female students who become mothers during their studies • Boosting of the KIHBT Guidance and Counselling Department – Officers who are fully engaged in guidance and counselling to co-ordinate those activities at the campus levels. • Engagement of spiritual leaders to cater to students' spiritual needs
	Engagement of resident male and female nurses to cater to student's health matters.
External Sensitisation and Awareness	Prepare a female enrolment campaign strategy.
	Establish Partnerships with external stakeholders e.g. Counties especially Directors of Education, CDF, Government Ministries, Agencies and State Departments,

MAIN ACTIVITY	SUB ACTIVITIES
	Technical –based private sector esp. Safaricom, International Organisations e.g. UN Women, UNICEF, WBG, Little Einstens Write proposals with partners.
	Survey on regions that are disadvantaged in terms of female enrolment. The initial awareness activities should target such regions. • Prepare a survey questionnaire and administer to current female students. The survey should capture information on their counties & sub-counties of origin, motivation in choosing the technical course, how they learnt about KIHBT, level of support by male students, challenges, proposed areas of improvement, • Administer the questionnaire • Data Analysis
	Prepare external awareness/publicity campaign material ie flyers, posters, brochures, videos, social media (esp. Facebook), website,
Engendering KIHBT	Safe and Conducive Environment for female students and staff • Improve Security Infrastructure: o Installation of Street Lighting and CCTV o Sensitization of Guards o Installation/Repair of Burglar Proofing • Provision/Improvement of clean, well-serviced (reliable water, warm water/showers) well equipped (shelves, lockable cabinets), flexible (e.g. self-cooking in a common area) accommodation for women as well as creating separate dormitory facilities with separate amenities and entry points (privacy). • Provision/Improvement of clean, well-equipped classrooms and washrooms • Renovation of the existing hostels to better accommodate female students • Establish clear channels of grievance redress and related communication (hostel reps, suggestion boxes)
	Undertake regular awareness programs on sexuality/sex education, provision of condoms.
	Articulation, popularization, implementation, and monitoring of policies to combat **sexual harassment** and **violence**. • Undertake stakeholder consultation on what constitutes sexual harassment and violence • Preparation of a draft sexual harassment policy • Review of the draft sexual harassment policy • Preparation of the final sexual harassment policy • Internal sensitization of the sexual harassment policy by pinning on notice boards, awareness talks, e-mails, social media, etc.

MAIN ACTIVITY	SUB ACTIVITIES
	Undertake regular assertiveness training and esteem building programs for women (staff and students)
	Establishment of **gender units within KIHBT,** with the objective of driving gender advocacy through teaching and research • Disseminate information regarding the gender focal points in each campus
	Institutionalise He for She programmes.
Gender Equity in Student	Prioritization of well-performing female students for internship/student
Attachment/Internship	attachment with the industry partners.
Gender Equity in Staff Engagement & Development	Identification of the gender related issues that influence gender equity in staff engagement and development
	Prepare a draft proposal on gender equity in internal promotions and training.
	Prepare a draft proposal on gender equity in engagement of external staff (part-time & temporary staff)
	Undertake stakeholder consultation for review of the draft proposals
	Launch final proposals on gender equity in staff engagement and development
Contractor's Gender Action Plan	Identification of gender issues that will arise because of construction activities within the campuses.
	Gender Committee Consultation with contractor and local community
	Preparation of the draft contractor's gender action plan
	Review of the draft contractor's gender action plan
	Launch of the final contractor's gender action plan
Gender Related CSR	Identification of possible gender related CSR activities that can be undertaken by all KIHBT campuses.
	Stakeholder consultation
	Preparation of CSR Implementation Budgets
	Implementation of CSR Activities

11. CONCLUSION AND RECCOMMENDATIONS

11.1. Project Description

The ESIA study was formulated to influence the proposed project to be responsive to the local environment and human needs. The key objectives of the Proposed KIHBT Ngong Kibiko Campus Tuition Block are to provide additional and high-quality learning and office spaces for students and staff within the campus; boost student enrolment into short term and long-term highway related courses; and to provide adequate training infrastructure and facilities such as classrooms, laboratories and workshops.

11.2. Project Design Considerations

The proponent emphasized the need to have a design that shall be functional, formulated to facilitate proper flow of activities and functions within KIHBT Ngong campus, which will involve education and training in technical and vocational programmes. The designed spaces should be readily accessible, inviting in character and environment, well equipped, humanely administered and an integral part of the existing structures within KIHBT Ngong campus.

11.3. Construction Materials

The proposed project will be constructed using modern, locally, and internationally accepted materials to achieve public health, safety, security, and environmental aesthetic requirements. The civil and construction works will be made using locally sourced materials that comply with the building code and standards. Prequalified suppliers shall be those who are registered and are compliant with the required environmental, statutory, and legal documents.

11.4. Waste Management

An integrated solid waste management system which embraces the circular economy approach and the 5Rs (Refuse, Reduce, Reuse, Repurpose, Recycle) concept of waste management shall be embraced. The contractor will develop a material management Plan (MMP) and solid waste management plan during the construction phase. A solid waste management awareness programme amongst the contractor staff, staff, and students of KIHBT shall be undertaken. Solid waste receptacles that encourage waste segregation shall be stationed at various points of the Proposed Tuition Block once operational. The proponent will engage a NEMA registered solid waste handler to regularly remove solid waste and dispose in the designated county disposal landfills.

11.5. Vegetation Cover

The proposed project's site plan and landscape design aims at retention of most of the mature trees. The building is sited at the part of the site with a clearing and the parking areas are designed around the existing trees. Young trees found within the project site that may be removed due to the construction works will be identified and restoration of the lost vegetation

will be carried out in the KIHBT Ngong campus. The landscape design further proposes addition of new trees and shrubs that will increase the current vegetation cover.

11.6. Project Impacts

11.6.1. Positive Impacts

KIHBT staff, students, the local community, the public, and Kajiado County are the greatest beneficiaries of the construction of the Proposed KIHBT Ngong Kibiko Campus Tuition Block. The project once in operation would provide improved quality of TVET in the county and nationally; upgrade of training infrastructure and facilities; better access to affordable highway and other infrastructural courses; employment opportunities for the community; business opportunities for neighbouring businesses; revenue to the county government; industrial attachment opportunities for KIHBT students; and environmental conservation through tree planting.

11.6.2. Negative Impacts

Long term adverse impacts

Identified long term adverse impacts include increase in social vices; increased insecurity; social disharmony or conflicts; inadequate student hostel accommodation; inadequate staff numbers; increased water demand; soil erosion and storm water mismanagement; increased solid waste and wastewater generation with poor management practices; increased water demand and increased incidences of power outages.

Short term adverse effects

Identified short term adverse impacts include noise and excessive vibrations; air pollution; inadequate provision of PPE; lack of provision of insurance cover to the construction workers.

11.7. Public Consultation

All stakeholders concurred that the Proposed KIHBT Ngong Kibiko Campus Tuition Block was timely as it would enhance the access to and quality of TVET education in the country and regionally once the institute becomes a regional TVET institution. The community will gain economically via employment and by doing business. These developments would directly improve the economic activities of Kibiko and provide a source of revenue for both the County government and National government. Maintaining the status quo therefore means foregoing the stated opportunities. The project stakeholders endorsed the construction of the Proposed Tuition Block noting that its operational benefits outweigh the negative impacts which can be mitigated.

11.8. ESMMP

The ESIA study has identified some negative impacts that need to be mitigated for the success of the project. The ESMMP has been developed to address these impacts by allowing for

integration of environmental and social management considerations in the construction, use and maintenance of the project as well as associated amenities and public interests within the site area. This ESMMP will provide a basis for codes of conduct by the proponent and contractor. It also allows for public engagement in the project activities and provides for grievance resolution mechanisms and the setting up of an Emergency Response Plan system in case of accidents or emergencies.

11.9. Possible CSR Activities

KIHBT Ngong Campus together with the contractor can offer free guidance and counselling services as well as free HIV testing to the neighbouring community as a way of promoting good relations with the public during the construction phase. During operation phase these activities shall be taken up by KIHBT. The proponent intends to undertake a community medical camp within the project duration and undertake a tree planting exercise as a measure for environmental conservation. The proponent has been commended on helping with minor roadworks needed in the community and is encouraged to continue to enhance the institution – community relations.

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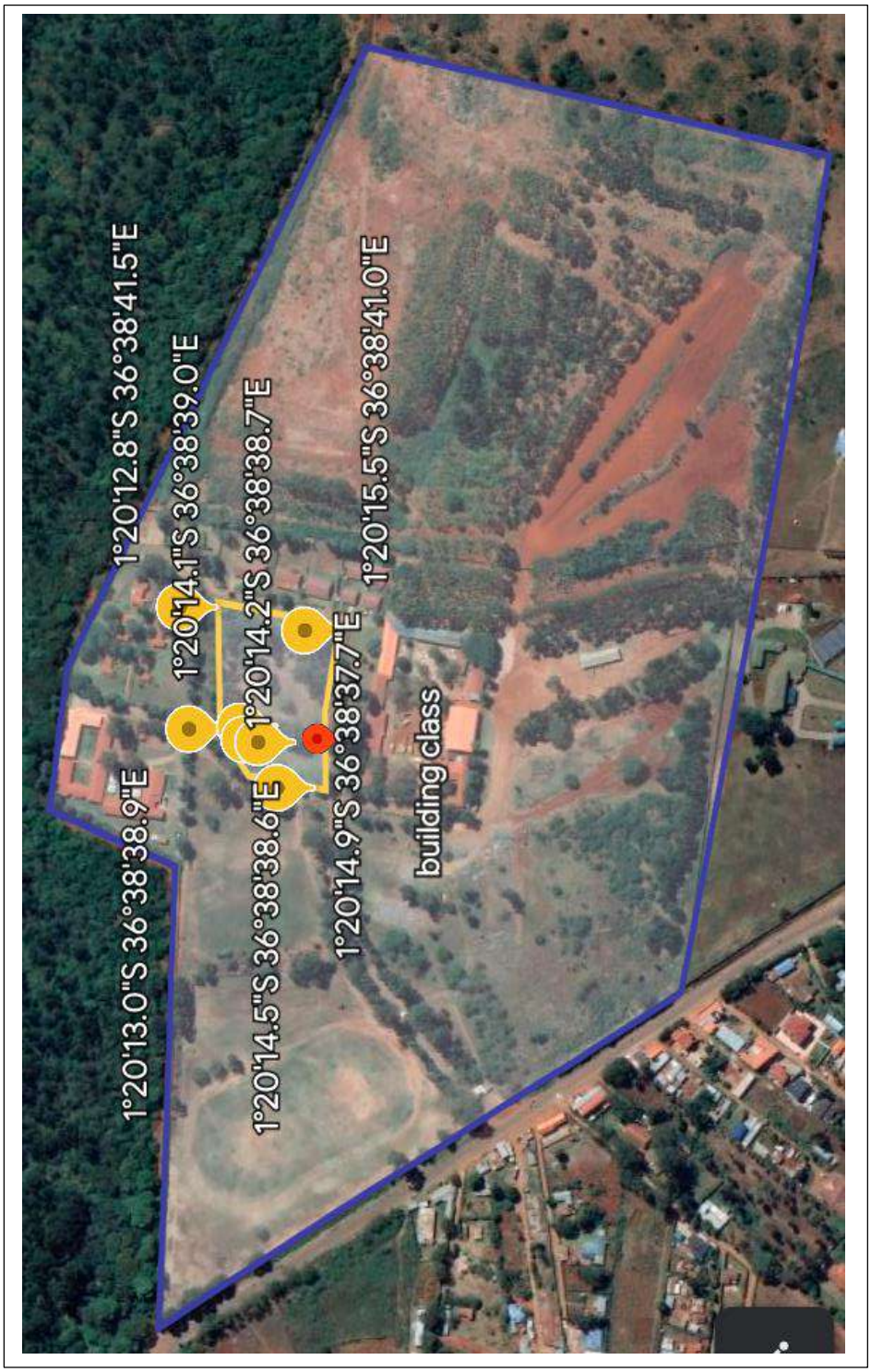
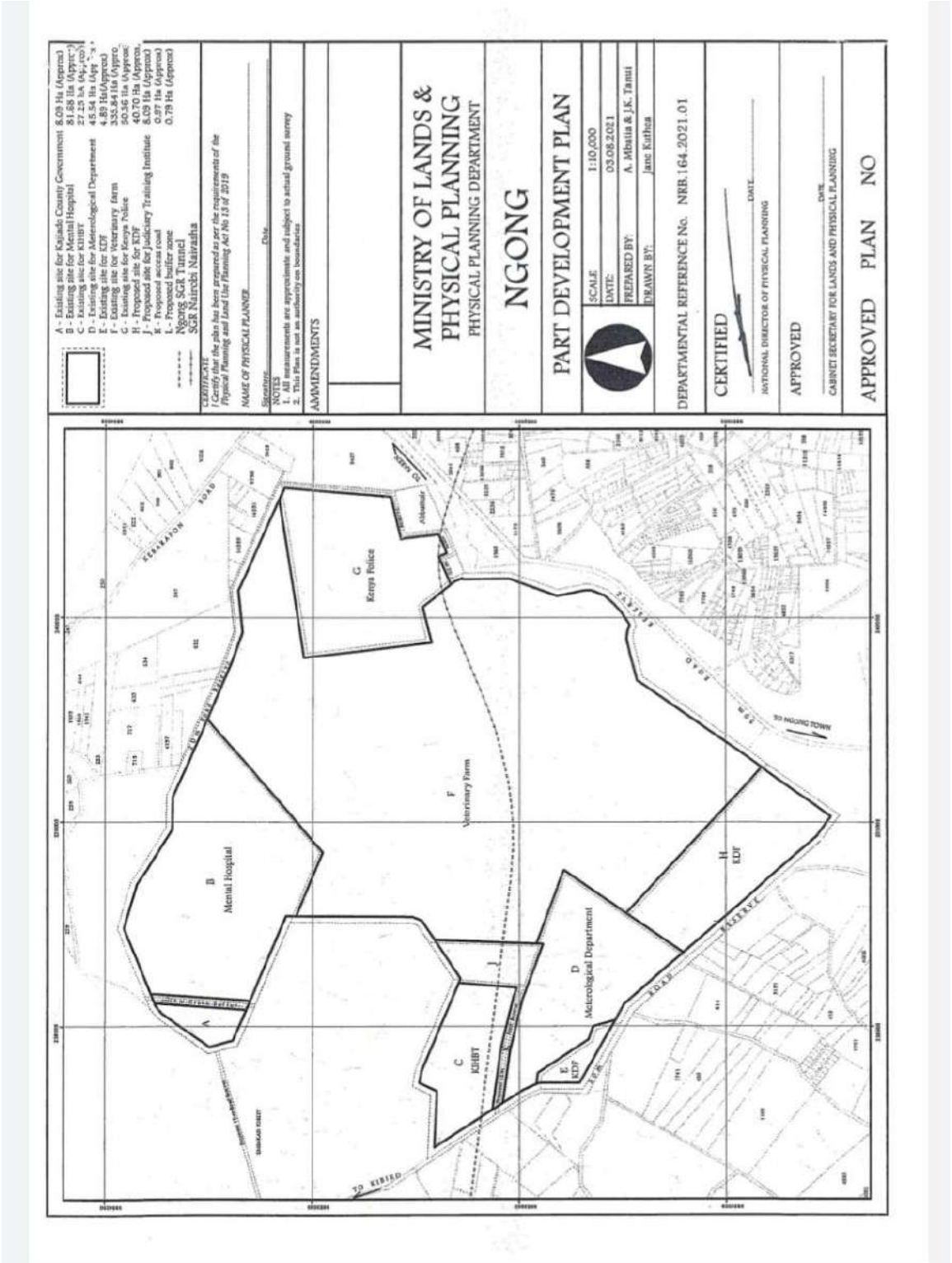
A2 LOCATION PLAN FOR THE PROPOSED DEVELOPMENT WITHIN KIHBT NGONG CAMPUS



A3 COPY OF PDP PLAN



A4 TERMS OF REFERENCE (TORs)

PROPOSED KIHBT NGONG CAMPUS TUITION BLOCK ON PDP REF NO. NRB.164.2021.01 KIBIKO, KAJIADO COUNTY

We have been commissioned by the KIHBT to carry out an ESIA Assessment of their project to construct a tuition block. The project comprises of; a three (3) storey building with ground, first floor, second floor consisting of the following spaces: entry court, lobby, classrooms (9 number), offices, lactation room, kitchenette, washrooms (staff and students) meeting hall, roof terrace with a hall, car park, students' passive recreational park and support facilities (see section 1.2 project components).

Proponent: **Kenya Institute of Highways and Building Technology (KIHBT),**
P.O. BOX 57511-00200
Nairobi

We propose to carry out the study in line with the scoping and Terms of Reference hereunder.

1. **Determine the level of ESIA required**
   Undertake a consultative ESIA through deskwork, literature review, development and administration of a scoping checklist, identification and preliminary consultations with key stakeholders and carry out a reconnaissance trip.
   The following factors shall be investigated:
   - Pressure on existing infrastructure
   - Land degradation
   - Changes in lifestyle and habits (surrounding inhabitants)
   - Landscape visual impact
   - Socio-economic impacts, positive and negative
   - Justification for and objectives of the project

2. **Description of project components**
   The proposed development shall be designed to accommodate the following spaces:
   - **Ground Floor**: Entry Court and Entry Porch, A Lobby with an information desk and a security desk, 3no. laboratories each covering an area of 90.2sm, a hallway, staircases, and students' (ladies and gents) washrooms. The ground floor will also accommodate two management offices, two open plan offices, a secretaries' office, a kitchenette, and staff (gents) washrooms.
   - **First Floor:** 3no. classrooms each covering an area of 90.2sm, a hallway, balconies, students' (ladies and gents) washrooms, two management offices, two open plan offices, a secretaries' office, a lactation room, and staff (ladies) washrooms.

- **Second Floor:** 3no. classrooms each covering an area of 90.2sm, 3no. classrooms each covering an area of 90.2sm, a hallway, balconies, students' (ladies and gents) washrooms and a meeting hall.
- **Roof Terrace:** A hall and terrace
- **Support Facilities and Services:** A ramp and lift that serves all the floors, fire escape, service ducts, vehicular parking for approximately 35 vehicles, and a students' passive recreational park.

3. Environment/ Baseline surveys

The following surveys shall be carried out:

- Habitat and vegetation
- Physical environment
- Occupational health and safety:
  - Man-made hazards/ risks
  - Nuisances; odours, vibrations, unsightly areas, nearby landfills
  - Police and fire protection services

4. Social economic surveys

The following surveys shall be carried out:

- Documentation of project affected persons.
- Availability of social facilities
- Project effect on income and age distribution of the area
- Displacement of individuals or families

5. Relevant legislative and regulatory considerations

6. The foreseeable potential impacts

a. Environmental

- Infrastructure (water, sewerage, solid waste, drainage, energy, transportation)
- Pollution – water, air, noise, excessive vibrations
- Generation of storm water
- Acceleration of soil erosion

b. Socio economic

- Social conflicts
- Labour provision
- Security matters
- Occupational safety and health
- Community safety and health

- Income generation
- Energy and its consumption
- Water supply and demand

7. **Alternative to the proposal in terms of:**
    - Site location
    - Site planning
    - Construction materials
    - Technology

8. **Public participation**
    - Stakeholder identification and engagement
    - Stakeholder consultation – meetings, administration of questionnaires, interviews

9. **Environmental Social Management & Monitoring Plan (ESMMP)**
    - Environmental and Social Management and Monitoring Plan
    - Budget for implementation
    - Environmental and social monitoring
    - Institutional Arrangements for the ESMMP Implementation
    - Key Players' Roles in ESIA/ ESMMP Implementation

10. **Emergency Response Plan, Grievance Resolution Mechanism & Gender Management Plan**

11. **ESIA project report compilation**

A5 ESIA QUESTIONNAIRE

EIA FOR THE PROPOSED KIHBT NGONG CAMPUS TUITION BLOCK ON PDP REF NO. NRB.164.2021.01 KIBIKO, KAJIADO COUNTY

PUBLIC PARTICIPATION INTERVIEW SCHEDULE/ QUESTIONNAIRE – STUDENTS & STAFF

An Environmental and Social Impact Assessment is being carried out for the Proposed KIHBT Ngong Campus Tuition Block, Kajiado County on PDP REF. No. NRB.164.2021.01 As a requirement of EMCA, 1999 Revised 2015 Section 58 on Environmental Impact Assessment and section 17 of the Environmental (Impact Assessment and Audit) Regulations 2003 Revised 2019, public participation is an important exercise for achieving the fundamental principles of sustainable development. We come to you as a key stakeholder and request for your comments on the expected socio-economic and environmental impacts of the proposed project.

Project Proponent – Kenya Institute of Highways & Building Technology (KIHBT).
Project components – Three storey building with ground, first floor, second floor consisting of the following spaces: entry court, lobby, classrooms (9 number), offices, lactation room, kitchenette, washrooms (staff and students) meeting hall, roof terrace with a hall, car park, students' passive recreational park and support facilities.

RESPONDENTS' INFORMATION:

Name of Respondent (optional):
County:…….. Sub County: ……
Location/ Ward: …… Area of Residence: …….……..
Identification Number (I.D No.):…… Phone Number: ……
Date: ……

1. DEMOGRAPHIC CHARACTERISTICS

1.1 Gender

1) Male 2) Female 3) Intersex

1.2 Age of respondent

1) 18 – 25 years 2) 26 – 35 years 3) 36 – 45 years 4) 46 – 55 years
4) 56 – 65 years 5) Above 65 years

1.3 Highest education level attained by respondent:

1) None 2) Primary 3) Secondary 4) College 5) University

1.4 Primary occupation of respondent

1) Formal employment 2) Casual Employment 3) Unemployed
4) Businessperson 5) Student 6) Retired 7) Other (specify) _____

2. TECHNICAL & VOCATIONAL EDUCATION & TRAINING (TVET) AT KIHBT

2.1. Is KIHBT Ngong Campus adequately equipped with required technical training infrastructure and staff? 1) Yes 2) No

2.2. Are the training fees at KIHBT Ngong Campus named affordable? 1)Yes 2) No

2.3. In your opinion, do graduates from KIHBT Ngong Campus have market relevant skills that make them competitive in the job market? 1) Yes 2) No

2.4. Which challenges face students/ staff currently in this KIHBT campus? **(**Multiple responses are allowed)

1. Unaffordable training fees
2. Inability to pay required training fees
3. Lack of education loans and scholarships
4. Inadequate training venues/ classes/ workshops, laboratories
5. Inadequately equipped workshops
6. Inadequately equipped laboratories
7. Inadequate staff numbers
8. Inadequate staff capacity building activities
9. Limited number/ lack of hostel facilities
10. Water shortages
11. Power outages/ inadequate power supply hindering institution operations
12. Poor road infrastructure to access the KIHBT Ngong Kibiko campus
13. Poor road infrastructure linking various parts of the institution
14. Lack of/ inadequate firefighting equipment
15. Others (specify) _____

2.5. Outline proposals you would wish to make in line with the TVET / Infrastructure training at KIHBT. _____

_____

3. WATER AND SANITATION

3.1 What is the main source of potable water used in Kibiko? (Multiple responses are allowed)
1) Piped Water 2) Borehole 3) River Water 4) Rain water harvesting 5)Other (Specify)

3.2 What is the main source of potable water used in this KIHBT campus? (Multiple responses are allowed)
1) Piped Water 2) Borehole 3) River Water 4) Rain water harvesting 5)Other (Specify)

3.3 How is wastewater (sewage) disposed of in Kibiko area?
1) Piped Sewer system 2) Effluent Treatment Plant 3) Open land 4) Septic Tank 5) other (specify)

3.4 How is solid waste disposed of in Kibiko area?

1) Compost pit 2) Burning 3) Open land 4) other (specify)

3.5 How does this KIHBT campus dispose its solid waste?

1) Compost pit 2) Burning/ incineration 3) Open land 4) other (specify)

3.6 How does this KIHBT campus dispose its wastewater (sewage)?

1) Piped Sewer system 2) Effluent Treatment Plant 3) Open land 4) Septic Tank 5) other (specify)

3.7 How can you describe the general solid and wastewater management situation within Kibiko?

1) Very bad 2) Bad 3) Average 4) Good 5) Very Good

3.8 How can you describe the general solid and wastewater management situation within this KIHBT campus?

1) Very bad 2) Bad 3) Average 4) Good 5) Very Good

4. HEALTH AND SAFETY

4.1. What are the most common diseases within the area? (Multiple answers allowed)

1) Malaria 2) Diarrhoea 3) Amoeba 4) Typhoid 5) Cholera 6) Skin diseases

7) Others (specify) _____

4.2. In which health facility were you attended to because of an injury or illness? _____

_____

4.3. Has there been a major fire outbreak in Kibiko? 1)Yes 2) No

4.4. If the answer is Yes, who put out the fire?

1) Community members 2) Kajiado West Sub County fire response team

3) Others (specify) _____

4.5. Name the government / private institutions fitted with firefighting equipment in the vicinity of the project site? _____

_____

4.6. Is this KIHBT Ngong Kibiko campus fitted with firefighting equipment? 1) Yes 2) No

If Yes, Outline which kind of firefighting equipment: _____

_____

4.7. Are there fire safety sensitization trainings carried out in this KIHBT Ngong Kibiko campus?

1) Yes 2) No

If the answer is Yes, how frequent? : _____

4.8. In regard to improving health and safety management in Kibiko, what, in your opinion, should be considered? _____

_____

4.9. In regard to improving health and safety management in this KIHBT Ngong Kibiko campus, what, in your opinion, should be considered? _____

_____

5. ANTICIPATED IMPACTS

5.1. Will the project substantially change;

1) Quality of technical and vocational education and training in the community?
   1)Yes 2) No
2) Access to TVET programs in highway, and other infrastructure technology?
   1)Yes 2) No
3) General enrolment of students into short term and long-term roads/highways/ other infrastructure courses? 1)Yes 2) No
4) Provided infrastructure and training facilities e.g. classes, laboratories, workshops etc.? 1)Yes 2) No
5) Required technical infrastructural skills enhancement in the community and nationally? 1)Yes 2) No
6) Income distribution among the area residents? 1)Yes 2) No

Give reasons:_____

_____

5.2. What are some of the **positive impacts** that you expect during the **Construction phase** of the project? (Multiple responses are allowed).

1) Job creation
2) Increased business opportunities
3) Increased revenue collection by government agencies/ county government
4) Improved livelihoods
5) Youth engagement thus reducing idleness.
6) Operating in a safe and secure environment.
7) Other (Specify) _____

5.3. What are some of the **positive impacts** that you expect during the **Operational phase** of the project? (Multiple responses are allowed).

1) Improved quality of technical and vocational education and training
2) Better access to TVET programs in highway and other infrastructure technology
3) Enhanced general enrolment of students into roads/highways/other infrastructure courses.
4) Better infrastructure and training facilities e.g. classes, laboratories, workshops etc.
5) Required technical vocational skills.
6) Improved livelihoods to those graduating from this institution.
7) Job creation in KIHBT Ngong campus
8) Business opportunities to those working/ supplying KIHBT Ngong campus.

9) Youth engagement through training and work
10) Improved security
11) Improved waste disposal and management
12) Environmental beautification
13) Other (Specify) _____

5.4. What **negative effects** do you expect during the **Construction phase** of the proposed project? (Multiple responses are allowed).
1) Interference with KIHBT activities
2) Increased accidents, injuries & diseases
3) Social vices e.g. alcoholism, drug abuse, sexual immorality
4) Traffic snarl up on the access road leading to KIHBT Ngong Kibiko Campus
5) Lost existing infrastructure within KIHBT campus e.g. telecommunication cables, water and sewer pipes
6) Noise and Vibrations
7) Environmental pollution i.e. air, dust, fumes and spills
8) Clearing of vegetation
9) Increased solid waste disposal.
10) Interruption in Water supply
11) Interruption in Electricity supply
12) Others (specify) _____

5.5. What **negative effects** do you expect during the **Operation phase** of the proposed project? (Multiple responses are allowed).
1) None
2) Increased insecurity
3) Increased accidents, injuries & diseases
4) Social conflicts
5) Social vices e.g. alcoholism, drug abuse, sexual immorality
6) Lost infrastructure e.g. telecommunication cables, water and sewer pipes
7) Irregular wastewater/ effluent disposal
8) Increased solid waste disposal.
9) Interruption in water supply
10) Interruption in electricity supply
11) Increased surface water runoff
12) Others (specify) _____

THANK YOU

EIA FOR THE PROPOSED KIHBT NGONG CAMPUS TUITION BLOCK ON PDP REF NO. NRB.164.2021.01 KIBIKO, KAJIADO COUNTY

PUBLIC PARTICIPATION INTERVIEW SCHEDULE/ QUESTIONNAIRE- EXTERNAL STAKEHOLDERS

An Environmental and Social Impact Assessment is being carried out for the Proposed KIHBT Ngong Campus Tuition Block, Kajiado County on PDP REF. No. NRB.164.2021.01 As a requirement of EMCA, 1999 Revised 2015 Section 58 on Environmental Impact Assessment and section 17 of the Environmental (Impact Assessment and Audit) Regulations 2003 Revised 2019, public participation is an important exercise for achieving the fundamental principles of sustainable development. We come to you as a key stakeholder and request for your comments on the expected socio-economic and environmental impacts of the proposed project.

Project Proponent – Kenya Institute of Highways & Building Technology (KIHBT).
Project components – Three storey building with ground, first floor, second floor consisting of the following spaces: entry court, lobby, classrooms (9 number), offices, lactation room, kitchenette, washrooms (staff and students) meeting hall, roof terrace with a hall, car park, students' passive recreational park and support facilities.

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Location/ Ward: …… Area of Residence: …….……..
Identification Number (I.D No.):…… Phone Number: ……
Date: ……

1. DEMOGRAPHIC CHARACTERISTICS

1.1 Gender

1) Male 2) Female 3) Intersex

1.2 Age of respondent

1) 18 – 25 years 2) 26 – 35 years 3) 36 – 45 years 4) 46 – 55 years
4) 56 – 65 years 5) Above 65 years

1.3 Highest education level attained by respondent:

1) None 2) Primary 3) Secondary 4) College 5) University

1.4 Primary occupation of respondent

1) Formal employment 2) Casual Employment 3) Unemployed
4) Businessperson 5) Student 6) Retired 7) Other (specify) _____

2. TECHNICAL & VOCATIONAL EDUCATION & TRAINING (TVET)

2.1.Approximately how many TVETs do you know of in Kajiado County?

1) Less than 5 2) 5 – 10 3) More than 10

2.2. Are the TVET institutions in Kajiado County adequately equipped with the required technical training infrastructure and staff? 1) Yes 2) No

2.3.Are the training fees in the TVET institutions in Kajiado County affordable?
1)Yes 2) No

2.4.Do the graduates from these TVET institutions in Kajiado County have market relevant skills that make them competitive in the job market? 1) Yes 2) No

2.5. Is KIHBT Ngong Campus adequately equipped with required technical training infrastructure and staff? 1) Yes 2) No

2.6. Are the training fees at KIHBT Ngong Campus affordable? 1)Yes 2) No

2.7. In your opinion, do graduates from KIHBT Ngong Campus have market relevant skills that make them competitive in the job market? 1) Yes 2) No

2.8.Which challenges face students/ staff currently in this KIHBT campus? **(**Multiple responses are allowed)

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3. Lack of education loans and scholarships
4. Inadequate training venues/ classes/ workshops, laboratories
5. Inadequately equipped workshops
6. Inadequately equipped laboratories
7. Inadequate staff numbers
8. Inadequate staff capacity building activities
9. Limited number/ lack of hostel facilities
10. Water shortages
11. Power outages/ inadequate power supply hindering institution operations
12. Poor road infrastructure to access the KIHBT Ngong Kibiko campus.
13. Poor road infrastructure linking various parts of the institutions.
14. Lack of/ inadequate firefighting equipment
15. Others (specify) _____

2.9.Outline proposals you would wish to make in line with TVETs / Infrastructure training institutions in your locality._____

_____

3. WATER AND SANITATION

3.1 What is the main source of potable water used in Kibiko? (Multiple responses are allowed) 1) Piped Water 2) Borehole 3) River Water 4) Rain water harvesting 5)Other (Specify)

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_____

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4.4. If the answer is Yes, who put out the fire?
1) Community members 2) Kajiado West Sub County fire response team
3) Others (specify) _____

4.5. Name the government / private institutions fitted with firefighting equipment in the vicinity of the project site? _____
_____

4.6. Is this KIHBT Ngong Kibiko campus fitted with firefighting equipment? 1) Yes 2) No
If Yes, Outline which kind of firefighting equipment: _____
_____

4.7. Are there fire safety sensitization trainings carried out in this KIHBT Ngong Kibiko campus? 1) Yes 2) No
If the answer is Yes, how frequent? _____

4.8. Regarding improving health and safety management in Kibiko, what, in your opinion, should be considered? _____

_____

4.9. Regarding improving health and safety management in this KIHBT Ngong Kibiko campus, what, in your opinion, should be considered? _____

_____

6. ANTICIPATED IMPACTS

6.1. Will the project substantially change;

1) Quality of technical and vocational education and training in the community?
   1)Yes 2) No
2) Access to TVET programs in highway, and other infrastructure technology?
   1)Yes 2) No
3) General enrolment of students into short term and long-term roads/highways/ other infrastructure courses? 1)Yes 2) No
4) Provided infrastructure and training facilities e.g. classes, laboratories, workshops etc.? 1)Yes 2) No
5) Required technical infrastructural skills enhancement in the community and nationally? 1)Yes 2) No
6) Income distribution among the area residents? 1)Yes 2) No

Give reasons:_____

_____

6.2. What are some of the **positive impacts** that you expect during the **Construction phase** of the project? (Multiple responses are allowed).

1) Job creation
2) Increased business opportunities
3) Increased revenue collection by government agencies/ county government
4) Improved livelihoods
5) Youth engagement thus reducing idleness.
6) Operating in a safe and secure environment.
7) Other (Specify) _____

6.3. What are some of the **positive impacts** that you expect during the **Operational phase** of the project? (Multiple responses are allowed).

1) Improved quality of technical and vocational education and training
2) Better access to TVET programs in highway and other infrastructure technology
3) Enhanced general enrolment of students into roads/highways/other infrastructure courses.
4) Better infrastructure and training facilities e.g. classes, laboratories, workshops etc.
5) Required technical vocational skills.

6) Improved livelihoods to those graduating from this institution.
7) Job creation in KIHBT Ngong campus
8) Business opportunities to those working/ supplying KIHBT Ngong campus.
9) Youth engagement through training and work
10) Improved security
11) Improved waste disposal and management
12) Environmental beautification
13) Other (Specify) _____

6.4. What **negative effects** do you expect during the **Construction phase** of the proposed project? (Multiple responses are allowed).
1) Interference with KIHBT activities
2) Increased accidents, injuries & diseases
3) Social vices e.g. alcoholism, drug abuse, sexual immorality
4) Traffic snarl up on the access road leading to KIHBT Ngong Kibiko Campus
5) Lost existing infrastructure within KIHBT campus e.g. telecommunication cables, water and sewer pipes
6) Noise and Vibrations
7) Environmental pollution i.e. air, dust, fumes and spills
8) Clearing of vegetation
9) Increased solid waste disposal.
10) Interruption in Water supply
11) Interruption in Electricity supply
12) Others (specify) _____

6.5. What **negative effects** do you expect during the **Operation phase** of the proposed project? (Multiple responses are allowed).
1) None
2) Increased insecurity
3) Increased accidents, injuries & diseases
4) Social conflicts
5) Social vices e.g. alcoholism, drug abuse, sexual immorality
6) Lost infrastructure e.g. telecommunication cables, water and sewer pipes
7) Irregular wastewater/ effluent disposal
8) Increased solid waste disposal.
9) Interruption in water supply
10) Interruption in electricity supply
11) Increased surface water runoff
12) Others (specify) _____

THANK YOU

A6 MINUTES OF STAKEHOLDERS MEETING FOR THE PROPOSED KIHBT NGONG KIBIKO CAMPUS TUITION BLOCK, KAJIADO COUNTY

EIA Public Participation Meeting Minutes

8th June 2023

PROJECT TITLE: **PROPOSED KIHBT NGONG CAMPUS TUITION BLOCK ON PDP REF NO.NRB.164.2021.01 KIBIKO, KAJIADO COUNTY**

PROPONENT: **KENYA INSTITUTE OF HIGHWAYS AND BUILDING TECHNOLOGY**

EIA EXPERT: **CASE ARCHITETURE LTD**

MINUTES OF THE EIA, PUBLIC PARTICIPATION MEETING HELD ON 8th June, 2023

PRESENT:

S/N	Name	Designation/ Occupation	Representing/Area of Residence
1.	Hon Joseph Tarus	Area MCA	Ewuaso Kedong
2.	Edith N. Kbatura	Assistant County Commissioner	Kibiko
3.	James Kariuki	Chief Kibiko	Keiko
4.	Chief Lucy	Assistant Chief	Kibiko A
5.	Elijah L. Maronah	Ward Manager	Ewuaso Kedong
6.	Richard Karino	Village Administrator	Kibiko O
7.	Beatrice Njenga	Comm Officer	Kibiko
8.	Yucabeth Nyaboke	Academic Registrar	KIHBT-EPU
9.	Peter N. Akatima	Dean/ Instructor	Ngong

10.	Patricia Baariu	Principal Lecturer/ SGO EASTRIP	Ngong
11.	Peter Barasa	HOD Civil/ Ngong	Ngong
12.	Nyawa Katana	KIHBT	Kibiko
13.	Mercy Wanyoike	KIHBT	Ngong
14.	Sylvia Mutua	Environmentalist/ EIA Expert	Thika
15.	Ruth Wanjiku	EIA Team	Nairobi
16.	Betty Mwendwa	EIA Team	Juja
17.	James Kiprop	EIA Team	Nairobi
18.	Calvin Wambura	Architect	Guest
19.	Jucios K. Munyiri	Architect	Rongai
20.	Karuri Kingori James	Lecturer	Kibiko
21.	Joan Linda Mwaniki	Lecturer	Kibiko
22.	Zachary Atheru	Program Coordinator IGAD	Kibiko
23.	David Kariuki	Works Officer	Ngong
24.	Thomas Ngugi	Teacher	Kibiko
25.	Samuel ntamasas Musaile	Reverend/Pastor	Kibiko B
26.	John Karanja	Student	Ngong
27.	Lusweti Joseph	Student	KIHBT
28.	Caroline Nthambi Mutua	Student	KIHBT
29.	Selector Ndungu	Business Person	Kibiko
30.	Simon Kimani	Business Person	Guest
31.	Rebecca Wasosi	Business Lady	Kibiko
32.	Hannah Wanjiru	Business Person	Kibiko

33.	Joyce Naipet	Business Person	Kibiko
34.	Edward Sena	Business Person	KIHBT
35.	Elizabeth Wanjiku	Business person	Kibiko
36.	Dorothy Kathambi	Business Person	Kibiko
37.	John B Muthuma	Farmer	Kibiko
38.	Elizabeth Rimjaso	Farmer	Kibiko
39.	Bernard Ramoya		Kibiko FPU
40.	Bernard Meseli	Farmer	Kibiko
41.	James		Kibiko
42.	Margaret Gathiaka	Business Lady	Kibiko A
43.	Lawrence Muiha	Business person	Kibiko A
44.	Francis Mwangi	Business Man	Kibiko A
45.	Mary Kangethe	Business Lady	Kibiko A
46.	Gladys Wamaitha	Business Lady	Kibiko A
47.	Lornah Kerubo	Business	Kibiko B
48.	Michael Mwawali	Hospitality	Ngong
49.	Hanna Njoki	Farmer	Kibiko
50.	Lucy Naitera	Farmer	Kibiko
51.	Alice Kasali	Farmer	Kibiko
52.	Rureti Ene Lekanae	Mid-wife	Kibiko
53.	Magret Ndutha	Mid-wife	Kibiko
54.	Fredrick Galgalo	Business Person	Kibiko

ITEM	DESCRIPTION	ACTION
	Agenda:	
1	1. Setting up of grounds, public address system & project drawings 2. Registration of stakeholders 3. Sitting of stakeholders & Distribution of questionnaires 4. Start of meeting: • Opening prayers • Welcoming visitors • Introduction 5. Opening Remarks & Project Background 6. Consultants Presentations: • Project Manager • Architectural • Civil/ Structural Engineering • Mechanical & Electrical Engineering • Environmental & Social Matters 7. Comments and Discussion 8. Resolutions 9. Closing: • Remarks • Prayers 10. Refreshments & Departure at own pleasure 11. Photography 12. Filling & Collection of questionnaires	KIHBT (Proponent) EIA Team Participants Public Works Stakeholder representative
1.0	**Setting up of grounds, public address system & project drawings**	
2.0	**Registration of stakeholders**	
3.0	**Sitting of stakeholders & Distribution of questionnaires**	
4.0	**Start of meeting:**	
4.1.0	Meeting was opened by the proponent representative Patricia Karamuta who led the participants national anthem and thereafter the opening prayers.	
4.2.0	**Introduction**	
4.2.1	Meeting participants were invited to introduce themselves	All
4.2.2	Village Administrator i. Recognized KIHBT for the exemplary work they are doing and urged the community representatives to bring their children to learn at KIHBT ii. Proposed KIHBT to consider sponsoring the qualified students from needy backgrounds	

4.2.3	Chief Kibiko Area i. Appreciated KIHBT for calling for public participation. ii. Thanked the community members for availing themselves for the public participation. iii. Urged KIHBT to provide scholarships to the needy students from the community. iv. He noted Kibiko is cosmopolitan with many communities residing within. v. He created awareness on the integral role of KIHBT in community affairs such as road works, education and scholarships, noting that one female has been offered a scholarship to learn how to operate tractors (plant operations). vi. He further indicated 75% of KIHBT students were from Kajiado County and priority is given to Kajiado County students whenever the institute is shortlisting students. vii. He thanked IGAD for availing themselves and requested the institution to support the community.	Chief
4.2.4	Assistant County Commissioner i. She thanked Kibiko chief for greatly mobilizing the community especially the women to attend the meeting. ii. Encouraged the community to be free in expressing themselves and give their comments. iii. She thanked KIHBT for opening their doors to the community. iv. She gave apologies from DCC who was held up in another meting	ACC
4.2.5	MCA i. Thanked KIHBT for supporting the community by giving a scholarship to a needy girl and planning for the public participation to inform the community about the proposed project. ii. Created awareness about the proposed project and how it would impact the community. iii. He encouraged IGAD to open to the community and support them with scholarships, bursaries, and employment amongst others. iv. He urged KIHBT to sensitize the community on how to use the Edu. Portal for applications of courses. v. Emphasized on the importance of TVET courses, noting that the blue-collar jobs are on demand with many opportunities such as plumbing, masonry, carpentry, plants operations and mechanical works. vi. He requested the community to support the KIHBT project.	MCA

vii. He requested that after the project main contractor is procured, he should be urged to prioritize employing the local community and also seek material sourcing from the locality during the construction phase.

5.0 Opening Remarks & Project Background

5.1.0 Ms. Sylvia Mutua – EIA Lead Expert — EIA Expert

i. Briefed those in the meeting on the proposed project, the EIA process which includes public participation.
ii. Briefed the meeting participants on the questions in the questionnaire
iii. Insisted on the importance of the public participation exercise to the local community and neighbourhood

5.2.0 Patricia Karamuta- KIHBT Representative — KIHBT (Proponent)

i. She introduced the project and gave the background of the project
ii. She noted that the project is funded by World Bank
iii. She noted that the project was a government project meant to increase the access to and quality of TVET programs
iv. She created awareness on the aims of the project along with its components:
- Strengthening governance and management
- Institutionalizing industry links
- Developing market relevant competency-based training programs and market relevant skills
- Upgrading key training equipment and facilities
- Outreach and support for a non-project national TVET institutes

6.0 Consultants Presentations:

6.1.0 State Department of Public Works - Architects — Architects

i. Noted that the proposed tuition block building is 3 floors but designed such that it can structurally be extended to 6 floors later when there is enough funding.
ii. Indicated that the proposed building is well equipped with firefighting equipment
iii. Noted that a laboratory will be added to the building design
iv. Walked the stakeholders through the plans
v. Community members were invited to look at the building plans and seek any clarifications

7.0 Comments and Discussion

7.1 Meeting participants were invited to give their comments and ask questions — EIA Lead Expert

7.2	i.	How will the sewer system be done? Or will it be the use of septic tank?	Ndungu Ndicho
	ii.	Which are the criteria of employing the casual workers on site and tenders' application?	
Response	i.	The septic tanks that are currently in operation within KIHBT will be used for liquid waste water disposal	Architect
	ii.	Meeting participants interested in supplying materials or working with KIHBT during the construction stage were urged to put in place the required documents and certifications in preparation for the applications when tenders shall be called.	EIA Lead Expert
	iii.	With regard to the casual workers on the construction site, the chief will be informed after the project ground breaking exercise to mobilise and enumerate potential construction workers. The community members were urged to be vigilant.	
	iv.	For the procurement of suppliers, KIHBT will follow due process for government tenders.	KIHBT
7.3	i.	Is there a fire outbreak management strategy?	Senior Retired Chief
	ii.	What can KIHBT provide as CSR to the community such as a health centre?	
	iii.	How will solid waste be managed and disposed?	
	iv.	KIHBT has helped in road works in the community roads.	
	v.		
Response	i.	Every floor is equipped with a hose reel and fire extinguisher cylinders strategically placed	• Architects
	ii.	Once the project is complete, KIHBT will prepare a sensitization workshop on fire management	• KIHBT
	iii.	There is a consideration to involve the community in fire management sensitization in line with the institute's protocols.	
	iv.	Every student intake undertakes training of the new students on first aid and fire management	
	i.	Project has a small component of CSR	KIHBT
	ii.	The project will undertake an environmental awareness activity such as tree planting	
	iii.	There will be a community medical camp during the course of the project implementation	
	iv.	KIHBT will take into consideration the proposal of putting up a health facility	

	i.	Solid waste disposal is through incineration, use of pits for dumping and ferrying out of the institution	KIHBT
	ii.	KIHBT is looking into E-waste management	
7.4	i.	What is the criteria of employing casual workers during construction?	Galgalo
	ii.	Can the community have an additional committee parallel to the grievance redress committee?	
	iii.	What more can KIHBT do with regard to environmental conservation policy?	
	iv.	Kibiko location has 8 wards, can KIHBT offer short courses' scholarships to the community?	
Response	i.	The area leaders represent community needs and will ensure that the casual workers are sourced from the locality	EIA Lead Expert
	ii.	The parallel committee suggestion should be addressed to the grievances redress committee already in place. The community were hence advised to talk to the representatives already in the grievances redress committee to get their plans, progress as well as suggestions.	
	iii.	A committee can be formed from a need and therefore it is important to find out from the representatives the progress made so far	
	iv.	It is important for the community to as well engage and bring on board the leaders in the community or other institutions such as IGAD to partner with KIHBT for sponsorships	
	i.	EASTRIP has a proposal for a scholarship program with it being biased to benefit females in KIHBT	KIHBT Representative
	ii.	A government agency has a budget that need to be approved by the government hence KIHBT can only provide scholarships approved in their budget	
	iii.	Government offices are management by others in charge	
	iv.	Regarding the environmental policy there is a small budget of CSR where they can have tree planting. Moreover, there is a yearly tree planting exercise carried out in KIHBT	
7.5	i.	Which mechanisms have been put in place to address community grievances?	Lawrence Kiguta
	ii.	What impacts is the project anticipated to have on the environment?	
	iii.	What are the measures in place to ensure mitigation of impacts?	

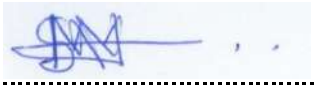
	iv.	Can the project proceed without community agreement?	
Response	i.	World bank is strict with ESIA and the project cannot break ground without the community endorsing it	KIHBT Representative
	ii.	A feasibility study was done by an Economist and the World Bank experts ascertaining the viability of the project. In the ESIA, there is an initial scoping which checks the level of risk of the project to the community and the environment, and the project was given a low-risk award category indicating there will be minimal long-term impacts, most impacts are anticipated during the construction phase.	
	iii.	Concerning the addressing of community grievances, there is a grievance redress committee which is 1st tier. 2nd Tier is the national coordination committee, 3rd Tier is a Regional coordination committee and 4th Tier is the World Bank	
	iv.	There are safeguard measures in place for the project for instance: • The main contractor has to have an environmental Health and Safety expert to enforce the OHS measures • KHBT has safeguards and two communication officers	
7.6	i.	Proposed consideration of recycling technology	Elijah Maruma - Ward Manager
	ii.	Commented on the dust emissions during construction, business supply and employment as some of the possible impacts from the project	
	iii.	Urged community members to be free and express themselves	
7.7	How is KIHBT and the administration prepared for the social vices?		Thomas Ngugi
Response	The local administration is aware of the existing social vices such as alcohol abuse and are working to sensitize the community to alleviate future misfortunes.		Area Chief
7.8	Poor road condition from KIHBT to Ngong		James Kiarie
Response	The Ngong- Suswa road is under a Chinese contractor and once there is full disbursement of funds, the road construction will be completed.		Area Chief
7.9	Which route will be used to bring construction material into the project site as this can cause disruptions of learning activities within KIHBT campus?		Joan Mwaniki

Response	In the Environmental and Social Management and Monitoring Plan (ESMMP) there is a traffic management plan that will consider the least interference to the institution and community activities	KHBT Representative
8.0	i. How will the KIHBT alumni be taken to work in the construction? ii. Between students and community who are priority in employment? iii. How will school identify students and outsiders?	Joseph Lusweti
Response	i. Students are also part of the community and will be given priority during recruitment. The students form the first community, then the area residents form the second community. ii. The Lead Expert challenged the student leaders to make the proposal of alumni's consideration to the grievances redress committee or the area Chief	EIA Lead Expert
	i. The students will be offered attachments in the construction site during their school holiday ii. Main contractor hoard off the construction site	Architect
8.0	**Resolutions** The Proposed project is welcomed as it will have considerable positive impacts to the community	All
9.0	**Closing remarks:** i. Appreciation of the Participants for turning up for the stakeholders' meeting ii. Lead Expert welcomed the attendees to visit the project site iii. Answering of questions arising during site visit iv. Vote of thanks by Patricia Karamuta (KIHBT) v. Prayers by a community member pastor Samuel Musaile	• EIA Team • KIHBT • Stakeholder representative
10.0	Refreshments & Departure at own pleasure	All
11.0	Photography	All
12.0	**Filling & Collection of questionnaires**	Participants & EIA Team
12.1	Having no other business, the meeting was adjourned at 1400 hours.	EIA Lead Expert

Minutes confirmed by

Name: Ms. Sylvia Mutua

Signature…



Date: 12th June, 2023

Minutes confirmed by

Meeting participant

Name…….

Signature……..

Date……

Proponent Representative

Name…….

Signature……..

Date……

A7 LIST OF STAKEHOLDERS WHO PARTICIPATED PUBLIC PARTICIPATION FOR THE PROPOSED KIHBT NGONG KIBIKO CAMPUS TUITION BLOCK, KAJIADO COUNTY

KENYA INSTITUTE OF HIGHWAYS AND BUILDING TECHNOLOGY
REGIONAL FLAGSHIP TVET INSTITUTE OF HIGHWAYS TECHNOLOGY

Ngong Town Centre P.O. BOX 57511 – 00200 NAIROBI Email: principal@kihbt.ac.ke Telephone: (020) 650291

PROPOSED KIHBT NGONG CAMPUS TUITION BLOCK ON PDP REF NO. NRB.164.2021.01 KIBIKO, KAJIADO COUNTY – ENVIRONMENTAL IMPACT ASSESSMENT PUBLIC PARTICIPATION/ STAKEHOLDER MEETING ON 8TH JUNE 2023 FROM 9.00 A.M – 1.00 P.M

ATTENDANCE REGISTER

SIN	NAME	GENDER	AREA OF RESIDENCE	OCCUPATION	CONTACT
1.	[illegible] Nyoka	F.	Kibiko	Farmer	0113715897
2.	Lucy Naibera.	F.	Kibiko	Farmer	0724083563
3.	Alice Kasali	F	Kibiko	Farmer	0116405008
4.	Kuria Bre Lekanae.	F.	Kibiko	Mid-wife	0131965102
5.	Magret Nduku.	F	Kibiko	Mid-wife	0114948996
6.	Zachary Atitenu	M	KIBIKO	Platform Coordinator	0733817214
7.	Thomas Nkuge	M	Kibiko	Teacher	0725403976
8.	Fredrick Gaigah	M	Kibiko	Business Person	0718259600
9.	Lawrence Timan Ruda	M	Kibiko "B" Emanyatta	Business Person	0724978782

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S/N	NAME	GENDER	AREA OF RESIDENCE	OCCUPATION	CONTACT
10.	KOILEKEN OLE ORUMOI	M	KIBIKO(O)	Farmer	0712713742
11.	RICHARD KARINO	M	KIBIKO (G)	Y. ADMINISTRATOR	0716608974.
12.	Samuel Nhamasas Musaik	M	KIBIKO B	Rev / PST	0722929944
13.	Kamiri Kingori James	M	KIBIKO	Lecturer	0729780501
14.	John B Muttumma	M	Kibiko	Farmer	0722709923
15.	Chief Lucy	F	KIBIKO A	Ass. CHIEF	0711 795 290
16.	MARGARET GATHIAKA	F	KIBIKO A	BUSSINESS LADY	0723 756 616
17.	LAWRENCE MUMITA	M	KIBIKO A	Bussiness	0715259505
18.	FRANCIS MWANGI	M	KIBIKO A	Business man	0720 381893
19.	Mary Kangethe	F	Kibiko A.	Business lady.	0768812166.
20.	Gladys Wamaitha	F	Kibiko A.	Business lady.	0108324581

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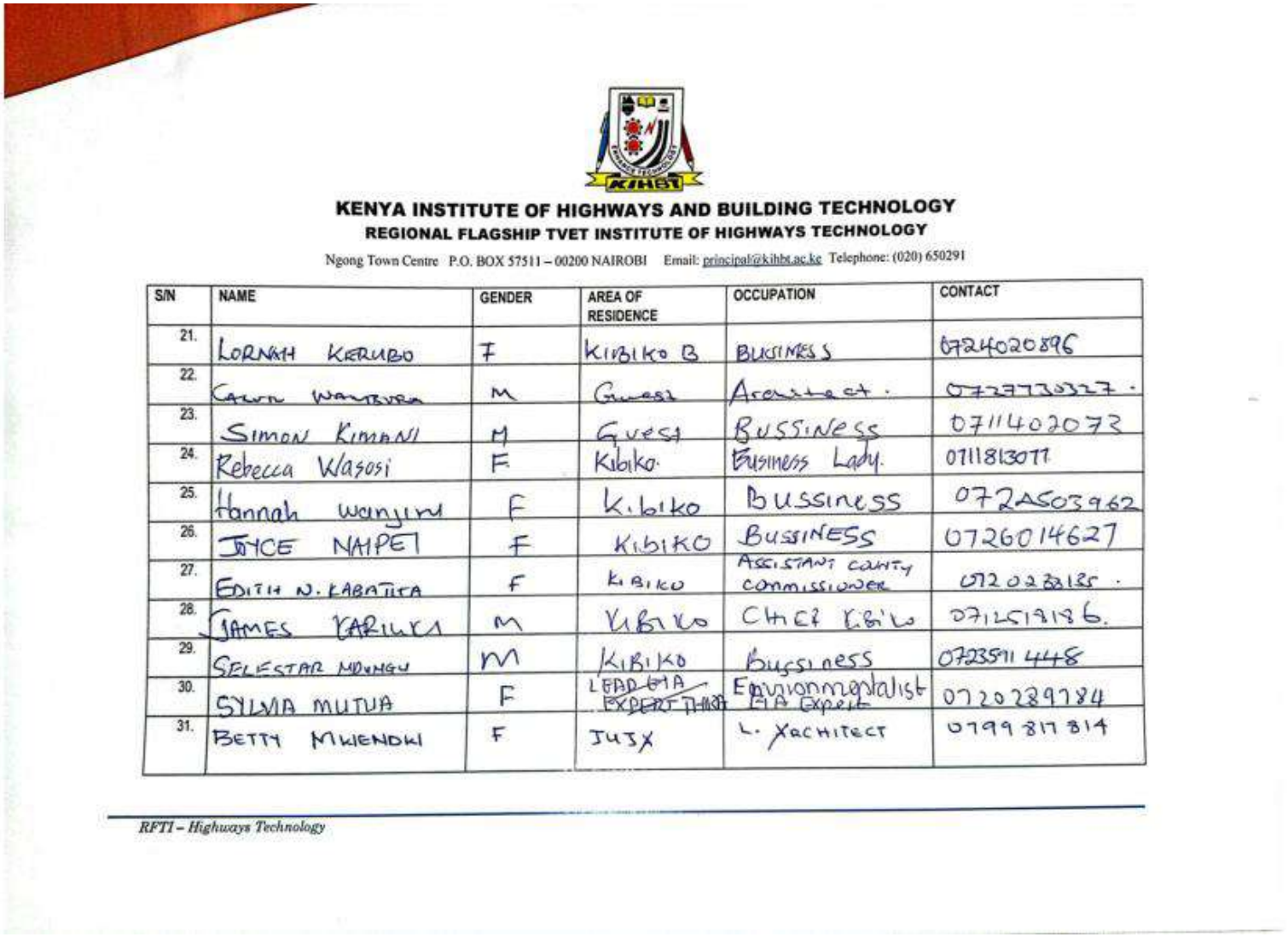

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S/N	NAME	GENDER	AREA OF RESIDENCE	OCCUPATION	CONTACT
21.	LORNAH KERUBO	F	KIBIKO B	BUSSINESS	0724020896
22.	CALVIN WANYAMA	M	Guest	Architect.	0729730327.
23.	SIMON KIMANI	M	Guest	BUSSINESS	0711402073
24.	Rebecca Wasosi	F	Kibiko.	Business Lady.	0711813077
25.	Hannah wanjiru	F	K.biko	Bussiness	0724503962
26.	JOYCE NAIPET	F	KIBIKO	BUSSINESS	0726014627
27.	EDITH N. KABATIKA	F	KIBIKO	ASSISTANT COUNTY COMMISSIONER	0720228185.
28.	JAMES KARIUKI	M	KIBIKO	CHIEF KIBIKO	0712519186.
29.	SELESTAR MBONGU	M	KIBIKO	BUSSINESS	0723591448
30.	SYLVIA MUTUA	F	LEAD EIA EXPERT THIS	Environmentalist EIA Expert	0720289784
31.	BETTY MWENDWI	F	JUJX	L. ARCHITECT	0799817814

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S/N	NAME	GENDER	AREA OF RESIDENCE	OCCUPATION	CONTACT
32.	Hon Joseph Tmit	M	Sunaro.	Area MCA	0701128803
33.	Yucabeth Nyaboke.	F	KIHBT - FPU	Academic Registrar	0721658275.
34.	EDWARD SENA	M	KIHBT	BUSSINESS.	0721713387
35.	ELIZABETH WANJIKU	F	KIBIKO	BUSINESS	0724 946520
36.	Dorothy Kathambi	F	KIBIKO	BUSINESS	0700211014
37.	ELIJAH · L · MARONIAH	M	EWUNSO	WARD MANAGER	0720707149
38.	Elizabeth Rimbeo	F	Kibiko	farmer.	0700622238
39.	Bernard Ramoya	M	Kibiko-FPU	[illegible]	0733276630.
40.	LUSWETI JOSEPH	M	KIHBT	STUDENT	0757081318
41.	Caroline Nthambi Mutua	F	KIHBT	student	0794870635
42.	Bernard Mesee	M	KIBIKO	Farmer	0722569218

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S/N	NAME	GENDER	AREA OF RESIDENCE	OCCUPATION	CONTACT
43.	James [illegible]	M	Kibiko	Bursar	0724171436
44.	RUTH WANJIKU	F	NAIROBI	E I A TEAM.	0724480868.
45.	James Kiprop	M.	Nairobi.	EIA TEAM	0703556700.
46.	David Kanuthi	M	NGONG	WORKS Office	0714329016
47.	JOAN LINDA MWANIKI	F	KIBIKO	P/LECTURER	+254726571627
48.	PATRICIA BAARIU	F	Ngong	Principal lect/SGD EASTRIP	0721687018
49.	Beatrice Njenga	F	Kibiko	Comm. Officer	0728317786
50.	Nyaga Katana	M	Kibiko	KIHBT	[illegible]102291
51.	MERCY WANYOIKE	F	NGONG	KIHBT	0721989877
52.	PETER N AKATIMA	M	NGONG	DEAN/INSTRUCTOR	0725678464
53.	Peter [illegible]	M	NGONG	HOD CIVIL/[illegible]	07[illegible]53536

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S/N	NAME	GENDER	AREA OF RESIDENCE	OCCUPATION	CONTACT
54.	Michael Mwaseni	M	Ngong	Hospitality	0710460575
55.	John Karanja	M	Ngong	Student	0741159084
56.	Jacob K. Mwangi	M	Rongai	Architect	0722478186
57.					
58.					
59.					
60.					
61.					
62.					
63.					
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A8 PHOTOGRAPHS OF STAKEHOLDERS MEETING FOR PROPOSED KIHBT NGONG KIBIKO CAMPUS TUITION BLOCK, KAJIADO COUNTY

Plate 33: Registration of stakeholder meeting participants

Plate 34: KIHBT Director representative making welcoming remarks

Plate 35: KIHBT safeguards officer making a presentation at the stakeholders meeting

Plate 36: Stakeholders following the meeting proceedings at KIHBT Ngong Campus Conference hall

Plate 37: Lead EIA Expert addressing the meeting

Plate 38: Village administrator

Plate 39: Kibiko location chief

Plate 40: Ewuaso Kedong ward MCA addressing the gathering

Plate 41: Ewuaso Kedong ward manager

Plate 42: Meeting participants viewing the project architectural drawings

Plate 43: KIHBT students viewing project architectural drawings

Plate 44: Answering of administered questionnaires.

Plate 45: Stakeholders making comments at the meeting



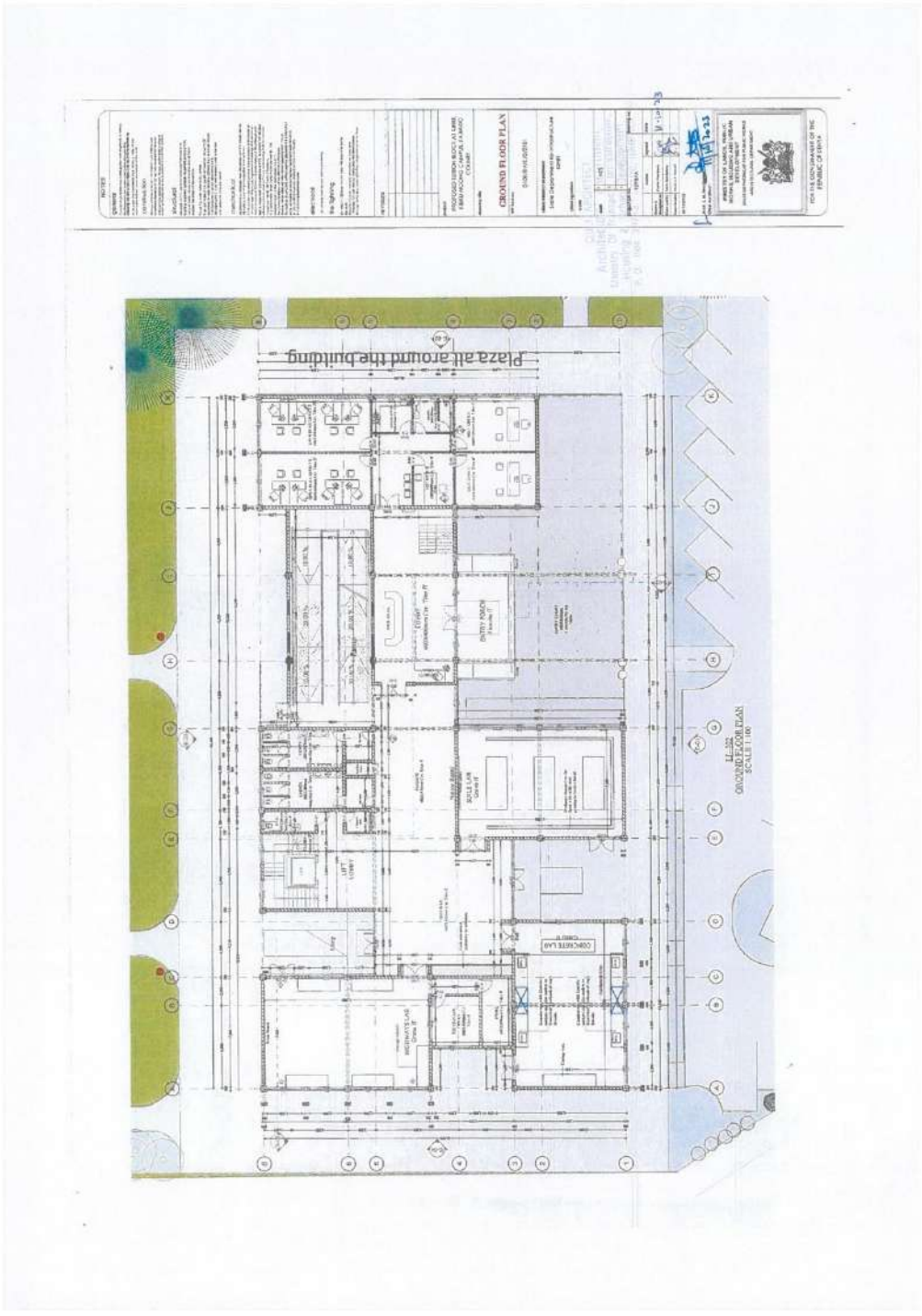

Plate 46: KIHBT staff member and a student making comments at the stakeholders' public forum

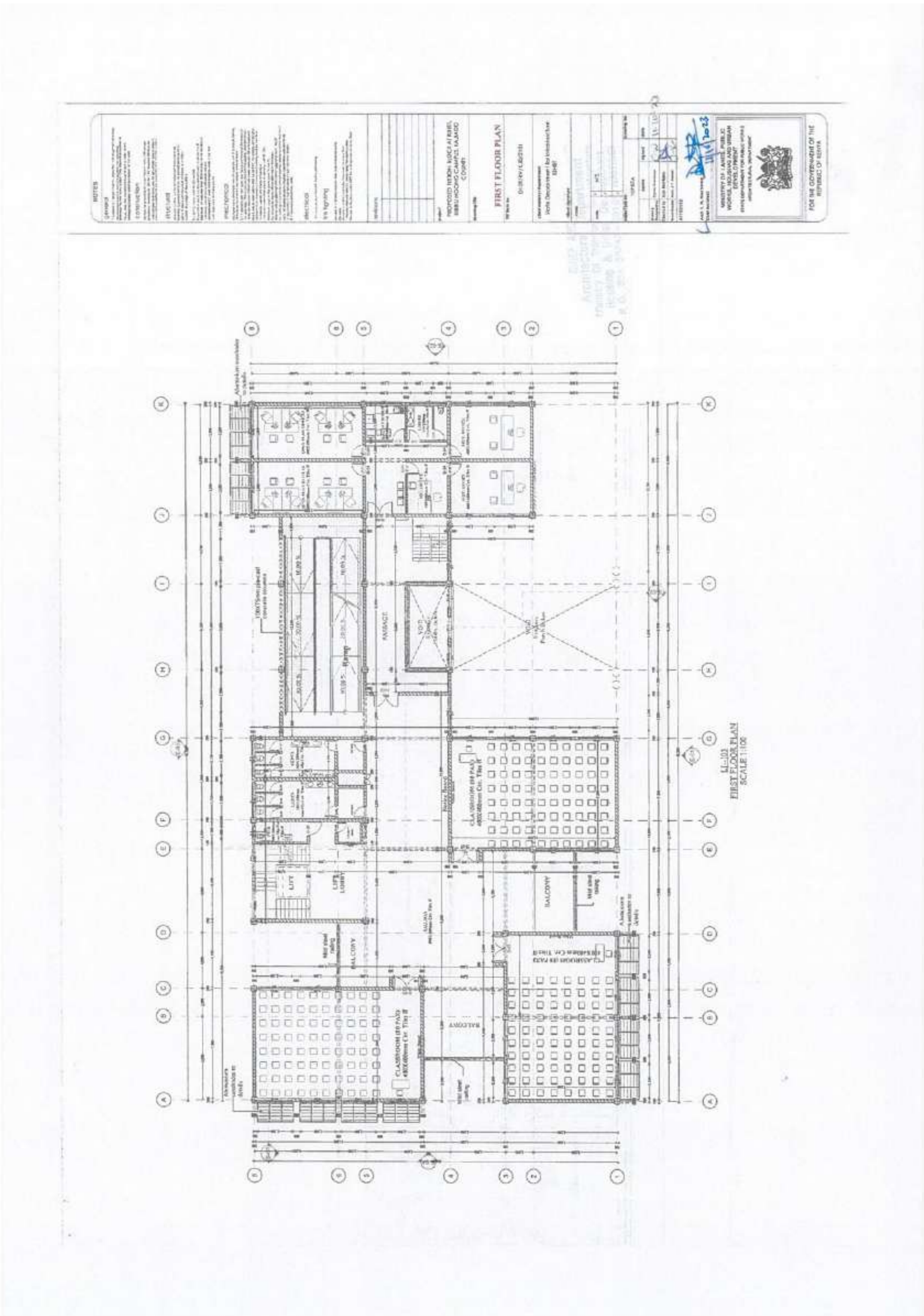

Plate 47: Resolution by the stakeholders supporting the proposed construction of the Tuition Block

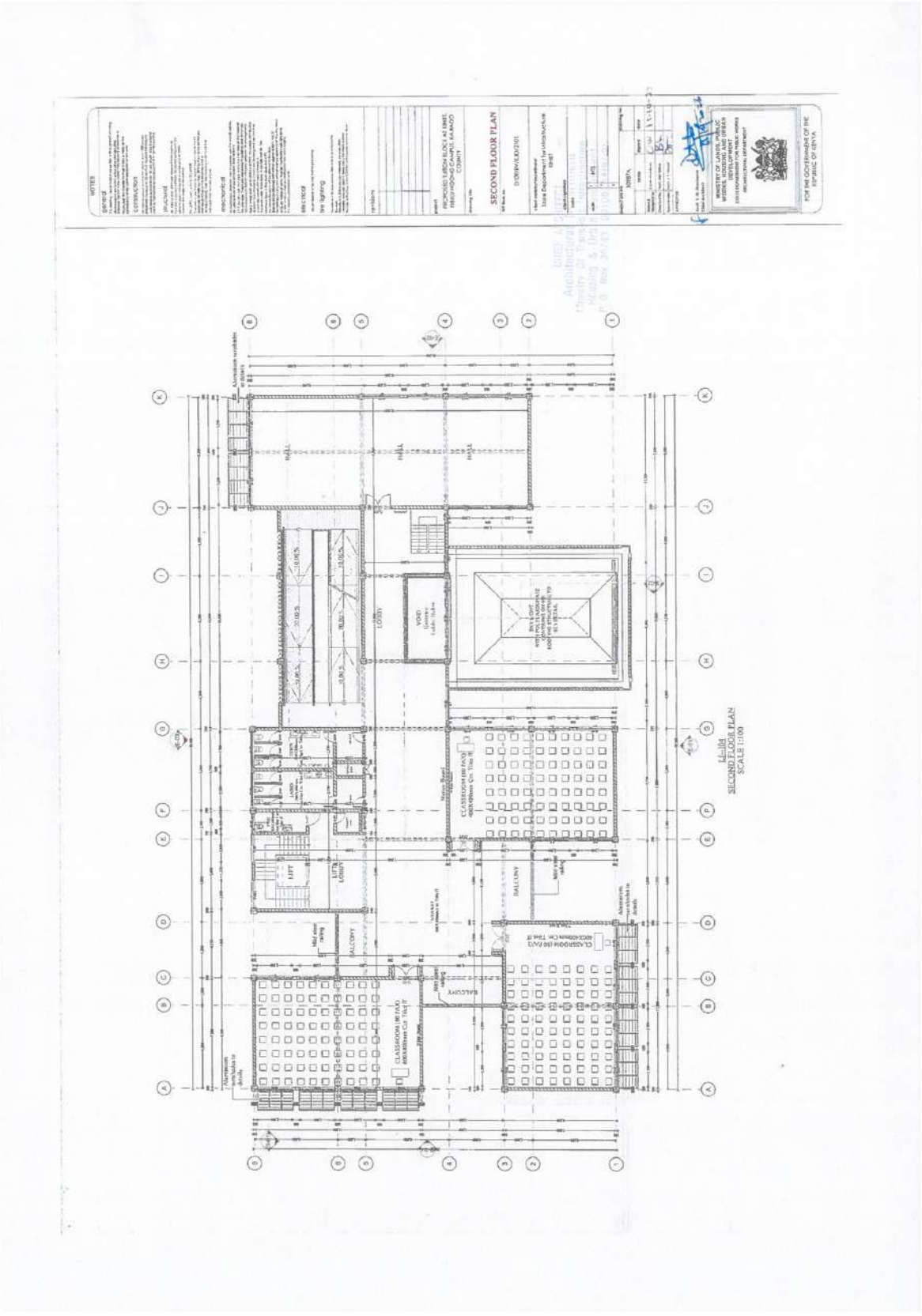
Plate 48: Stakeholders at the proposed project site

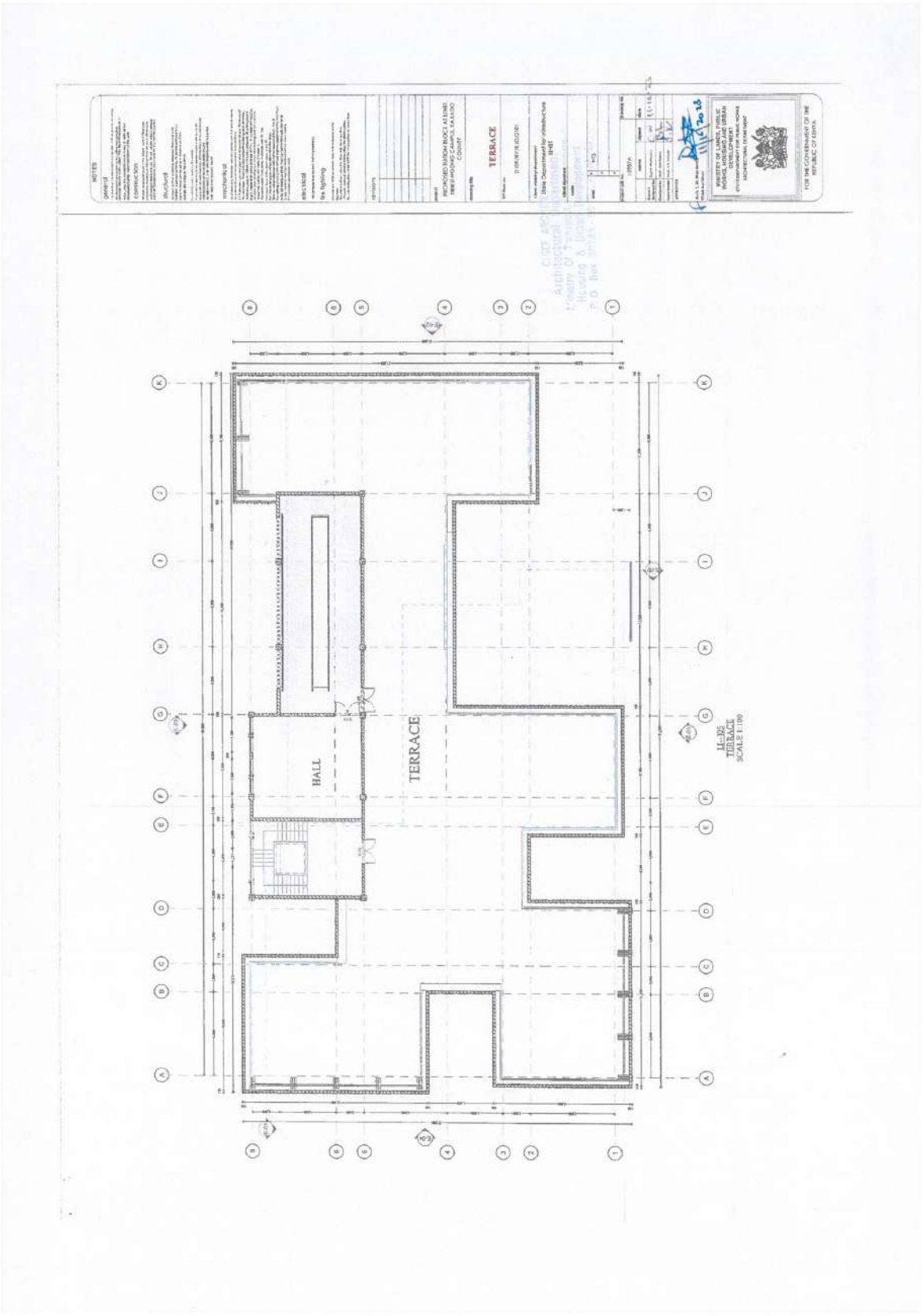
+

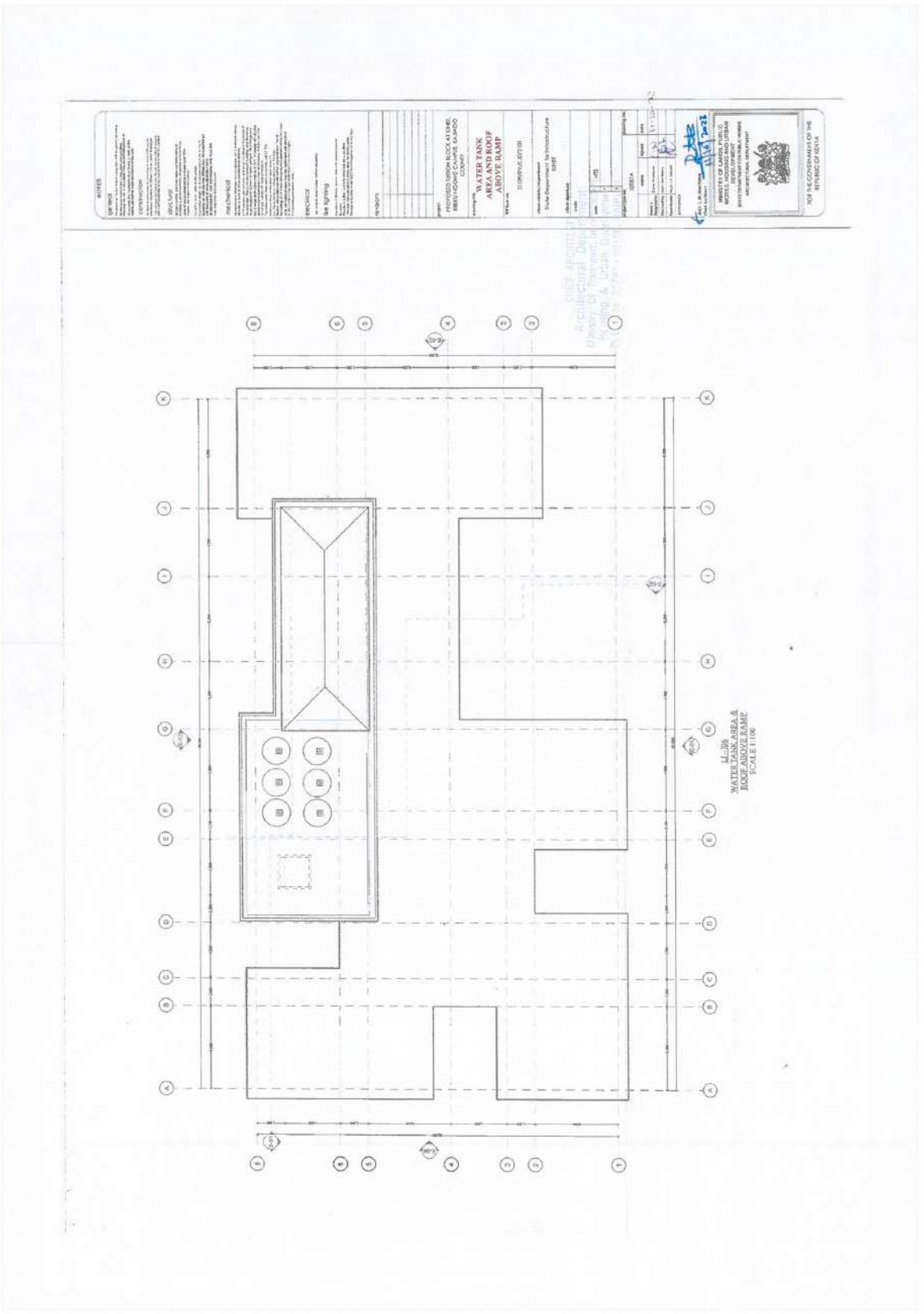
A9 ARCHITECTURAL DRAWINGS FOR THE PROPOSED KIHBT NGONG KIBIKO CAMPUS TUITION BLOCK, KAJIADO COUNTY


GROUND FLOOR PLAN
Plaza all around the building
GROUND FLOOR PLAN
SCALE 1:100


FIRST FLOOR PLAN


SECOND FLOOR PLAN
SECOND FLOOR PLAN
SCALE 1:100


TERRACE
HALL
TERRACE
14-105
TERRACE
SCALE 1:100


WATER TANK AREA AND ROOF ABOVE RAMP
WATER TANK AREA & ROOF ABOVE RAMP
SCALE 1:100

NOTES
PROPOSED DESIGN BLOCK AT KIHBT-NGONG KIBIKO CAMPUS, KAJIADO COUNTY
ELEVATIONS
EASTRIP BLOCK
ELEVATION E-01
ELEVATION E-02

ELEVATIONS
ELEVATION E-03
ELEVATION E-04

NOTES
SECTIONS
SECTION 01
SECTION 02

A10 CULTURAL PROPERTY PROTECTION MEASURES AND CHANCE FIND PROCEDURES

World Bank Group Policy on Management of Cultural Heritage (ESS 8)

ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and future. It aims to ensure that developers protect cultural heritage from adverse impacts in the course of their project activities and support cultural heritage preservation the policy further promotes equitable sharing of benefits from the use of cultural heritage. Tangible cultural heritage is considered as unique and often a non-renewable resource that possesses cultural, scientific, spiritual or religious value and includes moveable or immoveable objects, sites, structures, groups of structures, natural features or landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural value.

Integration of cultural heritage preservation and protection into the project's assessment process and management systems is essential because damage to cultural heritage can result from activities other than direct excavation or refurbishment of buildings.

National Policy on Cultural Heritage – The National Museums and Heritage Act 2006

An Act of Parliament to consolidate the law relating to national museums and heritage; to provide for the establishment control, management and development of national museums and the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya.

Pertinent provisions of the National Museums and Heritage Act include:

Part II, section 4 (c&d) on the Functions of the National Museums of Kenya- The National Musuems shall identify, protect, conserve and transmit the cultural and natural heritage of Kenya and promote cultural resources in the context of social and economic development.

Part IV section 25 (a-f) on the Declaration of Heritage Monuments - After consultation with the National Museums the Minister may by notice in the Gazette declare and open space, a specified place, immovable structure, specified site in which a buried monument/ object/ archaeological/paleontological interest exists, or a geo park to be a protected area or item of historical interest.

Part V section 30 on Notification of discovery - a person who discovers a monument or object of archaeological or palaeontological interest, shall within seven days notify the National Museums indicating the precise site and circumstances of the discovery and shall deliver the object to the National Museums or to the District Commissioner to keep it for any particular purpose or for any particular period.

Part V section 31 on Restriction of discovered object - no person shall move a monument or object of archaeological or palaeontogical interest from the place where it has been discovered otherwise than in such manner and to such place as may be allowed by an exploration licence, or by written permit from the Minister after consultation with the National Museums.

Part V section 32 on prohibited acts/ offences – it is an offence for a person to fails to comply with the provisions of section 30 or moves a monuments or object of archaeological interest contrary to section 31 of this Act.

Part VIII section 46 (1) on antiquities and protected objects – all antiquities which are lying in or under the ground, or on the surface of any land already protected under any law as a monument or being objects of archaeological, palaentological or cultural interest discovered in a part of Kenya after the commencement of this Act shall be the property of the Government.

Definition of Cultural Heritage

Cultural property includes monuments, structures, works of art, or sites of significance points of view, and are defined as sites and structures having archaeological, paleontological, historical, architectural, or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.

KIHBT Guiding Principle on Protection of Cultural Property

The Proposed KIHBT Ngong Kibiko Campus Tuition Block does not pose any risk of damaging cultural property and does not encroach on any burial sites. If any item of historical interest is chanced upon during the construction phase, it is expected that the Proponent and Contractor follow the prescribed Chance Find Procedures (CFP).

Chance Find Procedures (CFP)

The following procedural guidelines must be considered in the event that previously unknown heritage resources or burial grounds and graves (BGG) are exposed or found during the life of the project:

a. Stop the construction activities in the area of the chance find;
b. Delineate the discovered site or area;
c. Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities take over. The National Museums of Kenya shall be responsible for significant movable and immovable cultural property that pertains to Kenyan history, heroes and the conservation of historical artifacts;
d. Notify the supervisory Engineer who in turn will notify the responsible county government and the National Museum of Kenya within seven days;

e. Contact the responsible local authorities and the National Museum of Kenya who would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.
f. Ensure that decisions on how to handle the finding be taken by the responsible county government and the National Museums of Kenya. This could include changes in the layout (such as when the finding is an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
g. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the National Museums of Kenya; and
h. Construction work will resume only after authorization is given by the responsible county government and the National Museums of Kenya concerning the safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts, Safeguards Procedures for Inclusion in the Technical Specifications for Contracts. During project supervision, the Resident Engineer/ Clerks of Works shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

Relevant findings will be recorded in KIHBT Construction Monitoring Report and the World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

A11 EMCA AIR QUALITY REGULATIONS

- FIRST SCHEDULE - AMBIENT AIR QUALITY TOLERANCE LIMITS
- SECOND SCHEDULE – PRIORITY AIR POLLUTANTS

11 (r 5,6, 7,10,11, 20,33,38)

FIRST SCHEDULE

AMBIENT AIR QUALITY TOLERANCE LIMITS

Table 1: Ambient Air Quality Tolerance Limits

	Pollutant	Time weighted Average			
			Industrial area	**Residential, Rural & Other area**	**Controlled areas*** **
1.	Sulphur oxides (SO_X);	Annual Average*	80 µg/m^3	60 µg/m^3	15 µg/m^3
		24 hours**	125 µg/m^3	80 µg/m^3	30 µg/m^3
		Annual Average		0.019 ppm/50µg/m^3	
		Month Average			
		24 Hours		0.048ppm /125µg/m^3	
		One Hour			
		Instant Peak		500 µg/m^3	
		Instant Peak (10 min)		0.191 ppm	
2.	Oxides of Nitrogen (NO_X);	Annual Average*	80 µg/m^3	60 µg/m^3	15 µg/m^3
		24 hours**	150 µg/m^3	80 µg/m^3	30 µg/m^3
		8 hours			
		Annual Average		0.2 ppm	
		Month Average		0.3 ppm	
		24 Hours		0.4 ppm	
		One Hour		0.8 ppm	
		Instant Peak		1.4 ppm	
3.	Nitrogen Dioxide	Annual Average	150 µg/m^3	0.05 ppm	
		Month Average		0.08 ppm	
		24 Hours	100 µg/m^3	0.1 ppm	
		One Hour		0.2 ppm	
		Instant Peak		0.5 ppm	
4.	Suspended Particulate	Annual Average*	360 µg/m^3	140 µg/m^3	70 µg/m^3

	Pollutant	Time weighted Average			
		24 hours**	500 µg/m^3	200 µg/m^3	100 µg/m^3
			Industrial area	**Residential, Rural & Other area**	**Controlled areas*** **
		mg/Kg			
		Annual Average****		100 µg/m^3	
		24 hours***		180 µg/m^3	
5.	Respirable Particulate Matter (<10µm) (RPM)	Annual Average*	70 µg/m^3	50 µg/m^3	50 µg/m^3
		24 hours**	150 µg/Nm^3	100 µg/Nm^3	75 µg/Nm^3
6.	$PM_{2.5}$	Annual Average	35 µg/m^3		
		24 hours	75 µg/m^3		
7.	Lead (Pb)	Annual Average*	1.0 µg/Nm^3	0.75 µg/Nm^3	0.50 µg/m^3
		24 hours**	1.5 µg/m^3	1.00 µg/m^3	0.75 µg/m^3
		Month Average		2.5	
8.	Carbon monoxide (CO)/ carbon dioxide (CO_2)	8 hours**	5.0 mg/m^3	2.0 mg/m^3	1.0 mg/m^3
		1 hour	10.0 mg/m^3	4.0 mg/m^3	2.0 mg/m^3
		mg/Kg			
		24 hours**			
9.	Hydrogen Sulphide	24 hours**	150µg/m^3		
10.	Non-methane hydrocarbons				
		instant Peak	700ppb		
11.	Total VOC	24 hours**	600 µg/m^3		
12.	Ozone	1-Hour	200 µg/m^3	0.12 ppm	
		8 hour (instant Peak)	120 µg/m^3	1.25 ppm	

And any other parameter as may be prescribed by the Authority from time to time

Legend

(a) *µg- microgram*

(b) m^3 – cubic metre

(c) ppm – Parts per million

(d) ppb – Parts per billion

(e) Values at Standard Temperature and Pressure (STP)

(f) Conversion factors from ppm to mg/m^3 and mg/m^3 to ppm are stipulated under the Eleventh Schedule

(g) * [Annual Arithmetic mean of minimum *104* measurements in a year taken twice a week 24 hourly at uniform interval.]

(h) [** 24 hourly/8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days.]

(i) Whenever and wherever two consecutive values exceeds the limit specified above for the respective category, it would be considered adequate reason to institute regular/continuous monitoring and further investigations.

(j) * the 24-hour limit may not be exceeded more than three times in one year;

(k) ** 24-hour limit may not be exceeded more than three times in one year micrograms/m3

(l) *** Not to be exceeded more than once per year average concentration

(m)***In coversion of units from ppm to mg/m^3 and vice versa shall use guidelines set out under Part II of the Fifth Schedule.

(b) Table 2: Ambient Air Quality at Property Boundary for General Pollutants

	Pollutant	Time weighted Average	Property Boundary
1	Particulate matter (PM)	Annual Average*	50 $\mu g/m^3$
		24 hours**	70 $\mu g/m^3$
2.	Oxides of Nitrogen (NO_X);	Annual Average*	80 $\mu g/m^3$
		24 hours**	150 $\mu g/m^3$
3.	Sulphur oxides (SO_X);	Annual Average*	50 $\mu g/m^3$
		24 hours**	125 $\mu g/m^3$
4.	Hydrogen Suphide	24 hours**	50 $\mu g/m^3$
5.	Ammonia	24 hours**	100 $\mu g/m^3$

Note.

(a) For residential premises in designated industrial areas, the above standards do not apply.

(b) For industries in designated residential areas, standards for residential areas shall apply.

(r6,10, 14,25, 35,37,75)

SECOND SCHEDULE

PRIORITY AIR POLLUTANTS

Part I: General Source Pollutants

(a) Particulate matter (Dust, black smoke, smog, aerosols);

(b) Sulphur oxides (SO_X);

(c) Nitrogen oxides (NO_X);

(d) Carbon monoxide (CO)

(e) Carbon dioxide (CO_2);

(f) Hydrocarbons (HC);

(g) Volatile organic Compounds(VOC);

(h) Hydrogen Sulphide (H_2S);

(i) Hydrogen Chloride (HCl);

(j) Lead and its compounds;

(k) Mercury vapour (Hg)

(l) Ozone (O_3);

(m) Dioxins and furans (PCDD and PCDF).

Part II: Mobile Source Pollutants

(a) Hydrocarbons (HCs)
(b) Volatile organic Compounds(VOC);
(c) Sulphur dioxide (SO_x)
(d) Nitrogen oxides (NO_x)
(e) Particulates (PM)
(f) Carbon Monoxide (CO)

Part III: Greenhouse gases(GHG)

(a) Carbon dioxide (CO_2);
(b) Methane (CH_4);
(c) Nitrous oxides (N_2O);
(d) Hydrofluorocarbons (HCFCs);
(e) Perfluorocarbons (PFCs); and
(f) Sulphur hexafluoride (SF_6).

A12 EMCA WATER QUALITY REGULATIONS

- FIRST SCHEDULE - QUALITY STANDARDS FOR SOURCES OF DOMESTIC WATER
- SECOND SCHEDULE – WATER QUALITY MONITORING FOR DOMESTIC WATER SOURCES

FIRST SCHEDULE

QUALITY STANDARDS FOR SOURCES OF DOMESTIC WATER

Parameter	Guide Value (max allowable)
pH	6.5 – 8.5
Suspended solids	30 (mg/L)
Nitrate-NO_3	10 (mg/L)
Ammonia –NH_3	0.5 (mg/L)
Nitrite –NO_2	3 (mg/L)
Total Dissolved Solids	1200 (mg/L)
Scientific name *(E.coli)*	Nil/100 ml
Fluoride	1.5 (mg/L)
Phenols	Nil (mg/L)
Arsenic	0.01 (mg/L)
Cadmium	0.01 (mg/L)
Lead	0.05 (mg/L)
Selenium	0.01 (mg/L)
Copper	0.05 (mg/L)
Zinc	1.5 (mg/L)
Alkyl benzyl sulphonates	0.5 (mg/L)
Permanganate value (PV)	1.0 (mg/L)

Nil means less than limit of detection using prescribed sampling and analytical methods and equipment as determined by the Authority.

And any other parameters as may be prescribed by the Authority from time to time

SECOND SCHEDULE

WATER QUALITY MONITORING FOR SOURCES OF DOMESTIC WATER

Name of Water Source .....

Sample No .....

Description of sample (untreated).....

Date and time sample received in lab .....

Date and time sample was examined .....

Parameter	RESULTS	
	Observed value	Guide value (max allowable)
pH		6.5 -8.5
Suspended solids		30 (mg/L)
Nitrate-NO_3		10 (mg/L)
Ammonia –NH_3		0.5 (mg/L)
Nitrite –NO_2		3 (mg/L)
Total Dissolved Solids		1200 (mg/L)
(E.coli)		Nil/100 ml
Fluoride		1.5 (mg/L)
Phenols		Nil (mg/L)
Arsenic		0.01 (mg/L)
Cadmium		0.01 (mg/L)
Lead		0.05 (mg/L)
Selenium		0.01 (mg/L)
Copper		0.05 (mg/L)
Zinc		1.5 (mg/L)
Alkyl benzyl sulphonates		0.5 (mg/L)
Permanganate value		1.0 (mg/L)

And any other parameters as may be prescribed by the Authority from time to time

Remarks

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A13 NEMA EIA LICENCE OF LEAD EXPERT

FORM 7 (r.15(2))

nema
mazingira yetu | ufuai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/18249

Application Reference No: NEMA/EIA/EL/23884

M/S **Sylvia Mwongeli Mutua**
(individual or firm) of address
P.O. Box 1377 - 00600 Nairobi

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
General
registration number **2426**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **12/30/2022** Expiry Date: **12/31/2023**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified