

ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT REPORT

PROPONENT

UNAITAS SACCO SOCIETY LIMITED
P.O BOX 38721 – 00100
NAIROBI

PROPOSED MIXED-USE DEVELOPMENT

Located on LR. NO. 5989/203 (Nairobi Block 194/100)
within Runda, Karura in Westlands Sub- County, Nairobi County.
GPS Coordinates -1.216453, 36.830067



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REPORT CERTIFICATION

This Environmental and Social Impact Assessment report has been commissioned by Unaitas Sacco Society Limited, hereafter referred to as "The Proponent" for the proposed Mixed-Use Development within Runda area of Westlands Sub County in Nairobi County prepared by team of consultants from Greenlite Consultants Ltd in accordance with the Environmental Management and Coordination Act (EMCA) CAP 387, Kenya's supreme environmental law and the National Constitution.

We, the ***undersigned***, do hereby certify that this Environmental Impact Assessment Project Report was prepared based on the data collected from primary and secondary sources and on the best understanding and interpretation of the facts by the Firm of Experts.

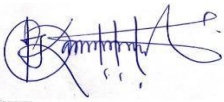
We are pleased to herewith submit the EIA Report to NEMA for approval and licensing consideration.

PROPONENT:

UNAITAS SACCO SOCIETY LIMITED
P.O BOX 38721 – 00100
NAIROBI

NAME	Martin Muhoho
DESIGNATION	Chief Executive Officer
SIGNATURE	
DATE	05.03.2026

CERTIFICATION BY THE EIA CONSULTANTS

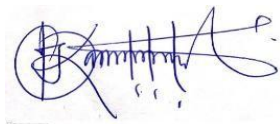
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Date	26/02/2026

DISCLAIMER:

This project report has been prepared in accordance with the terms and conditions of agreement in respect to the provision of consultancy services as per the Environmental Management and Coordination Act (EMCA) 2015, and the Environmental Impact Assessment and Environmental Audit Regulations of 2003 and subject to terms and conditions of the National Environment Management Authority (NEMA).

QUALIFICATION STATEMENT.

The following multi – disciplinary team of Experts among others participated in undertaking and harnessing this Environmental and Social Impact Assessment and developing a competent report for submission to the proponent and to the authority for approval consideration.

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LIST OF ACRONYMS

°c	Degree Celsius
CO _x	carbon oxides
HS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental management coordination act
EMP	Environmental Management Plan
ERP	Emergency Response Plan
Ha	Hectare
Km	Kilometre
LR	Land Reference
NEAPC	National Environment Action Plan Committee
NEC	National Environment Council
NEMA	National Environment Management Authority
NO _x	Nitrogen Oxides
OHS	Occupational Health and Safety
PCC	Public Complaints Committee
PPE	Personal Protective Equipment
PV	Permanent ventilation
RC	Reinforced Concrete
SEM	Sustainable Environmental Management
SERC	Standard and Enforcement Review Committee
Tor	Terms of reference
VOC	Volatile organic compounds
DOSHS	Directorate of Occupational Safety and Health Services
EHS	Environment Health and Safety

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EXECUTIVE SUMMARY

The Proponent

The Proponent of the proposed Mixed-Use development is the UNAITAS Sacco Society Ltd. UNAITAS is a deposit-taking savings and credit cooperative society registered in Kenya in 1993. Originally established for tea farmers, it has expanded its membership to include various groups like small and medium-sized entrepreneurs and salaried employees. Its mission is to provide financial solutions, and its vision is to be the preferred financial solutions provider, guided by values such as innovation and integrity. The Sacco has branches across various towns and cities in the country and its membership is growing by day.

The Proposed Project

The proposed project is a Mixed-Use development which shall comprise of an office block and a strip mall (twin towers). The strip mall will be three storey while the office block will be seven storey. The entire project shall occupy a total of 16,266 SQM. The Proposed strip mall will host a Unaitas branch among other lettable spaces while the office block shall host Unaitas headquarters and data center among the other lettable spaces.

Floor	Description	
	Strip mall	Office Block
Ground	Banking hall, ATM feed and lobby, Petrol Station office,	Unaitas Data Centre and offices, Parking levels 1 & 2.
First	Bank branch offices, Banking Hall,	Parking level 3 & 4 and Utilities
Second	Lettable spaces	Parking level 5 and utilities
Third	Lettable spaces	Lettable office spaces
Fourth – seventh Floors		Lettable office spaces

The objective is to construct a multi-story mixed use development that will host several facilities as detailed on the table above. The development is expected to;

- Act as an income generating venture for the proponent,
- Host the proponent's headquarters (Unaitas Sacco) and a branch
- Open up the area to similar and complementing developments,
- Enhance urban life by incorporating various services,
- Put into a commercial use the already idle parcel of land.

Project Cost and Statutory fees

Project Cost	
System Description	Cost (Ksh.)
Project cost	521,562,856.93
Statutory fees	
0.1 % of the total Project Cost	521,563.00

The indicated statutory fees will be paid to the authority during submission of this EIA Report.

Activities of the Project

The major project activities include but not limited to:

- Site clearance and preparation
- Excavation and appropriate disposal of excavated soil
- Laying of foundation slab and walling
- Construction of the proposed building, plastering and painting
- Storm water and drainage construction
- Connection to utilities electricity, water and sewer line
- Cleaning and removal of construction waste and Landscaping
- Government inspection/occupation certificate and completion of works issued

Project Location and Land Ownership.

The Proposed Mixed Used development project is to be located on L.R. / Parcel No 5989/203 (Nairobi Block 194/100) with Coordinates -1.216453, 36.830067 within Runda area of Westlands Sub- County along Northern Bypass in Nairobi County. The parcel of land belongs to the proponent, Unaitas Sacco Society Ltd as per the attached copy of title deed.

ESIA Rationale and Background

Environmental and Social Impact Assessment is a tool for environmental conservation and has been identified as a key component in new project implementation. According to section 58 of the Environmental Management and Coordination Act (EMCA) No.8 (Amendment) 2015 second schedule 9 (1), and Environmental (Impact Assessment and Audit) regulation, 2003, new projects must undergo Environmental Impact Assessment. The report of the same must be submitted to National Environment Management Authority (NEMA) for approval and issuance of relevant licenses.

In accordance with the 2nd Schedule of the Environmental Management and Coordination Act (No. 8 of 1999) contained in Kenya Gazette Supplement No. 62, Legal Notice 31, the proposed project

requires a full study Environmental and social Impact Assessment owing to its nature, magnitude and sensitivity. It falls under the category of high-risk projects.

Scope Objective and Criteria of the Environmental Impact Assessment EIA)

The broad objective of this study was to carry out detailed Environmental and Social Impact Assessment of the proposed project to ensure that any negative impacts resulting from the proposed project implementation are adequately addressed and mitigated thereof.

The scope of the assessment covered literature review, project description, description of the baseline environment, description of the environmental legislative and regulatory framework, undertaking stakeholder's engagement and public consultation, identification of impacts, proposing mitigation measures, analysis of project alternatives as well as development of an environmental and Social management plan. The output of this work was a full study Environmental and Social Impact Assessment Report.

The Environmental Management and Coordination Act (Amendment) 2015 Cap 387 and its subsequent regulations have been used to guide the methodology and provide the framework for this study. The consultant prepared the study report in accordance with the outline contained in Part IV, Section 18 (1) of the above regulations.

Study Methodology

Based on the magnitude of the proposed Project, the ecological and biophysical aspects of the area, an Environmental and Social Impact Assessment (ESIA) was undertaken to determine the impacts of the project. The general steps followed in Environmental and Social Impact Assessment were as follows:

- Environmental screening, in which the project was identified as among those requiring Environmental Impact Assessment under schedule 2 of EMCA, Cap 387.
- Environmental scoping that identified the key issues to be addressed in the ESIA study report.
- Desktop studies to gather any relevant secondary data and information on the impacts of the project on the environment and possible mitigation measures by making use similar reports for other infrastructural projects that have been undertaken before.
- Public participation by conducting interviews, discussions and public meetings with key stakeholders including members of the community adjacent to the project site to obtain their views on the impacts of the project and possible mitigation measures. This is as per the Kenyan Constitution, EMCA Cap 387, and Multilateral Environmental and Social Impact Guidelines.
- EISA full study report preparation, publication and submission.
- Integration of recommendations of the ESIA study report into the design and implementation of the proposed project.

The consultant, on behalf of the proponent conducted the EIA by incorporating but not limited to the following terms of reference:

- Project description
- Proposed location of the MUD project.
- Description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- Environmental effects of the project including the social and cultural effects, and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.
- EMP proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures.
- Consideration of the viable project alternatives

Table 1: Permits and Surveys required for the Construction and Operations phases

Relevant Surveys / Studies		
Survey	Consultant	Current status
Feasibility Study report	Consulting firm	Undertaken
Ambient Air Quality Report	Licensed Lab	Undertaken
Noise level measurements	EHS / EIA Expert	Undertaken
Geotechnical survey Report	Geologist	Undertaken
Socio – economic Survey	Sociologist	Undertaken
Gender Assessment Report	Gender Specialist	Undertaken
Ecological Survey	Ecologist	Undertaken
Traffic Assessment and management plan	Proponent's Engineer	Undertaken
Relevant Permits / Licenses		
Permit	Issuing Agency	Current status
Change of Use Approval	County Government	Acquired
Approval or building plans	County Government	Acquired
ESIA Certificate of approval	NEMA	To be acquired via this ESIA
Environmental Audit	NEMA	To be done once operational, annually
Registration of workplaces	DOSH	To be acquired towards construction phase.

Single Business Permit	County Government	To be acquired towards construction phase.
Acceleration and deceleration lanes Approval	KURA	Applied for pending approval

Impacts and Mitigation Measures

The proposed project is envisaged to generate direct and indirect impacts of which some are positive while others are negative. The potential Impacts are derived from the proposed project activities, the baseline information as well as the discussions with the community and stakeholders during the public participation exercises.

The positive impacts associated with the proposed development are both short term and long term and include the following:

Long term Positive Impacts;

- Creation of job opportunities within the development
- Creation of space for various commercial ventures and enterprises,
- Increased income to the proponent from lease of units and their operation activities
- Creation of job opportunities during implementation and operational phases
- Revenue generation for both the national and county Governments
- Host the proponent's headquarters (Unaitas Sacco),
- Open up the area to similar and complementing developments,
- Enhance urban life by incorporating various services,
- Put into a commercial use the already idle parcel of land.

Short term positive impacts

- Expand opportunities for small scale businesses in the area
- Creation of job opportunities during construction and implementation phases.
- Market for raw materials

A summary of key negative impacts associated with the proposed MUD and their mitigation measures are listed in table o-1 below

Table o-1: A summary of negative impacts and mitigation measures Possible

Possible Impact	Mitigation Measures
Biodiversity Loss	• Rehabilitation and revegetation of excavated areas after construction • Site clearance and cutting of trees to be restricted to project site only • Minimum disturbances to soil cover and also care will be taken not to damage adjoining vegetation.

	Trees cut to be compensated at the minimum ratio of a 1:2. Planting locations could be either onsite or in the neighbouring Karura forest.
Air emissions/ greenhouse gases	- Vehicles to be used during the construction phase are to be kept in good working condition and should not be the source of excessive fumes - The backup genset onsite to also be well maintained and kept off unless when genuinely needed during power black outs.
Dust pollution	- Dust and air pollution due to dust when excavated material is stock piled, should be limited by means of wetting (particularly in dry season), covering with foil or working in small sections so that the trenches are backfilled with excavated soil within shortest possible period (maximum 2-3 days). - Settled areas within project access routes will be identified and maximum speeds of project vehicles will be established within these areas. iv. Speed limit of 15km per hour will be posted and enforced to reduce airborne fugitive dust caused by vehicular traffic. - Construction materials will be delivered in bulk to avoid repetitive movements of delivery vehicles - Construction materials and stockpiled soils will be covered if they are a source of fugitive dust. - Transportation of materials will be done in such a manner that they do not fly or fall off the vehicle by covering or wetting friable materials.
Generation of solid waste	- A site management plan should be prepared by the proponent prior to construction activities. - This should include designation of appropriate waste storage areas, collection and removal schedule. - Re-useable inorganic waste should be stockpiled away from drainage features and used for infilling where necessary. - Unused construction waste, such as damaged pipes, form work and other construction material, must be disposed at appropriate dumpsite.
Noise Pollution	- Road traffic movements shall be scheduled to normal working hours (08H00 –17H00) - Servicing of all construction vehicles and machinery must be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced - Maintenance of vehicles, equipment and machinery will be regular and up to the satisfaction of the Resident Engineer to keep noise levels at the minimum - Temporary noise pollution due to construction works will be controlled by ensuring proper maintenance of equipment and vehicles

	• Idling of temporary trucks or other equipment will not be permitted during periods of loading / unloading or when they are not in active use. This practice will be enforced especially near residential and sensitive areas.
Impacts on Drainage and flooding	• Installation of adequate and sizeable culverts along the storm drain adjacent the highway and beneath the acceleration and deceleration lanes. • Ensuring that no materials or waste are dumped along the traditional drainage routes within the project area of influence. • Install Permeable Pavers to allow water to soak into the ground rather than running off.
Health and Safety Risks	• Capacity building of the workers and staff; to create awareness towards potential risks and recommended preventive measures through training. This will ensure that health and safety measures are followed. • Conduction of regular drills on fire prevention and control will be encouraged to ensure proper preparedness for fire control. • Comprehensive firefighting equipment should be provided after completion of the project. This should be installed or provided at strategic points. The fire extinguishers should be serviced accordingly i.e. after every six months to ensure effective and efficient performance when required.
Soil Contamination/ pollution	• Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refuelling will be carried out in such a way that spillage of fuels and lubricants does not further contaminate the ground • Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (approved by NEMA)
HIV/AIDs risks	• Contractor to engage approved service provider by National Aids Control Council (NACC) to raise awareness on HIV/ AIDs to workers
Occupational Health and Safety Hazards	• Contractor to develop and safe operating procedures to the workers: this will involve creating detailed written instructions and guidelines that outline the specific steps, precautions, and best practices to be followed when carrying out a particular task or operation. • Safety Training of workers: Provide comprehensive safety training to workers on a regular basis. Ensure workers are aware of potential hazards and understand safety protocols. • Provide and enforce the use of appropriate PPE, including helmets, gloves, safety boots, and high-visibility vests.
Grievances	• Formation of a project grievance redress mechanism to address all project related grievances • Inform local residents about ongoing construction activities and potential hazards. Address community concerns and establish open lines of communication

Sexual Exploitation and Abuse	• Develop and execute a SEA action plan with an Accountability and Response Framework, in line with international guidelines. • Prevention of SEA: Incorporate SEA prevention measures into Codes of Conduct and maintain ongoing staff sensitization. • Response to SEA: establish procedures for survivor-centred referral and assistance, staff reporting mechanisms, and case oversight, investigation, and disciplinary processes. • Engage the community with confidential complaints mechanisms and PSEA awareness-raising, using community-based IEC materials and outreach. • Management and Coordination: Integrate SEA considerations into job descriptions, employment contracts, and performance appraisals; establish policies related to SEA and whistle blower protection; provide training for project management; manage a coordination mechanism for case oversight, investigations, and disciplinary actions; designate trained PSEA focal points and community liaison officers.
Gender Based Violence and Sexual Harassment	• Implement a clear human resources policy against sexual harassment in alignment with national law. • Integrate provisions related to sexual harassment into the employee Code of Conduct (COC) • Appoint human resources personnel responsible for managing reports of sexual harassment according to policy. • Ensure that the Contractor's employees, sub-contractors, sub-consultants, and relevant personnel sign and adhere to a Code of Conduct containing provisions for protection against sexual exploitation and abuse. • Implement provisions that prevent gender-based violence at the community level, including effective community engagement and consultation, especially involving women and girls. • Review project components known to heighten GBV risk at the community level, such as compensation Projects and employment opportunities for women.
Economic displacement	• In case any economic activity be interfered with especially along the road reserve, the affected individuals will be properly notified so that they can plan their relocation with ease.

Table 2 A summary of negative impacts and mitigation measures Possible

Conclusion

It is quite evident that the construction and operation of the proposed mixed-use development will have positive impacts not only to the developer and the local community within the project area but to Kenya in general.

The proposed construction of the development will Create space for various commercial ventures and enterprises, Increased income to the proponent from lease of units and their operation activities and create job opportunities during construction and operational phases, open up the area to similar and complementing developments, enhance urban life by incorporating various services, Put into a commercial use the already idle parcel of land. Additionally, and most importantly, the development will host the proponent's headquarters (Unaitas Sacco) and open up a banking branch which will be a first within the immediate neighborhood.

The identified negative effects, most of which shall be experienced during construction phase are generally minor and can be minimized by appropriate mitigation measures. These include impacts such as increased pressure on the existing infrastructure, pollution (air, water, soil), crime during the construction phase, social crime, and increased waste (solid and liquid) generation, among others. The occupational safety, Health, and Environment is one major issue of great concern both in the construction and operation of the development

The proposed project design has integrated mitigation measures with a view to ensuring compliance with all the applicable laws and procedures, as well as the legislation and regulatory framework that governs environmental management. To this effect, the proposed project shall be constructed in line with the required planning, architectural, and structural standards of the local council, Lands, and MOH. During project implementation and operation, Sustainable Environmental Management (SEM) shall be ensured, avoiding inadequacy/improper use of natural resources.

Considering the positive socio-economic and environmental benefits that will accrue as a result of the proposed development, and the ESIA report as well as other studies having found no major unmitigable impacts to arise from the proposed development, it is our conclusion that the project is environmentally, socially and economically viable. The proponent as well as their contractors and subcontractors will adhere to the mitigation measures recommended herein and will further still implement the proposed Environmental and Social Management and monitoring Plans (ESMMP) and the proponent's ESMS to the letter.

1: INTRODUCTION

1.1 Background and Rationale

The Proponent of the proposed Mixed-Use development is the UNAITAS Sacco Society Ltd. UNAITAS is a deposit-taking savings and credit cooperative society registered in Kenya in 1993. Originally established for tea farmers, it has expanded its membership to include various groups like small and medium-sized entrepreneurs and salaried employees. Its mission is to provide financial solutions, and its vision is to be the preferred financial solutions provider, guided by values such as innovation and integrity. The Sacco has branches across various towns and cities in the country and its membership is growing by day.

The Proposed Mixed Used development project is to be located on L.R. / Parcel No 5989/203 (Nairobi Block 194/100) with Coordinates -1.216453, 36.830067 within Runda area of Westlands Sub-county along Northern Bypass in Nairobi County. The parcel of land belongs to the proponent, Unaitas Sacco Society Ltd as per the attached copy of title deed.

1.2 Nature of the Proposed Project

The proposed project is a Mixed-Use development which shall comprise of an office block and a strip mall. The strip mall will be three storey while the office block will be seven storey. The entire project shall occupy a total of 16,266 SQM. The Proposed strip mall will host a Unaitas branch among other lettable spaces while the office block shall host Unaitas headquarters and data center among the other lettable spaces.

Floor	Description	
	Strip mall	Office Block
Ground	Banking hall, ATM feed and lobby, Petrol Station office,	Unaitas Data Centre and offices, Parking levels 1 & 2.
First	Bank branch offices, Banking Hall,	Parking level 3 & 4 and Utilities
Second	Lettable spaces	Parking level 5 and utilities
Third	Lettable spaces	Lettable office spaces
Fourth – seventh Floors		Lettable office spaces

Table 3 Project description

1.3 Objectives of the Project

The main objective of the proposed construction of the proposed project is to construct a mixed-Use development which would serve as the proponent's head office, data center and a banking branch while still allowing for lettable spaces which would create room for various business, ventures and offices.

The development is expected to;

- Act as an income generating venture for the proponent,
- Host the proponent's headquarters (Unaitas Sacco) and a branch
- Open up the area to similar and complementing developments,
- Enhance urban life by incorporating various services,
- Put into a commercial use the already idle parcel of land.

1.4 Scope objective and criteria of the Environmental Impact Assessment (EIA)

1.4.1 Objective of the Assessment

The broad objective of the study was to carry out detailed Environmental and Social Impact Assessment for the proposed project.

The specific objectives included:

- Identify and assess the anticipated Environmental and Social Impacts of the proposed project
- Identify and analyse alternatives to the proposed project
- Propose and recommend cost effective mitigation measures against negative impacts and enhancement measures for positive impacts to be undertaken during and after the implementation of the proposed projects;
- Verify compliance with national environmental regulations and policies, International policies, and industry best practice and standards.
- Generate baseline data for monitoring and evaluation of how well the mitigation measures have been implemented during the project life cycle;
- Seek the views of affected persons in consultation with the proponent and NEMA;
- Prepare an Environmental and Social Management Plan (ESMP); and,
- Prepare a full study Environmental and Social Impact Assessment Report Assessment.

1.4.2 Scope

The scope for the assessment work included:

Literature Review

The Consultant was to undertake a detailed desktop study on the available literature on the proposed project and its potential impacts. Literature available to the client was provided to the Consultant which served as a starting point for gathering Environmental and Social information pertaining the project.

Description of the Baseline Environment

The Consultant was to collect, analyse and present the baseline information pertaining to the environmental and social situation on the ground, with an emphasis on the downstream environment, namely:

- The Physical Environment
- The Biological Environment
- The Social and Cultural Environment

Detailed Description of the Proposed Project

The Consultant was to describe the proposed project, its geographic location, general layout of facilities, raw materials, products and by-products, wastes to be generated and project alternatives.

Carry out Stakeholders Participation and Consultations

The Consultant was to carry out a detailed stakeholders consultation exercise to collect the views and opinions of stakeholders and the affected population. The consultant would organize forums for public participation (barazas) to enable interested and affected parties to present their concerns and opinions regarding the proposed project. The views of the public would be captured then noted in the ESIA Report. Key Stakeholders were also to be consulted and their views and concerns captured and reported.

Identify Potential Environmental Impacts

The Consultant was to analyse and describe all potential impacts on the environment for the project, environmental, ecological and social impacts, both positive and negative. The impacts were to be further identified according to effective time span, that is, short, medium and long-term.

Occupational Safety & Health Concerns

The Consultant was to analyse and describe all occupational health and safety concerns likely to arise as a result of construction and operations of the proposed facility. Recommendations on corrective and remedial measures to be implemented would then be made under the Environmental and Social Management Plan.

Propose Mitigation Measures for the Identified Negative Impacts

The Consultant was to come up with mitigation measures for the negative impacts that could result from the proposed project.

Development of Environmental and Social Management Plan

The Consultant was to develop a comprehensive Environmental and Social Management Plan (ESMP) which would recommend a set of mitigation, monitoring and institutional measures to eliminate, minimize or reduce to acceptable levels of adverse environmental impacts and/or maximize socio-economic benefits. It would also have cost estimates for implementation of the proposed measures as well as their institutional and financial support.

Development of Environmental and Social Monitoring Plan

The Consultant would give specific descriptions and technical details of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, and definition of thresholds that would signal the need for corrective actions as well as deliver monitoring and reporting procedures.

Environmental and Social Impact Assessment Report

The main output for this exercise - the Environmental and Social Impact Assessment (ESIA) Report. The study report would be in English Language, presented in a manner that is clear and acceptable to all parties.

1.4.3 Terms of Reference (TOR) for the EIA Process

The Environmental Impact Assessment included the necessary specialized assessments to determine the environmental impacts relating to the biophysical, health and safety and socio-economic aspects and to determine the issues of concerns from the relevant authorities and interested and/or affected parties. The appropriate measures to ensure co-existence of the proposed development with other social and economic activities in the area are provided as part of the Environmental Management Action Plan.

The consultants on behalf of the proponent conducted the assessment by committing themselves to the following terms of reference among others: -

- Proposed location of the proposed project.
- Description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- Objectives of the project.
- Technology, procedures and processes to be used in the implementation of the project.
- Materials to be used in the construction and implementation of the project.

- Products, by-products and wastes generated by the project.
- Description of the potentially affected environment.
- Environmental effects of the project including the social and cultural effects, and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.
- Alternative location, technologies and processes available and reasons for preferring the chosen technology and processes.
- Analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies.
- EMP proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures.
- Provision of an Action Plan for the prevention and management of foreseeable accidents and hazardous activities caused by carrying out activities or major industrial and other development activities.
- Measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies.
- Identification of gaps in knowledge and uncertainties which were encountered in compiling the information.
- Economic and social analysis of the project.
- Indication of whether the environment of any other state is likely to be affected and the available alternatives and mitigating measures; and
- Other such matters as the National Environment Management Authority (NEMA) may require.

1.4.4 Methodology outline

The general steps followed in Environmental and Social Impact Assessment were as follows:

- Environmental screening, in which the project was identified as among those requiring Environmental Impact Assessment under schedule 2 of EMCA, Cap 387.
- Environmental scoping that identified the key issues to be addressed in the ESIA study report.
- Desktop studies to gather any relevant secondary data and information on the impacts of the project on the environment and possible mitigation measures by making use similar reports for other infrastructural projects that have been undertaken before.
- Public participation by conducting interviews, discussions and public meetings with key stakeholders including members of the community adjacent to the project site to obtain their

views on the impacts of the project and possible mitigation measures. This is as per the Kenyan Constitution, EMCA Cap 387, and Multilateral Environmental and Social Impact Guidelines.

- EISA full study report preparation, publication and submission.
- Integration of recommendations of the ESIA study report into the design and implementation of the proposed project.

1.4.5 Data collection procedures

First, the Consultant undertook environmental screening and scoping to narrow down into the most critical issues requiring attention in the assessment. The data collection was carried out through questionnaires/standard interview schedules, use of checklists, observations and photography, site visits, consultative meetings and desktop environmental studies, where necessary in the manner specified in Part V (section 31-41) of the Environmental (Impact Assessment and Audit) Regulations, 2003.

1.4.6 EIA organization and structure

The EIA was carried out to full completion within a period of three weeks from the date of undertaking. The Firm's Team leader and lead environmentalist coordinated the day-to-day functions and any related institutional support matters. Otherwise, all formal communications were directed to NEMA through the proponent.

1.4.7 Reporting and documentation

The EIA Report with the findings was compiled in accordance with the guidelines issued by NEMA for such works and was prepared and submitted by the proponent for consideration and approval. The Consultant ensured constant briefing of the client during the exercise.

1.4.8 Responsibilities and undertaking

The Consultant undertook to meet all logistical costs relating to the assignment, including those of production of the report and any other relevant material. The consultant arranged for own transport and travels during the exercise. On the site, the proponent provided all the information required by the consultant.

The output from the consultants includes the following: -

- A Full Study Environmental and Social Impact Assessment report comprising of an executive summary, study approach, project description, baseline conditions, anticipated impacts and proposed mitigation measures, analysis of alternatives, conclusion and recommendations.
- An Environmental and Social Management Plan Outline which also forms part of the report recommendations.

2: PROJECT DESCRIPTION

2.1 Introduction

The proposed project is a Mixed-Use development which shall comprise of an office block and a strip mall. The strip mall will be three storey while the office block will be seven storey. The entire project shall occupy a total of 16,266 SQM. The Proposed strip mall will host a Unaitas branch among other lettable spaces while the office block shall host Unaitas headquarters and data center among the other lettable spaces.

2.2 Location of the project

The Proposed Mixed Used development project is to be located on L.R. / Parcel No 5989/203 (Nairobi Block 194/100) with Coordinates -1.216453, 36.830067 within Runda area of Westlands Sub-county along Northern Bypass in Nairobi County. The parcel of land belongs to the proponent, Unaitas Sacco Society Ltd as per the attached copy of title deed.

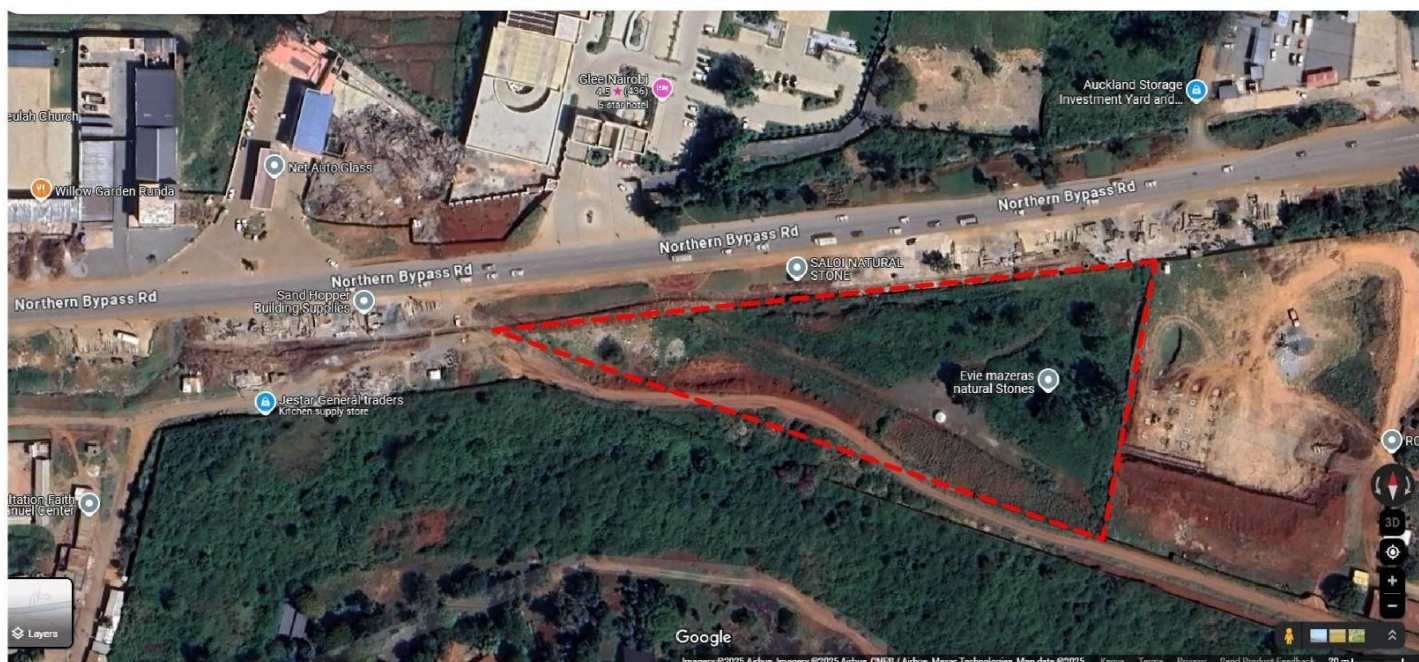


Figure 1: Google maps representation of the project site.

2.3 Project's surrounding

The project site is a neighbor to various facilities and developments such as the Glee Hotel which is directly opposite the site, various car selling yards which dominate the area, the famous Githogoro village and the Runda Estate. Other similar developments within the neighborhood include the Runda mall and other facilities along Kiambu Road and northern bypass. The site is along the Northern bypass approximately 300 Metres from the Kiambu road – Northern bypass four-way junction towards Ruaka direction.



Figure 2: Project immediate surrounding.

2.5 Detailed Project Description

The following is a summary of the key project components

Floor	Description	
	Strip mall	Office Block
Ground	Banking hall, ATM feed and lobby.	Unaitas Data Centre and offices, Parking levels 1 & 2.
First	Bank branch offices, Banking hall,	Parking level 3 & 4 and Utilities
Second	Lettable spaces	Parking level 5 and utilities
Third	Lettable spaces	Lettable office spaces
Fourth – seventh Floors		Lettable office spaces
Auxiliary structures		
A Borehole		Source of Water
Waste Water Treatment Plant		Effluent disposal and Management

Table 4 Detailed Project description

2.6 The Strip Mall

The proposed development shall have a three storey strip mall in one part. The ground and first floors shall be utilized for the purpose of a Unaitas Sacco banking branch. The ground floor shall entirely be a banking hall will an ATM lobby and feed while the first floor shall host a banking hall and branch offices. Both floors are designed to have adequate gender sensitive toilets.

The second floor shall have a lettable shop spaces and a food court while the third and top most floor shall have a rooftop restaurant and food terrace.

2.7 The Office Block

The proposed development shall have a seven storey office block on the other part. The ground floor of the office block shall house the Unaitas Data Centre and offices, and open parking levels 1 & 2. The first floor shall entirely host Parking levels 3 & 4 and Utilities. The Second floor shall host Parking level 5, The third to seventh floors shall all constitute Lettable office spaces.

2.8 Project Cost and Statutory fees

Project Cost	
System Description	Cost (Ksh.)
Project cost	521,562,856.93
Statutory fees	
0.1 % of the total Project Cost	521,563.00

Table 5 Project cost

The indicated statutory fees will be paid to the authority during submission of this EIA Report.

2.9 Project Activities

The project activities for the mixed-use development are comprehensive, covering the entire lifecycle from initial site works to long-term operation and resource management. The activities can be grouped into the following main categories:

2.9.1 Pre - Construction activities

Conducting of surveys and Acquiring relevant permits / approvals

A number of surveys will be conducted prior to the construction of the proposed Project. This will include feasibility study, geology and geotechnical investigations, hydrogeological study, Traffic assessment, Environmental and social Impact Assessment among others as tabulated below.

Relevant Surveys / Studies		
Survey	Consultant	Current status
Feasibility Study report	Consulting firm	Undertaken
Ambient Air Quality Report	Licensed Lab	Undertaken
Noise level measurements	EHS / EIA Expert	Undertaken
Geotechnical survey Report	Geologist	Undertaken
Socio – economic Survey	Sociologist	Undertaken
Gender Assessment Report	Gender Specialist	Undertaken
Ecological Survey	Ecologist	Undertaken
Traffic Assessment and management plan	Proponent's Engineer	Undertaken
Relevant Permits / Licenses		
Permit	Issuing Agency	Current status

Change of Use Approval	County Government	Acquired
Approval or building plans	County Government	Acquired
ESIA Certificate of approval	NEMA	To be acquired via this ESIA
Environmental Audit	NEMA	To be done once operational, annually
Registration of workplaces	DOSH	To be acquired towards construction phase.
Single Business Permit	County Government	To be acquired towards construction phase.
Acceleration and deceleration lanes Approval	KURA	Applied for pending approval

Table 6 Requisite permits and approvals for the proposed MUD

Construction of the Contractor's campsite.

For the purpose of accommodating workers on site, the contractor will construct a worker's camp at a designated area within the project site. Made of temporary structures, the camp shall host among others, contractor's office, the workers' hostels, kitchenette, lounge, store, washroom and bathroom facilities among other necessary facilities. A septic tank shall be built as an effluent management system. The Contractor will however be advised to prioritize the locally available labor to avoid hosting many people within the camp. This local workforce will be residing at their homes and only report to and from work.

Mobilization of construction machinery, equipment, and raw materials

The contractor shall mobilize construction equipment and machinery and identify approved and suitable sources of raw material such as quarries as well as disposal sites for construction/demolition debris. Construction machinery will include, concrete mixes, haulage vehicles, and other handheld equipment. Construction materials include water, sand, and cement, building stones, hardcore stones, crushed rock (gravel/ballast), steel and wooden fixtures and fittings, glass, steel metals, timber, among others. It is advised that the construction materials be sourced from the approved and licensed suppliers.

2.9.2 Construction Activities

Site clearance, excavation and foundation work

The site will be cleared from the current vegetation to initiate development of the project's structures. Excavation activities shall be confined to the project area. The excavated material shall be managed properly and where need be disposed of from the site or be used to backfill areas with depressions. The project site has a relatively small slope gradient but non the less, excavation activities must be

managed properly to prevent soil erosion and mitigate against riparian destruction. The construction works must be contained within the permissible distance from the road reserve.

Site clearance, excavation and foundation works shall be undertaken within the Contractor's Standard Operating Principles for erosion and sedimentation control.

Sourcing of raw materials

There are going to be construction works which will entail construction of the project structure. The required raw materials will include stones, cement, ballast and sand, steel, timber among others. It is the proponent's intention that all these materials will be sourced from existing and approved local quarries within the County and only approved quarries will be used. Cement, timber and iron sheets as well as other associated materials will be sourced from local vendors. It is also assumed that these will most likely be existing production centers that are not limited to supplying the project contractor hence assumed that the necessary assessments for these quarries have already been conducted by their respective operators. Assessments of these quarry areas therefore do not form part of this ESIA. Thus, this support component will not be assessed further in this ESIA.

All materials to be used in the construction of the project shall be tested in accordance with the appropriate National and International standard and requirements to verify their suitability for the purpose. The actual quantities of the various bulk materials required will vary depending on the outcome of the detailed design exercise, yet to be carried out. Sourcing of the materials is the responsibility of the contractor, subject to any constraints imposed by this ESIA report

N/B: All purchases of raw materials as well as award of contract will be undertaken in compliance with the supply chain management policy of the contractor.

Storage of materials

Construction materials will be stored at the project site. This will include stones, ballast, sand, steel, pipes and others. These materials will be carefully stored in a selected area within the Project site. Sensitive raw materials like cement will be stored within a material store to be constructed on site.

Construction schedules

The length of time from the awarding of the construction contract to the commissioning of the Mixed-Use Development is estimated to be approximately twelve months, with work beginning immediately following contract award. Preparatory activities will involve mobilization, construction of access path

and site office etc. The major construction activities, such as construction of the structures will begin immediately.

Masonry, concrete work, and related activities

The construction of the building walls, foundations, floors, pavements, drainage systems, among other components of the project, involves a lot of masonry work and related activities. General masonry and related activities include stone shaping, concrete mixing, plastering, slab construction, construction of foundations, and the erection of building walls and the curing of fresh concrete surfaces. These activities are known to be labor-intensive and are supplemented by machinery such as concrete mixers.

Structural steel works

The building will be reinforced with structural steel for stability. Structural steel works involve steel cutting, welding, and erection. Structural steel works will mainly be used for reinforcement of slabs and beams.

Roofing works

Roofing activities will include raising the roofing materials, such as iron sheets, structural timber trusses, to the roof and fastening the roofing materials to the roof.

Electrical work

Electrical work during the construction of the premises will include the installation of electrical gadgets and appliances, including electrical cables, lighting apparatus, sockets, etc. In addition, there will be other activities involving the use of electricity, such as welding and metal cutting.

Plumbing

Installation of pipework will be done to connect piped water to each room unit, as well as the draining of liquid waste and sewer from the same to the region's sewer line. Plumbing will also be done for the drainage of storm water from the rooftop into the peripheral storm water channels. Plumbing activities will include metal and plastic pipe cuttings, the use of adhesives, metal grinding, and wall drilling, among others.

Construction safety

General Construction Guidelines

Construction work can be particularly hazardous. Personal protective equipment, fire safety, electrical safety, and other precautions are essential for safe construction work. One should follow these guidelines when visiting or working at construction site:

- Do not walk, stand, or work under suspended loads. If you raise a load, be sure to crib, block, or otherwise secure the load as soon as possible.
- Avoid placing unusual strain on equipment or materials.
- Be prepared for unexpected hazards. BE ALERT!

Barriers and Guards

The contractor and project manager should use barriers and guards as necessary to protect employees, and visitors from physical hazards. If any person identifies a mechanical hazard that is not sufficiently protected, s/he should notify the attending foremen, the Health and Safety Advisor or the DOSHS office immediately.

NOTE: Barriers, guards, and warning signs are required to ensure safety against existing hazards.

Types of Barriers and Guards

- Physical barriers and solid separators (dust barriers, hazard barriers, temporary walkways, etc.

NOTE:

- Signs that state DANGER, WARNING, or CAUTION are also important when barriers or guards are necessary.
- Remember to make signs legible, visible, and brief.

Areas that Need Barriers or Guards

Any area that poses a physical threat to workers and/or pedestrians requires barriers or guards. Areas that typically require permanent or temporary protection include the following:

- Elevated platforms,
- Areas with moving machinery,
- Excavation sites,
- Construction sites,
- Temporary wall or floor openings,
- Doors opening into construction

2.9.3 Operation Activities

The main activities of the proposed mixed-use development project will involve the day-to-day business operations within the commercial spaces, shops and offices as well as hospitality activities within the restaurant spaces and food courts. Others will include the banking related activities within the Unaitas Sacco branch and the data centre.

Solid waste management

The proponent will provide facilities for handling solid waste generated within the facility. These will include color-coded dust bins/skips for temporarily holding waste within the premises before final collection by a NEMA-registered company to transport to the designated dumping site. The project design has designated various waste handling sections within the premises.

Cleaning, General repairs, and maintenance

The proponent will be responsible for ensuring regular washing and cleaning of the compound and pavements, etc. Cleaning operations will involve the use of substantial amounts of water, disinfectants, and detergents. The facilities will be repaired and maintained regularly during the operational phase of the project.

2.9.4 Decommissioning Activities

The Project is expected to have a lifespan after which it will either be decommissioned or modernized. At the end of the economic lifetime, the project will be completely demolished or upgraded if the project acquires a new license from the then licensing authorities.

In the occasion that the Project will be decommissioned, the land should be returned close to its original state or improved better than the original state. The following activities will be planned:

- Mobilization of decommissioning equipment
- Temporary site preparation and storage areas where they will temporary store the demolition equipment before they are permanently removed from the project site
- Confirmation of access routes to the project site ability to handle transportation of the decommissioned infrastructure
- Planning for permanent storage of debris or its reuse.
- Organization of waste at the site into reusable, recyclable and debris.

Dismantling of equipment and fixtures

All equipment, including electrical installations, furniture, finishing fixtures, partitions, pipe-work, and sinks, among others, will be dismantled and removed from the site on decommissioning of the project. Priority will be given to the reuse of this equipment in other projects. This will be achieved

through resale of the equipment to other building owners or contractors, or donation of this equipment to charitable institutions.

Site restoration

Once all the waste resulting from demolition and dismantling works is removed from the site, the site will be restored through replenishment of the topsoil and re-vegetation using indigenous plant species.

A detailed decommissioned audit will be undertaken and submitted to NEMA for approval before the project decommissioning. NEMA should issue a decommissioning approval upon which the proponent will be ready to decommissioning works.

2.10 Waste management and Disposal strategy

Waste realized during construction, operation and decommissioning phases of the project will be managed in accordance with the proponent's waste management plan that is attached to this report in line with the NEMA Wastes management guidelines and the County bye-laws. The following are the types of Wastes anticipated from the project;

Effluent/ liquid wastes; Kitchen washing water, ablution block and bathrooms, dhobi sections.

Solid Waste; Cleared vegetation, pegging trash, material leftovers, material bags, scrap metals, filters, welding torches, domestic refuse, and spent electrodes

The above waste can be classified as follows:

- Construction wastes/debris
- Non-Hazardous waste
- Hazardous Waste

Waste disposal

All wastes should be collected and segregated at the site prior to being disposed of properly. This will include:

- *Non – Hazardous Waste*
- *Construction rubbles/ waste or debris* should be collected onsite and be disposed of after completion of construction process.
- *Biodegradable waste:* Food waste should be collected on daily basis and disposal undertaken weekly during both construction and operational phases
- *Combustible waste:* paper, cardboard, wood and derivatives (chipboard, etc.)- This type of wastes should be collected on weekly basis

- *Non-combustible waste*: scrap metal, tins/cans, wire, tires, plastics, glass, etc. Non-combustible waste should be collected and stored at a designated area on the site. These wastes should then be transferred to NEMA designated sites by an approved waste collector for onward disposal.
- *Effluent/ sewage*: All effluent will be managed through a waste water treatment plant proposed to be constructed at a section within the site.

2.11 Land Acquisition and Involuntary Resettlement

The land parcel which the project structures will be developed is privately owned by the proponent. This gives the proponent rights to access and utilize the parcel of lands for the purpose of the proposed project. There will be no displacement of people since the project site is currently vacant with no single activity taking place there-in. There however will be an economic displacement aspect of the various business people operating along the road reserve adjacent to the site. The proponent will issue them a notice in advance to ensure smooth transition and accord them time to identify alternative sites.

2.12 Human Resource Requirements

The construction and operation of the proposed MUD will require a number of employees including Engineers, Electricians, Supervisors, Health and Safety Experts, administrator, Accounts Clerks, Masons, Carpenters, Riggers, Labourers and Security Personnel etc. Depending on the availability of the human resources in the surrounding areas, all semi-skilled and unskilled employment opportunities, where possible, will exclusively be provided to the people of nearby villages. The Proponent can source for the skilled human resource elsewhere. At this ESIA stage, the actual numbers of the various human resource cadres were not determined and therefore not quoted in this ESIA report.

Various policies which will be referred to during engagement of human resource include; labor and working conditions policy, Gender equality and ethnic inclusion policy, zero tolerance to forced labor policy, third party contract policy among others.

3: BASELINE DESCRIPTION OF THE PROJECT AREA

3.1 INTRODUCTION

This chapter describes the current environmental setting within the proposed project's locality. The information presented here has been obtained from primary and secondary sources. It will be noted that baseline surveys on bio-physical and socio-economic aspects are discussed in this section too.

The proposed mixed-use development is to be sited on LR. NO. 5989/203 (Nairobi Block 194/100) within Runda, Karura in Westlands Sub-county, Nairobi County along the northern bypass on GPS coordinates: -1.216453, 36.830067.

The project site is a neighbor to various facilities and developments such as the Glee Hotel which is directly opposite the site, various car selling yards which dominate the area, the famous Githogoro village and the Runda Estate. Other similar developments within the neighborhood include the Runda mall and other facilities along Kiambu Road and northern bypass. The site is along the Northern bypass approximately 300 Metres from the Kiambu road – Northern bypass four-way junction towards Ruaka direction.

3.2 OVERVIEW OF NAIROBI COUNTY.

Nairobi County is the capital and largest city of Kenya, serving as the nation's economic, administrative, and cultural hub. It is the smallest county by area yet most populous (approx. 4.4 million residents). Known as the "Green City in the Sun," it is famously home to the Nairobi National Park, the only wildlife park located within a capital city. Nairobi City County borders Kajiado County to the south, Kiambu County to the north and west, and Machakos County to the east. The city occupies a total land area of approximately 695.1 km², lying between longitudes 36°40' and 37°06' East, and latitudes 1°10' and 1°27' South. Nairobi County is one of the five counties (along with Kiambu, Kajiado, Machakos, and Murang'a) that make up the Nairobi Metropolitan Region, and it is considered an important regional hub for trade, commerce, integration, and economic development.

3.3 PHYSICAL ENVIRONMENT

3.3.1 Climate and rainfall

Nairobi experiences five distinct seasons annually: a summer season from December through March, a long rainy season from March to May, a winter season from June to September, a fall season from September to mid-October, and a short rainy season from mid-October to mid-December. Average high temperatures range from the mid to high 20s Celsius, while overnight lows cool into the mid-

teens Celsius (upper 26°C to low 9°C). The alternating rainy and dry periods shape life and activities in this rapidly growing East African metropolis. More detailed information on precipitation and temperature is provided in the table below.

Table 7: Season-wise Precipitation (mm) Data

Season	Duration (2023)	Total Precipitation (mm)
Summer	December to March	13.04
Long Rain Season (Spring)	March to May	103.96
Winter	June to September	41.41
Autumn (Fall)	September to Mid-October	42.85
Short Rain Season	Mid-October to Mid-December	101.70

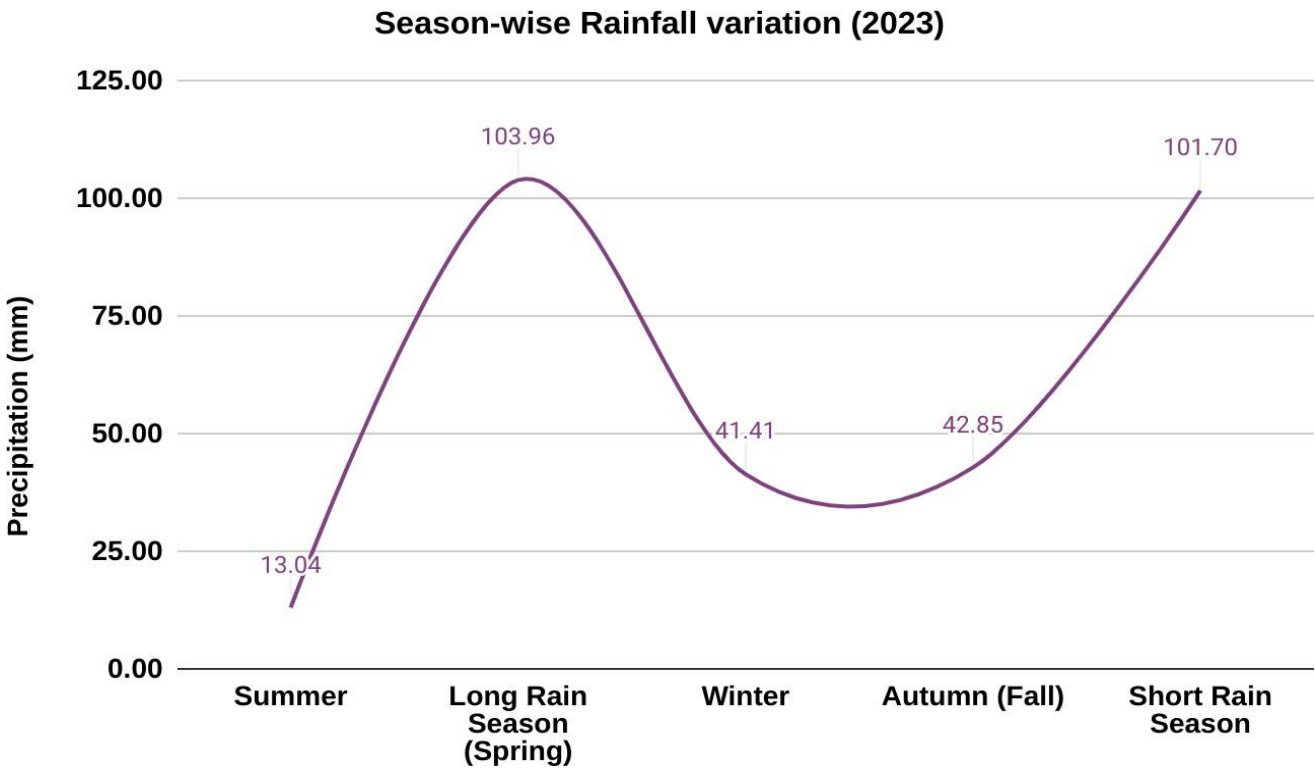


Figure 3: Season-wise Rainfall Variation (2023)

Season	Duration (2023)	Temperature (°C)		
		Min	Max	Average
Summer	December to March	10.00	29.50	19.13
Long Rain Season (Spring)	March to May	10.97	27.83	18.67
Winter	June to September	9.00	26.10	17.00
Autumn (Fall)	September to Mid-October	11.85	28.85	19.20
Short Rain Season	Mid-October to Mid-December	11.30	26.95	18.45

Table 8: Season-wise Temperature (°C).

Data Source: <https://weather.veolia.com/search/history>

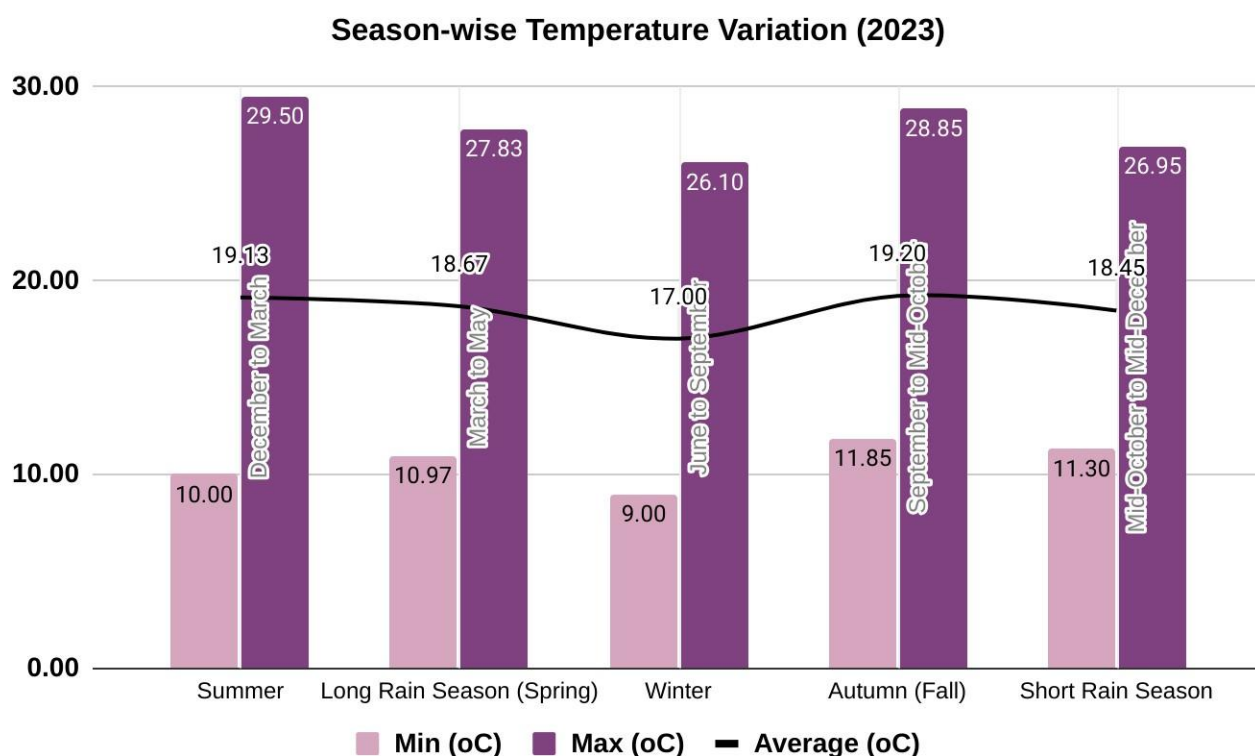


Figure 4: Season-wise Temperature Variations

Nairobi receives 925 mm (36.4 in) of rainfall per year, or 77.1 mm (3 in) per month. On average there are 89 days per year with more than 0.1 mm (0.004 in) of rainfall (precipitation) or 7.4 days with a quantity of rain, sleet, snow etc. per month.

3.3.2 GEOLOGY AND SOILS

i. Geology

The regional geological history described herein covers the Nairobi physiography where the current study area lies. The City of Nairobi lies within a volcanic setting that resulted from rift valley formation. The volcanic rocks overlie metamorphic rocks of Neo-Proterozoic Era. The metamorphic rocks consist of ancient sediments which subsequently were metamorphosed as a result of high temperatures and pressures. The metamorphism is believed to have taken place in the late Precambrian to Lower Palaeozoic times. Following the metamorphism and folding, the area was subjected to erosion lasting for more than 400 million years, leaving an erosion surface dated to end Cretaceous Age. The Nairobi region, including the present study area, is covered by a thick succession of alkaline volcanic rocks and associated tuffs, derived from the Rift Valley region (Saggerson, 1991). The rocks accumulated in the period of mid-Miocene to at least Upper Pleistocene, during which time volcanic activity dominated the geological history of the Nairobi region. According to Saggerson (1991), the volcanic rocks of Nairobi region are estimated to amount in volume to more than 1042 km^3 , and cover an area of about 3000 km^2 . The rocks are a part of a more extensive late Cainozoic (Pliocene) to recent petrographic province that extends outside Kenya, from Ethiopia in the north to Tanzania in the south. The earliest volcanic activity began with the extrusion of the Kapiti phonolite (dated at 13 Ma) onto a dissected erosion surface, which had developed across nearly the entire East African region, in pre-Miocene times (Saggerson and Baker, 1965). Weathered pyroclastic materials are also found associated in the Nairobi area, occurring as interstratifications within the lava succession and in the deep red soils. They were originally fragmentary deposits, a result of violent volcanic activity from a number of centres within the Rift region, during Pleistocene (Saggerson, 1991). The only identified vents include those of the Ngong volcano and its satellites, Ol Esayeiti and Ngoroi, all of which occur to the south – west of Nairobi city. Much of the volcanic material must have, therefore, derived from fissure eruptions from dispersing centres located in the Kikuyu-Limuru area, to the west of Nairobi city and the present study area.

The eastern limits of the flows are characterised by erosional scarps, which form terminal walls of the more resistant lava sheets. Studies have also shown the volcanic material to be mainly phonolitic and trachytic in character; while the pyroclastics are dominantly trachytic and Tuffs (Saggerson and Baker, 1965).

ii. Soils

The project area located along the Northern Bypass and bordering the affluent Runda estate in Nairobi, is characterized primarily by red volcanic soils.

Soil Type & Characteristics: The area features red soil that is well-drained, porous, and considered good for landscaping and construction. This type of soil is common in the coffee-growing regions surrounding Nairobi and is known for being easy to work with.

Drainage and Management: While red soil generally has good drainage, the surrounding areas (like Roysambu/Githogoro border) are known to experience flooding, suggesting that in low-lying areas of the slum, drainage can be a significant issue.



Plate 1: A test pit drilled during geotechnical investigations

3.3.3 Water resources

Nairobi's primary water resources include surface water from the Thika, Ruiru, and Sasumua Dams, and water from Kikuyu Springs, supplemented by groundwater from aquifers. However, there's a persistent water deficit due to increasing demand from population growth, an aging infrastructure, and climate shocks, which are further complicated by challenges like illegal connections, pollution, and a lack of funding for proper maintenance and expansion.

Nairobi is home to several important rivers, including the Nairobi River itself, the Ngong River, and the Mathare River, which are the three main rivers in the region, along with numerous smaller tributaries like the Gitathuru, Riara, and Ruiruaka rivers. These rivers form the Nairobi River Basin and were once vital for the city's ecosystem but are now heavily polluted from domestic and industrial waste, facing significant environmental degradation due to rapid urbanization.

As the capital and most populous city in Kenya, Nairobi has a metropolitan area inhabited by over 4.3 million people, according to the 2019 population census data. The city encompasses approximately 1.5 million housing units spread across 703.9 km², resulting in a high population density of 6,247 individuals per km². The rapid pace of urbanization and population growth in Nairobi has placed immense strain on the city's infrastructure, including its wastewater treatment facilities, struggling to keep up with the increasing demand.

Table 9: Projected Population and Water Demand.

Year	Population	Water Demand (m ³ /d)	Sewage Flow (m ³ /d)
2020 (Present)	4,563,906	1,281,318.29	980,244.93
2022 (Initial)	4,917,354	1,371,544.33	1,100,836.08
2032 (Future)	7,140,111	1,920,734.98	1,468,646.65
2042 (Ultimate)	10,367,607	2,733,543.60	2,090,803.59

3.4 AMBIENT AIR QUALITY

As part of this Environmental and Social Impact Assessment (ESIA), baseline ambient air quality assessment to establish the current environmental conditions before the actualization of the Proposed Construction of the mixed-use development was carried out. The assessment was carried out on 16th December 2025 by **Airsense Environmental Lab Ltd**, a NEMA licensed laboratory and involved measurement of concentration of PM_{2.5}, PM₁₀, SO_x, NO_x, CO, CO₂ and TVOCs.

The air samples for each pollutant were picked from five predetermined points at the project area so as to identify any potential exceedances early on so that corrective measures can be implemented to mitigate pollution levels. The standards used to evaluate the measured values are derived from EMCA (Air Quality) Regulations, 2024 and the WHO ambient air quality standards.

Environmental Management and Co-ordination Act Air Quality Limits.

The limits included in the first schedule of the Air Quality regulations are shown in the Table 1 overleaf below:

Table 10: EMCA Air Quality Limits

EMCA Ambient Air Quality Tolerance Limits		
Pollutant	TWA	Residential Rural & other Areas (µg/m³)
PM ₁₀	24 hours**	50
PM _{2.5}	24 hours	75
Sulfur Dioxide (SO ₂)	24 hours**	125
Nitrogen Dioxide (NO ₂)	24 hours	100
Volatile organic carbon (VOC)	24 hours	600
Carbon Monoxide CO	24 hours**	5
Carbon Dioxide CO ₂	24 hours	5

World Health Organization, Air Quality Guidelines

The World Health Organization (WHO) Air Quality Guidelines (AQG) are intended for worldwide use but have been developed to support actions to achieve air quality that protects public health in different contexts. The International Finance Corporation (IFC), Environmental, Health and Safety Guidelines also refer to WHO standards for ambient air quality. The guidelines are in table below.

Table 11: WHO Air Quality Guidelines

Pollutant	Time Weighted Average	Air Quality Guideline
Sulphur Oxides, Sox	24-Hr Mean	20µg/m ³
Nitrogen Dioxide, NOx	Annual Mean	40µg/m ³
Respirable Particulate Matter (<10µm)	24-Hr Mean	50 µg/m ³
PM_{2.5}	24-Hr Mean	25 µg/m ³

In addition to guideline values, interim targets are given for each pollutant. These are proposed as incremental steps in a progressive reduction of air pollution and are intended for use in areas where pollution is high. These targets aim to promote a shift from high air pollutant concentrations, which have acute and serious health consequences, to lower air pollutant concentrations. If these targets were to be achieved, one could expect significant reductions in risks for acute and chronic health effects from air pollution. Progress towards the guideline values should, however, be the ultimate objective of air quality management and health risk reduction in all areas.

3.4.1 Air Quality measurements Methodology

Persium Pods are advanced, low-cost air quality sensors designed for outdoor and indoor environmental monitoring. They measure up to 12 major pollutants — including gases like NO₂, SO₂, O₃, CO, H₂S, TVOCs as well as particulate matter (PM₁, PM_{2.5}, PM₁₀) — and also record atmospheric parameters such as temperature, humidity, and pressure. They have built-in wind sensors, enabling source apportionment and analysis of pollution dispersion.

Persium Pods can transmit data via multiple connectivity options (e.g, WiFi, 3G/4G LTE, LoRa WAN, GSM), and some models are solar powered for flexible and wide deployment. The hardware is paired with software tools, including dashboards, cloud storage, and visualization platforms. The systems support real-time data presentation, mapping (including heatmaps and wind isobars), and forecasting through machine learning, allowing users including governments, researchers, and planners — to monitor air quality, detect trends, and make informed policy or mitigation decisions.

Table 12: Description of the site – Linear (Identified) sampling points at the Junctions

Monitoring Point	Description of the sampling point	GPS Coordinates
Mp1-Opposite Glee Hotel Along the road	This point is located at the front left of the plot area	1°12'58" S 36°49'46."E
Mp2 -South west of the facility	This point is located at the back left of the Plot Area	1°12'58" S 36°49'10"E
Mp3- South East of the facility	This point is located at the back right of the Plot Area	1°12'58" S 36°49'18"E
Mp4-Boundary outside the gate	This point is located at the Front right of the Plot Area	1°12'28" S 36°49'19"E
Mp5 - Inside the plot	This point is located at the center of the Plot Area	1°12'30" S 36°49'21"E

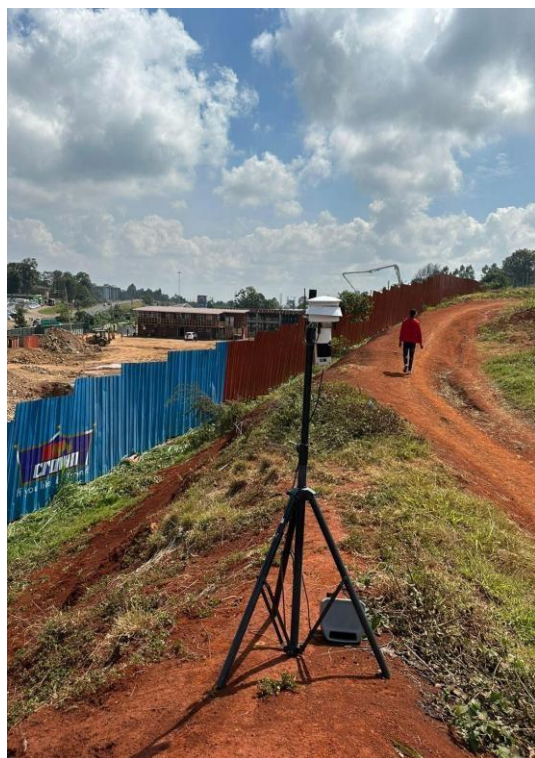


Plate 2: Air Quality Measurements



Plate 3: Air Quality Measurements

3.4.2 Particulate Dust

From the results analysis in tables 4 and 5, the five points sampled for both PM₁₀ and PM_{2.5} were within both the Environmental Management and Co-ordination (Air Quality), Regulations, 2024 and WHO ambient air quality standards.

Table 13: PM₁₀ Analysis Results

Location	Time (hrs)	Concentration µg/m ³			WHO Air Quality Guidelines PM ₁₀	EMCA (Air Quality) Reg. 2014
		AVG	MAX	MIN		
MP1	24hrs	20.93	22.8	19.8	50 µg/m ³ 24hrs	50 µg/m ³ 24hrs
MP2	24hrs	17.44	20.4	14.4		
MP3	24hrs	20.25	22	18.6		
MP4	24hrs	17.32	20.4	14.4		
MP5	24hrs	16.13	18.1	14.1		

Table 14: PM_{2.5} Analysis Results

Location	Time (hrs)	Concentration µg/m ³			WHO Air Quality Guidelines PM ₁₀	EMCA (Air Quality) Reg. 2014
		AVG	MAX	MIN		
MP1	24hrs	20.93	22.8	19.8	25 µg/m ³ 24hrs	75 µg/m ³ 24hrs
MP2	24hrs	17.91	20.4	14.3		
MP3	24hrs	14.4	15	12.8		
MP4	24hrs	14.08	15.8	10.2		
MP5	24hrs	16.2	18.1	14.7		

3.4.3 Oxides of Sulphur (SO₂) and Oxides of Nitrogen (NO₂)

From the results obtained, the five points sampled for SO₂ were within both the Environmental Management and Coordination Act (Air Quality) regulations, 2024 and WHO ambient air quality standards.

The levels of NO₂ results at all the measurement points were within both the Environmental Management and Coordination Act (Air Quality), Regulations, 2024 and WHO ambient air quality standards.

Table 15: NO₂ & SO₂ Analysis Results

Location	Time (hrs)	NO ₂ Concentration µg/m ³	SO ₂ Concentration µg/m ³	EMCA (Air Quality) Reg. 2014	WHO Air Quality Guidelines
MP1	24hrs	20.8	0.3	NO ₂ – 100 µg/m ³ SO ₂ – 125 µg/m ³	NO ₂ - 40 µg/m ³ SO ₂ -20 µg/m ³
MP2	24hrs	26.3	0.8		
MP3	24hrs	17.6	5.7		
MP4	24hrs	11.5	0.9		
MP5	24hrs	13.5	2.6		

3.4.4 VOCs

Total VOC levels were all within the Environmental Management and Coordination Act (Air Quality), Regulations, 2024, and the World Health Organization Air quality guidelines.

Table 16: VOC Analysis Results

Location	Time (hrs)	TOTAL VOC	EMCA (Air Quality) Reg. 2014
MP1	24hrs	5.7	VOC – 600 µg/m ³
MP2	24hrs	5.1	
MP3	24hrs	4.6	
MP4	24hrs	4.1	
MP5	24hrs	7.3	

3.4.5 Carbon Dioxide and Carbon Monoxide (CO₂ & CO)

The levels of both Carbon dioxide and carbon monoxide were within the Environmental Management and Co-ordination Act (Air Quality), Regulations, 2024 at all the measurement points assessed.

Table 17: CO & CO₂ Analysis Results

Location	Time (hrs.)	CO Concentration mg/m ³	CO ₂ Concentration mg/m ³	EMCA (Air Quality) Reg. 2024
		AVG	AVG	
MP1	24hrs	3.4	2.8	5 mg/m ³
MP2	24hrs	2.9	2.3	
MP3	24hrs	2.7	3.9	
MP4	24hrs	3.1	1.8	
MP5	24hrs	3.6	3.5	

3.4.6 Sources of Emission

During the monitoring period, several notable emission sources were identified within and around the project area. The primary source of air pollutants observed during the assessment was vehicular traffic along the Northern bypass, which is located in close proximity to the project plots. Continuous movement of both light and heavy commercial vehicles was recorded throughout the day. Emissions from these vehicles were considered a significant contributor to elevated concentrations of particulate matter and gaseous pollutants, particularly during peak traffic periods.

In addition, pedestrian movement along the pathway adjacent to Limuru Road was observed to contribute to the resuspension of dust particles. Frequent pedestrian activity, in combination with nearby vehicular traffic, resulted in intermittent increases in airborne dust levels in the vicinity of the monitoring locations.

Collectively, these sources were identified as the dominant contributors influencing the prevailing air quality conditions at the time of the assessment.

3.5 BASELINE NOISE MEASUREMENTS

3.5.1 Introduction

This section details noise level survey & mapping undertaken on 16th December 2025. Noise level measurements were taken from five predetermined points at the project area so as to identify the baseline noise levels which will inform project implementation and aid monitoring and future audits.

Noise measurements were performed at the stated areas in accordance with the South African standard SANS 10083:2004, Fifth Edition: "The Measurement and Assessment of Occupational Noise Exposure for Hearing Conservation Purposes". Further afield, A European directive (Directive 2003/10/EC of the European Parliament and the Council), published in 2003, describes the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise). Monitoring was done at a height of 1.5 meters from the ground and 1-meter way from the façade of the noise source. Measurements were carried out at various predetermined locations in the plant. A calibrator was used to check the sensitivity and accuracy of the meter immediately before, during measurement intervals and after the measurement period.

3.5.2 Scope of the Measurements

The noise measurements were taken at various points considered relevant for the ESIA. These points were;

- Opposite Glee Hotel Along the road
- South west of the site
- South East of the facility
- Outside the gate along the Highway
- Within the site

3.5.3 Objectives of the Survey

- To determine the current / typical noise levels within and around the project site.
- To see how the measurements, compare with the Limits
- To fulfil the requirements of the Environmental and Social Impact Assessment of the proposed Construction of the mixed-use development
- To recommend appropriate control measures if required.

3.5.4 Survey Methodology

Noise measurements were performed at the stated areas in accordance with the South African standard SANS 10083:2004, Fifth Edition: "The Measurement and Assessment of Occupational Noise Exposure for Hearing Conservation Purposes". Further afield, A European directive (Directive 2003/10/EC of the European Parliament and the Council), published in 2003, and describes the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise).

Monitoring was done at a height of 1.5 meters from the. The run time was averagely 5 minutes per point. Measurements were carried out at various predetermined locations around the site.

A calibrator was used to check the sensitivity and accuracy of the meter immediately before, during measurements intervals and after the measurement period.

3.5.5 Instrumentation

Noise levels were determined using the following:

- Sound level meter type SVAN 971 Serial No.73447 with Omni - directional microphone was used.
- This integrating sound level meter was calibrated using a multifunctional Acoustic calibrator type 4226 with a standard uncertainty of +/-0.025Db

3.5.6 Measurements Results

The measurement results are expressed as follows:

Table 18: Measurements Results

No	Point of measure	Measurement (dBA)	Code	OEL in dBA	Remarks
1	Opposite Glee Hotel Along the road with vehicles passing by	81.9		90	Below OEL
2	South west of the site	49.2		90	Below OEL
3	South East of the facility	56.3		90	Below OEL
4	Outside the gate along the Highway With vehicles passing by	81.1		90	Below OEL
5	Within the site	66.3		90	Below OEL

Legend:

Noise rating	Colour code	Implication
Less than 85dB(A)		No further action required
More than 85dB(A) but less than 90dB(A)		Occupier must develop and implement an effective noise control and hearing conservation programme when within the vicinity of the noise area
More than 90dB(A)		No worker to be exposed to such noise levels. Further, the Occupier must develop and implement an effective noise control and hearing conservation programme

3.5.7 Discussion of Results

Pursuant to the Factories and Other Places of Work (Noise Prevention and Control) Rules, 2005 which requires that where noise in a work place exceeds the continuous equilibrium of 85 dB(A), the occupier must develop and implement an effective noise control and hearing conservation program. The measurements revealed a normal working environment with no foreseeable adverse health effects that could arise due to noise exposure.

The measurements were within the occupational exposure limits – 8Hr Time Weighted Average. With regard to the hierarchy of hazard controls, noise risk factors would be controlled as follows:

Engineering controls

Machinery or plant in the workplace should be installed in such a way that the lowest possible noise is emitted when it is in operation. The occupier should also carry out regular inspection and maintenance of machines and installations to ensure that noise emission is prevented or controlled.

Administrative controls

The impact of high noise levels on workers will be minimized by limiting their exposure time. This can be achieved by rotating them.

Selection of Ear Protectors

The selection of proper ear protectors is key to ensuring that the protectors are effective in reducing noise impact. The following factors are considered in selecting a suitable ear protector:

- It must adequately attenuate noise levels to below 90dB (A) but not “over protect” an employee. Overprotection can lead to health and safety hazards such as worker not hearing safety warnings within the workplace.
- The attenuation values of different types of hearing protectors should be obtained by contacting the appropriate manufacturer of the type of PPE.

Ear protectors are available in two basic forms: earmuffs and earplugs. Either have an assigned Noise Reduction Rating (NRR) which gauges the adequacy of the hearing protector’s attenuation or rather the noise reducing capacity. The NRR was developed by USEPA (United States Environmental Protection Agency). The USEPA requires that the NRR be printed on the packaging of each hearing protector.

The NRR of a hearing protector will reduce the noise exposure by its rating. However, it is important to note that the calculation on reduction of noise exposure is true if only the original TWA exposure was arrived at with a noise measuring instrument in reading in the C scale. When A weighting is used as in this survey, a slight adjustment will be carried out: 7dB must first be subtracted from the hearing protector’s NRR; this number is then subtracted from the TWA exposure.

A good hearing protector should attenuate sound to between 75dB (A) to 80dB (A).

3.6 BIOLOGICAL ENVIRONMENT – ECOLOGY

3.6.1 Ecological Conditions

Nairobi County faces environmental challenges from rapid urbanization, including severe air and water pollution caused by vehicle emissions, industrial discharge, and waste disposal. The county's ecological conditions are characterized by the deterioration of air quality and the pollution of rivers and riparian zones, which are also impacted by climate change factors like increased flooding. To address these issues, Nairobi County is implementing regulatory frameworks, monitoring programs, and strategic partnerships to improve air quality, manage waste, and promote sustainable practice.

The project site, located along the Northern Bypass and neighboring the affluent Runda estate in Nairobi, is characterized by a fragile and rapidly changing ecology marked by intense urban pressure, environmental degradation, and proximity to protected, green areas like Karura Forest.

3.6.2 Biodiversity

The project area, which is within Runda estate and bordering the northern edge of Karura Forest in Nairobi, is part of an urban ecosystem heavily influenced by this major green space. Biodiversity in this area is largely defined by the edge effects of Karura Forest, offering a mix of indigenous and planted flora that supports local fauna, alongside the challenges of high-density urban settlement.

- **Flora:** The ecosystem includes a blend of planted forests (often featuring eucalyptus, cypress, and pine) and indigenous trees that have regenerated.
- **Fauna:** The area supports a range of urban-adapted fauna, including diverse birdlife, snakes, and insects. Karura is known to support small mammals, though specific, isolated data on Githogoro alone is sparse.

Mapping of Land use practices and other studies undertaken shows that biodiversity within the project area of influence, has reduced in both composition and density over time with anthropogenic activities such as illegal encroachment, poor effluent management, and urbanization has been the major cause of reduced biodiversity.

3.6.3 Biodiversity survey

A comprehensive biodiversity survey was carried out by the consultants as one of the ESIA field work activities. Coordinated by the consultancy's lead ecologist, the exercise was aimed at developing a comprehensive checklist of flora and fauna species within the project's area of influence that would

be affected by the project's development. This would also inform project implementation in a manner that will least affect biodiversity and also act as a monitoring checklist for future audits and surveys.

3.6.3.1 Floral diversity survey

Line transects were systematically established within the project area. Plants along each side of the established lines were identified and listed to generate plant diversity of the project area. No endangered or threatened plant was listed during the exercise. A detailed checklist of the identified floral diversity is attached below.

Table 19: The plants species that were recorded within the project area of influence.

Identified Plant species				
	Botanical name	Common or Local name	Distribution	Status
1	<i>Croton megalocarpus</i>	Kenya croton / Mukinduri	Tree	Least concern
2	<i>Lantana Camara</i>	Lantana / Mukigi	Herb	Least Concern
3	<i>Grevillea robusta</i>	Silky oak / Mukima / mubariti	Tree	Least Concern
4	<i>Cyprus alternifolius</i>	Umbrella Sedge	Grass	Least Concern
5	<i>Solanum mauritianum</i>	Wild tobacco	Shrub	Least Concern
6	<i>Xanthium strumarium</i>	Episil / Cocklebur	Herb	Least Concern
7	<i>Markhamia lutea</i>	Muu / Kyoo / Siala	Tree	Least Concern
8	<i>Senna siamea</i>	Mukengele	Tree	Least Concern
9	<i>Vachellia seyal</i>	Mugaa / Red Acacia	Tree	Least Concern
10	<i>Ipomoea wightii</i>	Morning glory / Nyakinyoro	Herb	Least Concern
11.	<i>Cyperus rotundus</i>	Nutgrass, Masinde, Ndago	Grass	Least Concern
12	<i>spathodea campanulata</i>	African tulip tree	Tree	Not Listed
13	<i>Ocimum gratissimum</i>	African Basil / Mūkandū	Herb	Least concern
14	<i>Vitex fischeri</i>	Meru oak	Tree	Least Concern
15	<i>Baccharoides lasiopus</i>	Muhasha	Shrub	Least Concern
16	<i>Parthenium hysterophorus</i>	Congress grass / Carrot weed	Grass	Least concern
17	<i>Solanum campylacanthum</i>	Ndongu	Herb	Least Concern
18	<i>Erigeron bonariensis</i>	Fleabane	Herb	Least Concern
19	<i>Crotalaria pallida</i>	Rattlepod	Herb	Least Concern
20	<i>Lantana viburnoides</i>	Lantana	Herb	Least Concern
21	<i>Biancaea decapetala</i>	Mubage	Tree	Least concern
22	<i>Cymbopogon citratus</i>	Lemon grass	Grass	Least concern
23	<i>Ipomoea cairica</i>	Railway creeper	Herb	Least concern
24	<i>Verbena brasiliensis</i>	Brazilian Vervain	Herb	Least concern
25	<i>Plantago major</i>	Common Plantain	Herb	Least concern
26	<i>Tagetes minuta</i>	Wild Marigold	Herb	Least concern
27	<i>Vitis coignetiae</i>	Crimson Glory Vine	Herb	Least concern
28	<i>Senna siamea</i>	Mukengele, Muvao	Tree	Least concern
29	<i>Cenchrus purpureus</i>	Elephant grass	Grass	Least concern

30	<i>Manihot esculenta</i>	Cassava	Food crop	
31	<i>Ageratum conyzoides</i>	Gathenge / Billygoat weed	Herb	Least Concern
32	<i>Launaea hafunensis</i>	False lettuce	Herb	Least concern
33	<i>Acanthospermum australe</i>	Sheepbur	Herb	Least concern
34	<i>Casuarina cunninghamiana</i>	River oak / Mvinje	Tree	Least Concern
35	<i>solanum incanum</i>	Sodom apple or bitter apple	Shrub	Least Concern
36	<i>senna didymobotrya</i>	African senna (<i>Mwinu</i>)	Herb	Least Concern
37	<i>Sphaeropteris cooperi</i>	Australian Tree Fern	Tree	Least concern
38	<i>Zea mays</i>	Corn / maize	Food Crop	



Plate 4: Cat's claw (Mubage) and Lantana



Plate 5: African Basil (Mükandü) and Railway Creeper



Plate 6: Muu / Kyoo / Siala and Meru Oak



Plate 7: Morning Glory and Rattlepod



Plate 8: Lemon Grass and Wild Tobacco

3.6.3.2 Fauna diversity survey

A combination of point counts and line transects were used to determine species diversity within the site and the project area of influence. Desktop study was also employed to help understand the fauna diversity of the project area. The biodiversity survey exercise, did not spot any key faunal species on site save for butterflies and passing birds which could not be identified.

Desktop studies however identified that the larger project area, Runda, shares a similar ecosystem with nearby Karura Forest, supporting a variety of fauna including birds, small mammals, and reptiles. Common species in the area include monkeys, bush babies, brush-tailed porcupines, genets, and duikers. The area is also known for birdlife such as the African Red-rumped Swallow.

The project site being adjacent a very busy highway, the Northern bypass and neighboring within a highly developed neighborhood hosts no notable faunal species.

3.7 Socio – economic Baseline

This section presents the socio-economic baseline conditions of the project area and its zone of influence to establish the human environment within which the proposed Mixed-Use Development will be implemented. Understanding existing social and economic characteristics is critical for: Identifying sensitive receptors, predicting potential project impacts, designing appropriate mitigation measures, and enhancing positive socio-economic outcomes. Baseline data was obtained through site observations, stakeholder consultations, secondary literature including the Nairobi City County Integrated Development Plan (CIDP) 2023–2027, 2019 Kenya Population and Housing Census (KNBS), and professional field assessments.

3.2.1 Settlement Patterns and Land Use

The Project area exhibits characteristics of a rapidly urbanizing settlement, including informal and semi-permanent housing, increasing commercialization along access corridors, high residential density, and mixed and often incompatible land uses.

Settlement pattern in Githogoro reflects growing pressure on land due to rural-urban migration and proximity to Nairobi. Land use is predominantly residential, with small-scale businesses, religious institutions, eateries, and community facilities. Increased and unplanned development of the area have contributed to strain on infrastructure, particularly in drainage, waste management, and transport systems.



Plate 9: Some human settlements within the area

3.7.2 Demographic Characteristics

According to the 2019 Kenya Population and Housing Census, Nairobi City County had a population of approximately 4.4 million persons, making it the most populous urban county in Kenya.

The county continues to experience high in-migration due to employment opportunities, education, and commercial activity.

According to the Nairobi CIDP (2023–2027), the county continues to experience strong population growth, which has intensified demand for housing, infrastructure, utilities, and social services, particularly in peri-urban settlements such as Githogoro. The population is predominantly youthful, creating strong demand for employment opportunities, education facilities, and affordable housing. High population in the area has caused pressure on existing social amenities.

3.7.3 Economic Activities and Livelihoods

The local economy is largely informal and service-oriented. Common livelihood activities observed within and around the project area include small retail shops, Food kiosks and makeshift eateries, transport services, and hotel and hospitality establishments, small-scale trading (activities observed include Mpesa shops, open air market, shops, supermarkets, butcheries, artisanal work, service provision and a few industries), and rental income due to its proximity to Nairobi CBD necessitating need for increased housing to accommodate rising population. Other key businesses within the area include hotels and car yards.

Proximity to Nairobi gives them access to income-generating opportunities but it also means a higher cost of living. Unemployment remains a notable concern among the youth in the project neighborhood, consistent with broader county trends emphasizing the need for private-sector investment to stimulate job creation. The proposed mixed-use development, therefore, has strong potential to contribute positively through direct and indirect employment through skilled and unskilled labour demand, increased commercial space, and economic stimulation of the area.



Plate 10: Some business outside the project site.

3.7.4 Social Infrastructure

Within the project area, several community-support facilities were observed, including religious institutions such as a church and mosque/madrassa, and informal learning environments. A community library was also sighted, reflecting the county's prioritization of expansion of educational infrastructure to support its growing population.



Plate 11: A community library near the project site



Plate 12: A Church and A Mosque near the project site

These facilities are an indication of a socially cohesive and culturally diverse community. Although these amenities serve as important symbols of social interactions, increased population growth continues to exert pressure on available services, indicating a need for more facilities.

No culturally sensitive heritage features were identified within the immediate project footprint during the site assessment.

3.7.5 Water and Sanitation

A community water project serving Githogoro village was identified near the project site, demonstrating localized efforts to improve water access. The area is largely challenged in terms of water supply and some people have taken into boreholes drilling for water supply.



Plate 13: A community water project within Githogoro village.

Despite efforts to localize water access, high demand due to urbanization has put pressure on the existing facilities leading to water rationing. Rapid population has also led to inadequate sanitation infrastructure within the immediate project and the larger county. Open disposal of raw sewer is evident within the project locality.



Plate 14: Raw sewage within the project neighborhood

Raw sewage sighted during the site visits is an indication of reliance on informal drainage systems. This mismanagement of wastewater poses major risks such as foul odours, public health hazards, contamination of surface and groundwater and degradation of the environment. These conditions heighten the importance of integrating robust sewerage and drainage systems within the proposed development.

3.7.6 Solid Waste Management

Solid waste management within the project area is visibly constrained. Field observations indicate that solid waste is crudely disposed, reflecting gaps in collection services, disposal infrastructure, or community awareness.

Poor waste handling can attract disease vectors, obstruct drainage channels, and contribute to environmental pollution. The CIDP identifies improved waste management as a key priority due to rising waste volumes associated with population growth and economic activity.



Plate 15: Poorly Managed Waste in the project neighborhood

The proposed project will be expected to implement a structured waste segregation, collection, and disposal systems compliant with Nairobi City County regulations and as per the Solid waste regulations.

3.7.7 Security and Social Stability

The security of the area reflects that of peri-urban settlements near major metropolitan areas. It is closely linked to the population demographics and economic disparities. Security dynamics in the area are influenced by; high population density, youth unemployment, informal housing patterns, economic disparities, and proximity to major transport corridors. The presence of local structures, including the Chief's and Assistant Chief's offices, reflects established governance mechanisms at the community level. These offices play a critical role in: conflict resolution, community mobilization and public participation coordination, and security coordination with national government agencies.

According to the Nairobi City County Integrated Development Plan 2023–2027, insecurity has gone high due to inadequate street lighting, poor road conditions, and limited formal employment

opportunities. However, no major security hotspots were identified within the immediate project footprint during site visits and stakeholder engagements. It is important to coordinate with local administration throughout project implementation.



Plate 16: Administrative Office within the area – The Karura Sublocations office.

3.7.8 Health

Nairobi, as Kenya's capital and largest city, serves as a central hub for the country's health care services. The city hosts a wide range of health care facilities, from high-end private hospitals and specialized clinics to public hospitals and community health centers. Major institutions such as Kenyatta National Hospital, Mbagathi Hospital, and Kenyatta University Teaching and Referral Hospital provide critical services to both Nairobi residents and patients from across the country.

Despite having some of the best medical facilities in Kenya, Nairobi's health care system faces several challenges. Public hospitals often experience overcrowding, understaffing, and shortages of essential medical supplies. Access to quality health care can also vary widely across different parts of the city, with informal settlements and low-income neighborhoods often lacking adequate services.

The private health sector is more advanced and better equipped but is often unaffordable for the majority of Nairobi's population. Additionally, the city continues to deal with a growing burden of non-communicable diseases, such as diabetes and hypertension, alongside infectious diseases like malaria, tuberculosis, and HIV/AIDS.

Environmental indicators of health observed within the project site include presence of open raw sewage, reliance on informal water sources, poorly managed solid waste, noise and poor air quality brought about by dust from unpaved roads, vehicle emissions, burning of fuels and open waste burning. There are also other risks that may come up during different project phases such as equipment-related accidents, exposure to hazardous materials, fire, and electrical safety risks.

There is increasing recognition of the need for better health infrastructure, improved funding, and policy reforms to ensure equitable access to quality health care. Partnerships between government,

private sector, and international organizations are key to building a more inclusive and efficient health system in Nairobi. Within the project area, several hospitals were identified including Wema Children's Access Clinics-Githogoro, Gertrude's Clinic-Runda Baptist, and Mji wa Huruma Dispensary.

3.7.9 Road Network

The proposed project site is strategically located along the Northern Bypass, approximately 300 metres from the Kiambu Road–Northern Bypass four-way junction. The area benefits from connectivity to major transport corridors including: Kiambu Road, Northern Bypass, Runda Road, and Limuru Road. These roads enhance accessibility to Nairobi and surrounding towns, supporting commercial and residential expansion. Public transport is the most common mode of transport for use by residents' use of matatus (public minibuses) and boda-bodas (motorcycle taxis).



Plate 17: The northern bypass road adjacent the project site

The project's proximity to major roads is expected to facilitate efficient movement of construction materials, labour, and future occupants while reducing travel times.

3.7.10 Electricity and Energy

Electricity coverage in Nairobi County has expanded significantly in recent years due to national rural electrification programs and metropolitan grid extensions, improving access for households, institutions, and businesses. The type of cooking fuel used by households is related to the socio-economic status of households/individuals. High level energy sources are cleaner but cost more and are used by households with higher levels of income compared with simpler sources of fuel, mainly firewood, which are mainly used by households with a lower socio-economic profile.

For the proposed development, a dedicated transformer will be installed by Kenya Power and Lighting Company (KPLC). The Proponent has already submitted the required applications and is actively following up on the connection process. During construction, the contractor will maintain a diesel generator set onsite to provide reliable temporary power pending grid connection. Apart from KPLC, a back up generator will be installed to ensure continuity of operations during power outages during the operational phase.

The Proponent is advised to install a Solar Photovoltaic (PV) system to reduce electricity costs, enhance energy reliability, lower dependence on grid power, and contribute to reduction of greenhouse gas emissions.



Plate 18: Electricity line passing through the project site

3.7.11 Vulnerable and Marginalized Groups

Githogoro area, is a rapidly developing suburb that, like many urban areas, is home to various vulnerable and marginalized groups. These populations face unique challenges that impact their social, economic, and health outcomes. Some of the identified Vulnerable and marginalized groups or people in Githogoro include:

- **Children and Youth in Street Situations:** Children and youth who find themselves in street situations in Nairobi, including areas like Githogoro, often face significant health and social challenges. Factors such as exposure to material, psycho-social, and behavioral risks contribute to health inequalities among these groups.
- **Residents of Informal Settlements:** Githogoro hosts informal settlements where residents, particularly marginalized child-headed households, persons with disabilities, and isolated older adults, face challenges related to health, education, and access to basic services.

3.7.12 Gender Issues

Culture, literacy levels and religion dictate gender issues which are reinforced by society values, norms and roles to males and female. These disparities including marginalization of women in education, income and property rights and lack of credit in turn will dictate the levels of participation in decision making and roles played as well as contribution of resources during and after construction of the proposed energy recovery project.

4: RELEVANT POLICY, LEGISLATIVE AND REGULATORY FRAMEWORK

4.1 Introduction

There is a growing concern in Kenya and at global level that many forms of development activities cause damage to the environment. Development activities have the potential to damage the natural resources upon which the economies are based. A major national challenge today is how to maintain sustainable development without damaging the environment. The environmental impact assessment is a useful tool for protection of the environment from the negative effects of developmental activities.

These legal obligations relating to EIA which covers all proposed enterprises, including firms, industries, warehouse, factories, petrol stations, power stations, quarries, mines and any ongoing projects specified under the second schedule of EMCA. There are other legislations to be complied with in the project and include those discussed below. These have been selectively reviewed to ensure that the project complies environmentally as required by the country's constitution.

4.2 The Constitution Of Kenya, 2010

The Constitution of Kenya has taken on board various issues that are related to environmental management. Article 42 of the Bill of Rights contained in the Constitution provides that 'every Kenyan has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures. Part 2 of Chapter 5 of the constitution is dedicated to Environment and Natural Resources. Article 69 in Part 2 provides that the state shall provide and encourage efforts towards sustainable use of natural resources, increasing of the national forest cover public participation in the management, protection and conservation of the environment, protection of genetic resources and biodiversity, environmental impact assessment, environmental audit and monitoring of the environment, etc.

Relevance: *This ESIA has ensured a comprehensive public participation exercise in compliance with the requirements of the constitution. The project proponent has undertaken a comprehensive public participation exercise through the NGAO offices to ensure that the members of public and especially those around the site have been well involved. The proponent and their contractor will be expected to ensure environmental protection throughout the project cycle.*

4.3 Relevant Policies

4.3.1 The Kenya Vision 2030

Kenya Vision 2030 is the country's development Programme from 2008 to 2030. It was launched on 10 June 2008 and its aim is to help transform Kenya into a newly industrialized, middle-income country with an aimed annual growth of 10 % by 2030. Developed through an all-inclusive and participatory stakeholder consultative process, involving Kenyans from all parts of the country, the Vision is based on three "pillars": Economic, Social, and Political. It calls for promoting environmental conservation and pollution and waste management, through the application of the right economic incentives in development initiatives.

Relevance: *The proposed project is in line with the Vision 2030 by contributing to sustainable development.*

4.3.2 Bottom-up Agenda

The Fourth Medium Term Plan 2023-2027 runs on the theme: "Bottom-Up Economic Transformation Agenda for Inclusive Growth", which focuses on achieving the Bottom-Up Economic Transformation Agenda (BETA) and builds on the achievements and Lessons learnt from the implementation of the

The objectives of the MTP IV will be achieved through targeted investments in five core pillars, namely: Agriculture; Micro, Small, and Medium Enterprise (MSME) Economy; Housing and Settlement; Healthcare; and Digital Superhighway and Creative Economy.

Relevance: *The proposed mixed-use development embodies the Bottom-Up Economic Transformation Agenda by promoting environmental sustainability, social equity, economic opportunity, and improved quality of life particularly for underserved urban populations.*

4.3.3 National Environment Policy, 2014

This Policy seeks to achieve a better quality of life for present and future generations by promoting the sustainable management and use of the environment and natural resources. To achieve this goal, the Policy outlines several key objectives. First, it aims to establish a comprehensive framework for integrated planning and sustainable management of Kenya's environmental and natural assets. It also seeks to strengthen the legal and institutional structures responsible for coordinating and overseeing environmental and resource-related matters, ensuring a more effective and cohesive approach.

Sustainable use and conservation of Kenya's unique terrestrial and aquatic ecosystems are central to the Policy, recognizing their vital role in supporting economic growth and improving livelihoods across the country. To support these efforts, the Policy promotes investment in research and capacity

development, as well as the adoption of innovative environmental management tools. These tools include incentives and disincentives, total economic valuation, sustainability indicators, Strategic Environmental Assessments (SEAs), Environmental Impact Assessments (EIAs), and environmental audits.

Relevance; *The undertaking of this Environmental Impact Assessment reflects the project's adherence to the requirements set out in this policy.*

4.3.4 National Land Policy 2009

The National Land Policy, 2009 was adopted to provide a framework for the sustainable management and use of land resources in Kenya. Prior to its enactment, Kenya faced numerous challenges such as land tenure insecurity, informal settlements, encroachment on riparian and public land, and land-related conflicts. The policy addresses historical injustices, guides land use planning, and promotes equitable access to land for all Kenyans. It underpins the Constitution of Kenya, 2010, especially Chapter 5 (Land and Environment), and informs subsequent laws including the Land Act 2012, Land Registration Act, 2012, and Community Land Act, 2016.

The overall objective of the National Land Policy is to secure rights over land and provide for sustainable growth, investment and the reduction of poverty in line with the Government's overall development objectives. Specifically, the policy shall offer a framework of policies and laws designed to ensure the maintenance of a system of land administration and management that will provide:

- All citizens with the opportunity to access and beneficially occupy and use land;
- Economically viable, socially equitable and environmentally sustainable allocation and use of land;
- Efficient, effective and economical operation of land markets;
- Efficient and effective utilization of land and land-based resources; and
- Efficient and transparent land dispute resolution mechanisms.

Relevance: *The National Land Policy will play a critical guiding role in the implementation of the proposed Project. Its provisions will influence planning, land acquisition, settlement regularization, and environmental protection.*

4.3.5 National Climate Change Action Plan (NCCAP, 2023–2027)

The NCCAP (2023–2027) is the third action plan under Kenya's climate policy framework and supports the implementation of the Climate Change Act, 2023. It outlines the priority climate actions Kenya will pursue over a five-year period to meet its Nationally Determined Contributions (NDCs) under the Paris Agreement. Key Pillars include:

- Climate adaptation and resilience building;
- Climate change mitigation through reduced greenhouse gas emissions;
- Mainstreaming climate change into national and county planning;
- Climate finance mobilization;
- Enhanced stakeholder engagement and capacity building

The NCCRS and NCCAP serve as guiding frameworks that promote sustainable, climate-resilient development.

Relevance: *The proposed project supports these national priorities by enhancing urban climate resilience and reducing urban emissions and environmental risks.*

4.4 Legal and Regulatory Framework

4.4.1 The Environmental Management and coordination Act (EMCA), 2015

The Environmental Management and Co-ordination Act (EMCA) is an Act of Parliament that establishes a legal and institutional framework for effective environmental management in Kenya. It serves as an umbrella law aimed at enhancing the coordination of various sectoral statutes related to the environment. As the principal environmental legislation in the country, EMCA affirms that every individual has the right to a clean and healthy environment. If this right is being, or is likely to be, violated, individuals have the right to seek legal redress.

To uphold this right, Part (VI) of the Act (Section 58) mandates that proponents of projects listed in the Second Schedule conduct Environmental Impact Assessment (EIA) and submit the EIA report to the National Environment Management Authority (NEMA) in the prescribed format, including the required information and fee. Additionally, Section 68 of the Act requires operators of existing projects to conduct environmental audits to assess their compliance with the commitments made in the EIA. Both the EIA and environmental audit reports must be submitted to NEMA for review and appropriate action.

Some of the Subsidiary EMCA Cap. 387 legislations relating to this project include:

4.4.1.1 Environmental impact assessment and audit regulations 2015

Established in 2003 and reviewed these regulations provide the objectives and guidelines for carrying out an EIA and an EA. These regulations which apply hand in hand with the EMCA Act of 1999 / 2015 requires any project proponent before commencement of the project activities to have an EIA done on the same and a license awarded by NEMA so as to ensure sound and effective environmental management.

Under the same regulations, regulation 4(1) prohibits project proponents implementing projects with negative environmental impacts.

The Environmental Impact Assessment and Audit Regulations state in Regulation 3 that 'the regulation shall apply to all policies, plans, programs, and activities specified in Part IV, V and the Second schedule of the Act.

Relevance: *This ESIA undertaking is in compliance with the provisions of this regulations. The proponent and their contractor are expected to undertake environmental audits on annual basis from the first year of operation.*

4.4.1.2 EMCA (Air quality) Regulations, 2024

Introduced in 2024, the Air Quality Regulations focus on improving ambient air quality and adding provisions for mobile and stationary source emissions. The Regulations provide for prevention, control and abatement of air pollution to ensure clean and healthy air. They apply to internal combustion engines, premises, places, processes, operations or works to which the provisions of the EMCA and the Regulations made apply. The regulation is a significant improvement of the 2014 Regulations and introduces various improvements including emission testing from mobile sources.

Relevance: *The project implementers shall ensure full compliance with the applicable Air Quality Regulations by conducting regular maintenance of machinery and equipment, as well as routine monitoring and measurement of atmospheric emissions to ensure adherence to permissible limits.*

4.4.1.3 EMCA (Waste Management) Regulations, 2024 (Legal Notice No. 178 of 2024)

The regulation operates under the Environmental Management and Coordination Act to provide a framework for the management of waste and abatement of pollution guaranteed under Article 42 of the Constitution and statutory guarantees of ensuring clean, safe and sustainable environment for all

people. The regulations apply to the handling, storage, transportation, segregation and destruction of waste by providing for guidance, procedures and standards for environmental governance to ensure compliance in the waste management sector.

Relevance: *The proponent and their contractor will develop and implement the Waste Management Plan in compliance with the provisions of this regulation.*

4.4.1.4 EMCA (Water Quality) Regulations, 2024 (Legal Notice No. 177 of 2024)

The regulations provide for the prevention of water pollution and protection of sources of water and apply to drinking water, water used for industrial purposes, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife and water used for any other purposes. They establish standards for wastewater management to ensure clean and healthy water resources and provision of standards for water for different uses. Section 5. A waste generator shall collect, segregate and dispose the waste in the manner provided in regulation 6 of these Regulations.

Relevance: *The proponent shall construct a waste water management plant for the purpose of effluent disposal within the site. During the operation phase, the proponent will be expected to be acquiring effluent discharge licenses from the authority on annual basis.*

4.4.1.5 EMCA (Noise and Excessive Vibration Pollution Control) Regulations, 2009

These regulations prohibit any person from making or causing any loud, unreasonable, unnecessary, or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. It also stipulates the factors to be considered when determining the amount of noise produced from various sources. The regulations further provide the permissible noise levels within different neighborhoods at different times. For the proposed project, Zone A noise permissible levels presented in Table below shall apply.

Table 20: Zone A Permissible Noise Levels.

Zone, Type and Description		Sound Limits dB (A)		Noise Rating Levels (NR)	
		Day	Night	Day	Night
A	Silent	40	35	30	25

Relevance: *Project work should be planned in a way that limits excessive noise and vibration, and ensure no works at night.*

4.4.2 Water (Amendment) Act (No. 13 of 2024)

The Water (Amendment) Act, 2024 is a critical piece of legislation enacted to enhance the regulation, management, protection, and sustainable development of Kenya's water resources and sewerage services. This Act reinforces the framework for water governance and aligns water sector management with principles of environmental conservation, public health, and sustainable development. A central feature of the Act is the establishment of the Water Resources Authority (WRA), a statutory body mandated to regulate the use and management of water resources across the country. The Authority is responsible for issuing water permits, monitoring water use compliance, protecting catchment areas, and enforcing pollution control measures. The Act explicitly prohibits a range of activities that may harm water resources. These include:

- Obstruction, interference with, or diversion of any watercourse or water resource without lawful authority;
- Disposal or discharge of any form of waste including rubbish, effluent, trade waste, or any offensive matter into or near a water resource in a manner that causes or is likely to cause pollution;
- Unauthorized use of water resources or construction of infrastructure is likely to alter natural water flows without necessary approvals from WRA.

Relevance: Key aspects of relevance include:

- *No unauthorized discharges of construction-related waste, chemicals, or runoff enter a water body.*
- *Securing the necessary permits and approvals from WRA before undertaking any works that involve abstraction such as borehole drilling;*
- *Implementing best practices in erosion control, stormwater management, and sediment containment to prevent water pollution;*
- *Designing and operating the project infrastructure in a manner that aligns with water quality standards and catchment protection goals.*

4.4.3 Sustainable Waste Management Act, 2024

This is an Act of Parliament to establish the legal and institutional framework for the sustainable management of waste; ensure the realization of the constitutional provision on the right to a clean and healthy environment under article 42 of the Constitution and for connected purposes. The objects of this Act shall be to:

- Promote sustainable waste management;
- Improve the health of all Kenyans by ensuring a clean and healthy environment;
- Reduce air, land, fresh water and marine pollution;
- Promote and ensure the effective delivery of waste services.

Section 12. Waste classification and segregation (1) All public and private sector entities shall segregate nonhazardous waste into organic and non-organic fractions. (2) The segregated waste shall be placed in properly labeled and color-coded receptacles, bins, containers and bags Sub section (4) Hazardous waste will be handled and managed as prescribed by the Environmental Management and Co-ordination Act (Cap. 387) and any other relevant written law.

Relevance: *Waste management plans (WMPs) shall be prepared in accordance with this Act to guide waste management throughout the Project lifecycle.*

4.4.4 The Physical and Land Use Planning Act, 2019

This Physical Planning Act, Cap. 286 provides for the preparation and implementation of physical development plans.

Part IV of the act requires developments to;

- ensure orderly physical and land use development;
- ensure optimal land use;
- ensure the proper execution and implementation of approved physical and land use development plans;
- protect and conserve the environment;
- promote public participation in physical and land use development decision-making;
- promote public safety and health;
- ensure orderly and planned building development, planning, design, construction, operation and maintenance; and
- promote the safeguarding of national security.

Relevance: *The proponent bears the responsibility of adhering to established planning regulations by securing all necessary approvals as stipulated under the Physical and Land Use Planning Act. This ensures compliance with legal and procedural requirements governing land use, development control, and spatial planning within the project area.*

4.4.5 Workers Injury Benefit Act (WIBA), 2007

The Workers Injury Benefit Act (WIBA), 2007 is an Act of Parliament to provide for compensation to employees for work related injuries and occupational diseases contracted in the course of their employment. It repealed the workmen's compensation Act cap 236. The Act came into operation as from 2nd June 2008. The Act is administered by the Director of Occupational Health and Safety Services in the Ministry of Labour.

Relevance: *The project proponent will be committed to ensuring the safety and welfare of all employees in line with the Act. All employees will be covered by the appropriate insurance policy. All employees will be provided with appropriate personal protective equipment (PPE), and safety protocols will be enforced. In the event of an accident, the company will facilitate full compensation as stipulated under WIBA.*

4.4.6. The County Government Act, 2012

As an agent of the state, the County Government serves the entire County in various ways. Among the functions the following relate to this project;

- Development of urban areas and cities structures
- Refuse removal, refuse dumping and solid waste disposal.
- Storm water management systems in build – up areas and water and sanitation services.
- Fire station services and disaster management.
- Issuance of trade licenses
- Control of air pollution, noise pollution, other public nuisance and outdoor advertising.
- Approval of building plans and other development proposals.

The Act allows the right to access to private property at all times by county Government, its officers and servants for purposes of inspection, maintenance and alteration or repairs of sewers. To ensure sustainability in this regard, the County Government is empowered to make by laws in respect of all such matters as are necessary or desirable for maintenance of health, safety, and well-being of the inhabitants of its area as provided for under the Act.

Relevance: *Through adherence to the County Governments Act, the proposed project not only remains legally compliant but also promotes collaborative governance, transparency, and long-term sustainability in urban development.*

4.4.7 Occupational Safety and Health Act, 2007 (OSHA)

The Occupational Safety and Health Act 2007 applies to all workplaces where any person is at work, whether temporarily or permanently. The purpose of the Act is to secure the safety, health and welfare of persons at work and protect persons other than persons at work against risks to safety and health arising out of, or regarding, the activities of persons at work. Section 19 of the Act provides that an occupier of any premises likely to emit poisonous, harmful, injurious or offensive substances, into the atmosphere shall use the best practicable means to prevent such emissions into the atmosphere and render harmless and inoffensive the substances which may be emitted.

Section 16 provides that no person shall engage in any improper activity or behavior at the workplace, which might create or constitute a hazard to that person or any other person.

Relevance: *It is thus recommended that all Sections of the Act related to this project, such as provision of protective clothing, clean water, and insurance cover are observed to protect all from work related injuries or other health hazards. The report advises the Proponent on safety and health aspects, potential impacts, personnel responsible for implementation and monitoring, frequency of monitoring, and estimated cost, as a basic guideline for the management of Health and Safety issues in the proposed project.*

4.4.8 Climate Change (Amendment) Act, 2023

The Climate Change (Amendment) Act, 2023, builds upon the Climate Change Act, 2016, to strengthen Kenya's legal and institutional framework for addressing the adverse effects of climate change and promoting climate-resilient development. This Amendment Act aligns national climate actions with updated international obligations, particularly under the Paris Agreement, and enhances the roles and responsibilities of both national and county governments in climate governance.

Relevance: *The proposed project shall incorporate climate mitigation strategies and adaptive capacity in particular for vulnerable urban communities living around the site. It shall also embrace use of solar energy as a supplementary source of energy thereby reducing dependence of diesel powered gensets and the overburdened KPLC grid.*

4.4.9 HIV/AIDS Act, 2006

Section 3 of The Act indicated the purpose of the legislation including public awareness and rights to people living with HIV/AIDS. Public awareness shall be achieved through education, public campaigns even at workplaces.

This Act's provisions then give the guidelines unto which the project shall follow in educating workers and staff and providing of incentives to combat HIV/AIDs.

Relevance: *The proponent and the contractor are expected to adhere to the provision of this Act by training workers and locals on HIV / AIDS and also provide incentives to combat the same*

4.4.10 Environment and Land Court Act, 2011

The Environment and Land Court is one of the Courts contemplated by article 162(2). It is a Superior Court and has the same status as the High Court. The court is established under section 4 of the Environment and Land Court Act No. 19 of 2011. It has jurisdiction to hear any other dispute relating to environment and land. The jurisdiction of the court is provided under section 13 of the Act. The Court has original and appellate jurisdiction to hear and determine all disputes in accordance with Article 162(2) (b) of the Constitution and with the provisions of the Act or any other written law relating to environment and land. The court has powers to deal with disputes relating to land administration and management. The court is also empowered to hear cases relating to public, private and community land and contracts or other instruments granting any enforceable interests in land.

Relevance: *In case any dispute related to land or touching on the environmental aspects of the proposed project, this court would be relied upon to listen to the dispute and offer judgement.*

4.4.11 The Employment Amendment Act of 2022

This Act establishes the minimum terms and conditions of employment. The Act sets forth the relationship between an employer and a worker. It defines the benefits, duties and obligations of the employer and the worker, which includes contract of service, prohibition against forced labour, discrimination in employment, sexual harassment, payment of wages, leave, termination, and living amenities.

The Act requires written contracts for jobs longer than three months (Section 9–10), outlining terms like wages, working hours, and duties. Wages must be paid in legal tender and on time, with no unauthorized deductions (Sections 17–20). Employees are entitled to equal pay for equal work (Section 5(5)). (Section 27) and provides for 21 days of annual leave (Section 28), 90 days maternity and 2 weeks paternity leave (Section 29).

Termination must be fair and follow due process (Sections 35–46), with notice or pay in lieu. Redundancy requires proper notice and severance pay (Section 40). Child labor is restricted, with strict

limits on work by persons under 18 (Sections 56–61). Disputes are handled by the Employment and Labour Relations Court (Sections 87–90), and employers must keep records for at least five years (Section 74). Penalties apply for violations of the Act.

Relevance: *During the construction phase of the project, the contractor will engage a combination of full-time and casual workers to support various project activities. In line with national labor laws and international labor standards, the contractor shall be required to strictly observe the prevailing basic minimum conditions of employment, as provided under the Employment Act, 2022 to prevent Child labour.*

4.4.12 Land Act, 2012

In Kenya, land is legally classified into three categories: public land, private land, and community land, as established under the Constitution of Kenya, 2010 and the Land Act, 2012. Individuals or entities may acquire legal ownership and a certificate of title to land through various mechanisms, including:

- Allocation by the national or county government
- Adjudication processes in previously unregistered areas
- Compulsory acquisition for public purposes
- Transfers through sale or donation
- Transmission through inheritance or succession
- Leases exceeding twenty-one years

The law guarantees equal recognition, protection, and enforcement of land rights across all tenure systems, whether freehold or leasehold. This framework ensures that land rights are secure, equitable, and enforceable regardless of the nature or duration of tenure.

Access to land and use on the other hand plays a role in environmental management and sustainability. In recognition of this, the land commission has the obligation under the Act in section 19 to conserve land based natural resources. The commission is supposed to identify ecologically sensitive areas that has endangered or endemic species of flora and fauna, demarcate to prevent environmental degradation or climate change (section 11).

The National Land Commission (NLC) is empowered under Part VIII of the Land Act, 2012 to acquire land on behalf of the national or county governments for public purposes or in the public interest, including infrastructure development, environmental conservation, or other state functions. In instances of such compulsory acquisition, the Act guarantees that just and prompt compensation shall

be paid to all persons holding recognized interests or rights in the affected land. The Act further outlines a clear, consultative, and legally binding procedure that must be followed prior to the issuance of compensation, including:

- Issuance of a notice of intention to acquire
- Public inquiries to determine rightful claimants
- Valuation of the land and any improvements
- Submission and verification of claims
- Agreement or determination of compensation payable

This process ensures that the rights of affected persons are safeguarded, and that any acquisition is conducted in a transparent, fair, and lawful manner in accordance with the principles of due process and equitable treatment. If need be, the commission has the power to create public right of way under section 143 and any institution or person has a right to execute any work, installation or structure on such way leave.

Relevance: *The proposed project site is within a private land owned by the proponent. The proponent has already acquired a copy of title deed as per the Act.*

4.4.13 Public Health Act Cap 242

The Public Health Act (Cap 242) serves as a foundational legal framework governing public health in Kenya. It is particularly focused on preventing and controlling activities that pose risks to human health, including those that result in unsanitary conditions, environmental pollution, and the spread of communicable diseases. The Act defines an environmental nuisance as any condition that causes danger, discomfort, or annoyance to the local population, or is otherwise injurious or hazardous to human health.

Relevance: *To protect both on-site workers and the surrounding communities, the implementing Agencies will develop a Sanitation and Hygiene Management Plans to ensure that health-related risks are minimized, thereby enhancing community well-being and contributing to the overall sustainability of the project.*

4.4.14 The Sexual Offences Act 2006

The Sexual Offences Act, 2006 provides a comprehensive legal framework for the prevention, prosecution, and punishment of all forms of sexual offences in Kenya. It criminalizes a wide range of sexual violations, including rape, defilement, sexual harassment, exploitation, and indecent acts.

Under the Act, employers, including contractors and implementing agencies, have a duty to:

- Prevent and respond to any form of sexual offence occurring within the project environment
- Implement Codes of Conduct for all workers prohibiting SH/SEA
- Establish confidential and accessible Grievance Redress Mechanisms (GRMs) for reporting sexual offences

Relevance: *The Act is particularly relevant during the construction and implementation phases of the project, where interactions between project workers and local community members especially vulnerable groups such as women, girls, and children may expose individuals to the risk of Sexual Harassment (SH), Sexual Exploitation and Abuse (SEA), and Gender-Based Violence (GBV).*

4.4.15 HIV/AIDS Prevention and Control Act (Act No.14 of 2006, Revised in 2012)

The HIV and AIDS Prevention and Control Act (HAPCA), Act No. 14 of 2006, is a key piece of legislation in Kenya aimed at addressing the HIV/AIDS epidemic. It was revised in 2012 to enhance its provisions and align them with evolving public health needs and human rights standards. The Act mandates the government to promote public awareness about HIV/AIDS through comprehensive educational campaigns.

These campaigns are to be conducted in schools, workplaces, prisons, and communities, focusing on scientifically proven approaches and encouraging HIV testing.

Relevance: *Contractor will make provision for Voluntary Counselling and Testing (VCT) services for employees and locals, as well as conduct training on HIV/AIDS awareness programmes throughout project lifecycle*

4.4.16 Kenya National Building Code, 2024.

The Kenya National Building Code, 2024, was officially gazetted as Legal Notice No. 47 on March 1, 2024, under the National Construction Authority Act. It came into effect on March 1, 2025, and replaces the outdated Local Government (Adoptive By-Laws) (Building) Order of 1968. The new code introduces several significant changes to modernize and standardize Kenya's building regulations, focusing on safety, sustainability, and efficiency. New requirements promote green building practices, including energy efficiency, the use of renewable energy, and proper waste and stormwater management. For example, the code encourages climate-responsive design and mandates solar water heating for new homes in some developments. The code creates a clearer framework for obtaining development permissions, environmental impact assessment licenses, and

compliance certificates. It mandates regular building inspections and maintenance to ensure long-term adherence to standards. It emphasizes the professional obligations of various licensed experts, including architects, engineers, and quantity surveyors. Unlicensed and unqualified practitioners face stricter oversight.

Relevance: *The construction activities of the proposed development shall be undertaken in line with the national building code and its guidelines.*

4.4.17 Trade Licensing Act Cap 497

The Act prohibits any person to conduct any business, except under and accordance with the terms of a current license –section 5(1). It also requires that the license so acquire be displayed in a prominent position on the premises in respect of which it was issued and where any license is not displayed the license shall be guilty of an offence and liable to a fine.

Relevance: *The contractor will acquire a license for the site and ensure that the license is displayed to avoid conflict with the relevant authority and to make business run smoothly during construction period. During the operation phase, the business that will lease or operate within the building will be expected to procure trading licenses annually.*

4.5 Relevant Institutional Framework

Several government and regulatory institutions are mandated to oversee various components of environmental management, land use planning, water and sanitation services, housing, and public infrastructure all of which are key to the proposed mixed use development Project. Outlined below represent institutions and their relevance but not limited to;

Institution	Mandate and Relevance
National Environment Management Authority (NEMA)	The National Environment Management Authority (NEMA) is a statutory agency established under the Environmental Management and Coordination Act (EMCA), Cap 387, as the principal instrument of the government in the implementation and coordination of all matters relating to the environment. The NEMA core mandate includes: • Formulating and implementing environmental policies and guidelines. • Supervising and coordinating environmental impact assessments and audits. • Enforcing environmental laws and standards. • Monitoring the state of the environment and issuing Environmental Impact Assessment (EIA) licenses.

	Coordinating environmental protection activities at the national and county levels.
National Construction Authority (NCA)	The National Construction Authority (NCA) is a regulatory body established under the National Construction Authority Act No. 41 of 2011. Its primary mandate is to oversee the construction industry in Kenya by ensuring compliance with quality and safety standards and promoting sustainable construction practices. Relevance: Given the scale and complexity of the proposed project, which includes a strip mall and an office block, the NCA has a pivotal role in ensuring quality construction standards and promoting safety on construction sites.
Nairobi City Water and Sewerage Company (NCWSC)	The Nairobi City Water and Sewerage Company (NCWSC) is a key entity in Kenya's water sector, established to provide water and sewerage services within Nairobi County. Operating under the Water Act of 2016, NCWSC is a wholly owned subsidiary of the Nairobi City County Government. The NCWSC will provide water and sewerage services to the proposed project.
Nairobi City County Government (NCCG)	The Nairobi City County is a creation of the Constitution of Kenya, 2010 and serves as the legal and institutional successor to the defunct City Council of Nairobi. It operates under the framework of the Cities and Urban Areas Act, the County Governments Act, and other relevant legislation governing devolved governance. As the principal devolved unit of administration within Nairobi, the County is mandated to provide a wide range of services to residents within its jurisdiction. These responsibilities include functions previously carried out by the former City Council as well as services that have since been devolved from the national government. Nairobi City County is a key stakeholder in ensuring the successful implementation of the proposed project within county bylaws and planning guidelines.
Department of Social Protection	The Department of Social Protection, under the Ministry of Labour and Social Protection, will play a critical role in ensuring that the social dimensions of the proposed Project are addressed in an inclusive, equitable, and rights-based manner. Its involvement will be essential in

safeguarding the welfare of vulnerable and marginalized groups affected by or benefitting from the proposed project.

Relevance: In areas affected by livelihood disruption (Economic activities), or environmental degradation, the Department will ensure that vulnerable populations are not disproportionately affected and are included in benefit-sharing mechanisms of the proposed development.

Table 21 : Relevant Institutional Framework

5: PUBLIC PARTICIPATION AND STAKEHOLDER ENGAGEMENT

5.1 Introduction

The Public Participation and Consultation process is a legal requirement by the Government of Kenya (GOK) and a mandatory procedure as stipulated in the Constitution and also by EMCA 1999 and EMCA (amendment), 2015 section 58, on Environmental and Social Impact Assessment (ESIA) for the purpose of achieving the fundamental principles of sustainable development. AfDB's Environmental and Social Operational Safeguard 10 (ESS OS 10) therefore recognizes the importance of open and transparent engagement between project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social (E&S) sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

Public participation and consultation in the ESIA process is undertaken to disseminate information to interested and affected parties, stakeholders, to solicit their views and consult them on resettlement and compensation issues surrounding the proposed project. Early consultation helps to manage public expectations concerning the impacts of a project and its expected benefits. Successive consultations are important as they provide opportunities for the Client (UNAITAS Sacco Society Ltd) and stakeholders have inclusiveness decision making process. Kenyan Legislation have laid emphasis on the need for meaningful, continuous consultation and disclosure of project activities at every level of project cycle.

Public participation ensures that due consideration will be given to public values, concerns and preferences when decisions are made. If well conducted SEP is beneficial in various ways:

- Obtains local and traditional knowledge that may be useful for decision-making;
- Facilitates consideration of alternatives, mitigation measures and tradeoffs;
- Ensure that important impacts are not over-looked and benefits are maximized with adverse impacts mitigated;
- Reduce conflict through the early identification of contentious issues;
- Provide opportunity for the public to influence project design in a positive manner;
- Improve transparency and accountability of decision-making; and
- Increase public confidence in the EIA process.

Public participation for this project was conducted through a series of consultative meetings held at the project site between **29th December 2025** and **6th** and **14th January 2026**. Minutes of the meetings and attendance lists are attached in the Annex of this report.

5.2 Objectives of the Stakeholder Engagement Process

Stakeholder consultation is generally useful for gathering environmental data, understanding likely impacts, determining community and individual preferences, selecting project alternatives, and designing viable and sustainable mitigation measure. Stakeholder consultation during ESIA study process main aim is to disseminate information to interested and affected parties (stakeholders), solicit their views and consult on sensitive issues.

The specific aims of the Public Consultation and Participation process during the ESIA study are;

- To inform the local people, leaders and other stakeholders about the proposed mixed-use development;
- To sensitize the community about the project and potential impacts on people and livelihoods
- To promote project ownership by the operator and beneficiaries in order to minimize conflicts;
- Obtain opinions and suggestions from the directly/indirectly affected persons on the Project impacts and appropriate measures to mitigate them and later incorporate to the ESIA Study Report
- Obtain opinions and suggestions on the Project Concepts, Designs, etc. and therefore minimize conflicts and delays in implementation;
- To facilitate the development of appropriate and acceptable entitlements options;
- To increase long term Project sustainability and ownership; and
- To reduce problems of institutional coordination, especially at the different Governments levels through partnerships.

5.3 Stakeholder Identification

Stakeholders were identified based on their proximity to the project site, potential exposure to project impacts, regulatory roles, and influence within the community.

The key stakeholders consulted included:

- National Government Administrative Officers (Senior Chief, Assistant Chief);
- Village elders and community opinion leaders;
- Immediate neighbours;
- Local business community;
- Representatives of community clusters including Githogoro, Phase 4, Phase 5, Matopeni, and Two Rivers;

- The project proponent (Unaitas Sacco Society Ltd);
- Contractor representatives;
- ESIA consultants; and
- Interested members of the public.



Plate 19: The Contractor representatives discussing the project components during one of the meetings.

5.4 Methodology For Stakeholder Engagement

Public participation was conducted primarily through community consultation meetings (public barazas) convened with the support of the NGAO officials at the local level to ensure adequate mobilization and representation. Prior to each public consultation meeting, efforts were made to notify all the stakeholders and to mobilize the public for the exercise.

Public notices announcing the meetings were placed in strategic and publicly accessible locations within the project area seven (7) days before each baraza. The notices provided key details of the meetings including the purpose, venue, date, and time.

Formal invitations were also issued through the offices of the Senior Chief, Highridge Location and the Assistant Chief, Karura Sublocation. Invitation letters were also sent to members of the business community surrounding the project area through the same administrative offices at least seven (7) days prior to the meetings to ensure preparation and attendance for them to air their views and concerns.

Public participation for this project was conducted through a series of consultative meetings held at the project site between **29th December 2025** and **6th** and **14th January 2026**. Minutes of the meetings and attendance lists are attached in the Annex of this report.



Plate 20: Public notices of the PPC Meetings at prominent places within the project vicinity.

5.4.1 Consultation Approach and Process

Public participation meetings (public barazas) were held at the project site with the support of National Government Administrative Officers. During the meetings, the ESIA team and project representatives;

- Presented the proposed project and its key components;

- Explained the ESIA process and the importance of stakeholder input;
- Highlighted anticipated environmental and social impacts;
- Provided an opportunity for participants to ask questions and seek clarification; and
- Recorded stakeholder concerns, recommendations, and expectations for consideration in the ESIA Study.

Open discussions and question-and-answer sessions were held to promote meaningful participation and ensure that views were captured and recorded. To enhance inclusivity the meetings were conducted in English and Kiswahili, allowing participants to express themselves in their preferred language.



Plate 21: The EIA Experts, Team leader during various meetings



Plate 22: The Senior Chief, High ridge location chairing various meetings

The first public participation meeting was held on 29th December 2025 to introduce the proposed project to stakeholders and explain the importance of the process. Stakeholders welcomed the project but raised concerns about drainage management, wastewater control, noise and dust,

employment opportunities, worker safety, traffic, security, and possible displacement of businesses along the road.

The second meeting was held on 6th January 2026. The main agendas of the meeting were to address issues raised during the initial consultation and provide further clarification on the proposed development. The community proposed several CSR initiatives, including construction of a community hall, support for education, provision of furniture for the Chief's office, and development of community sanitation facilities. Stakeholders expressed support for the project subject to adherence to mitigation measures and regulatory compliance.

The third meeting was convened at the same site on 14th January 2026 and focused on resolving outstanding issues from previous engagements. Stakeholders indicating their support for the project.



Plate 23: Members following ongoing Public Participation Meetings

All consultation meetings were documented through detailed minutes and attendance lists for all present (*Minutes and Attendance lists attached at the annex*). ESIA experts, the proponent and the

contractor's team addressed all the questions raised and guaranteed to capture their concerns and recommend appropriate mitigation measures in the final report.



Plate 24: Members unanimously accepting the project.

5.5 Summary of Key Issues raised and responses

Stakeholders generally expressed strong support for the proposed development, citing anticipated benefits such as employment creation, increased business opportunities, and enhanced security.

Issue Raised	Response / Commitment
Employment opportunities for local residents	The contractor committed to prioritizing local labour where feasible.
Dust and noise during construction	Dust will be controlled through water sprinkling, and construction will be limited to permitted daytime hours.
Drainage and wastewater management	Appropriate drainage infrastructure and a wastewater treatment system will be installed.
Worker health and safety	A health and safety framework will be implemented, and injuries will be covered through insurance.
Displacement of roadside businesses	Affected businesses will be notified in advance to allow adequate relocation planning.
Timely payment of workers	Weekly payment arrangements will be maintained in line with contractor policy.

Security		Collaboration with local administration and community structures will enhance site security.
Corporate Responsibility	Social	The proponent committed to reviewing community CSR proposals and providing feedback through the Chief's office

Table 22 Summary of Key Issues raised and responses

5.6 Summary of annexed public participation and stakeholders' engagement documents

The following documents are annexed to this report to serve as evidence of a comprehensive and procedural public consultation and stakeholders engagement process that was followed during the EIA process.

- Sample of NGAO office notification letters
- Samples of invitation letters to key stakeholders and business community
- Minutes of the three public participation meetings
- Attendance lists of the three meetings
- Samples of Duly filled questionnaires for the three meetings

6: ENVIRONMENTAL & SOCIAL IMPACTS DESCRIPTION

6.1 General

Environmental and Social Impact Assessment (ESIA) is used as a tool to guide environmentally sustainable decisions. The proposed project is envisaged to generate direct and indirect impacts of which some are positive while others are negative. Potential impacts discussed in this chapter are also linked to the different stages of the project which are identified as construction, operation and decommissioning. The potential Impacts are derived from the proposed project activities, the baseline information, as well as the discussions with the community and stakeholders during public participation exercise.

6.2 Identification of Environmental Impacts

To identify the potential impacts, the team of experts ensured that the public and key stakeholders were consulted to come up with a detailed list of these impacts. Scoping discussions were held with various interested and affected parties within the project's site environs during the fieldwork. In these discussions key environmental issues relating to project implementing activities were identified. The study team used both structured questionnaires/ interviews and non-structured discussions to solicit for information. The potential impacts of the proposed project are categorized into construction / installation, operational and decommissioning phases as listed below. A detailed EMP in Chapter 9 of this report outlines the mitigation measures considered for each of the listed negative impacts.

6.2.1 Impact severity for planned project activities

The proposed project activities and their impact severity were determined by evaluating the intensity of the impact and the sensitivity of the environmental and social receptors, which is largely subjective but based on the professional judgements of the entire team of specialists. This methodology required assigning of numerical descriptors to the impact intensity, as well as the environmental and social receptors, for each potential impact. The numerical descriptors are 1, 2, 3, or 4; which are equivalent to very low, low, medium or high. The impact severity was then calculated as the product of the two numerical descriptors, which was equivalent to negligible, minor, moderate or major, as indicated in Table 7-1. This approach is a semi-qualitative method designed to provide a broad ranking of the different potential impacts of the project.

6.2.2 Impacts of unplanned events (or contingencies)

Unplanned events which have a potential to occur at the proposed project were identified to include: vehicle accidents, protests, floods or oil spillages, that are difficult to assess within the framework outlined above, because:

- Their intensity is difficult to quantify, since there is a wide range of possible events (i.e. the impact intensity is highly variable); and

- Unplanned events that may result in a severe environmental or social impact usually result in high financial, social and political liabilities and costs to the proponent.

As best environmental practices, the project has substantial built-in controls to avoid such occurrences.

6.2.3 Mitigation and residual significance

The use of mitigation is reported, where appropriate, followed by a description of the residual effects, namely those which remain after the implementation of mitigation measures. The potential impacts are assessed for severity and mitigation measures are designed to reduce this impact severity. The impact severity is then re-assessed, assuming application of the mitigation measures, to derive the residual 'impact severity

6.2.4 Determination of impact severity

Table 23: Magnitude Intensity-Sensitivity receptor Matrix

MAGNITUDE - SENSITIVITY MATRIX			SENSITIVITY OF RECEPTOR			
			Very Low	Low	Medium	High
			1	2	3	4
INTENSITY OF IMPACT	Very Low	1	1 Negligible	2 Minor	3 Minor	4 Minor
	Low	2	2 Minor	4 Minor	6 Moderate	8 Moderate
	Medium	3	3 Minor	6 Moderate	9 Moderate	12 High
	High	4	4 Minor	8 Moderate	12 High	16 High

6.3 Positive impacts of the proposed Project

6.3.1 Job creation and Employment

Throughout the lifetime of the proposed project, job opportunities shall be created, these being the need for casuals and trained personnel during the construction and operation phases. The project will complement the Government's policy of employment creation in line with Vision 2030. The project through the generation of employment will stimulate other economic activities and also enhance the casuals' skill levels through intensive and well-structured technology transfer. Once the project is complete, there will be people who will be employed permanently within the building. This will include managers, Bankers, electricians, technicians, and security officers, among others. Consequently, the employees will indirectly employ people within and around the facility through provision of services such as transportation, tenancy and catering services.

6.3.2 Provision of market for local construction materials

Through the use of locally available materials during the construction phase of the project including cement, steel bars, concrete and ceramic tiles, timber, sand, ballast electrical cables etc., the project will contribute towards growth of the economy by contributing to the gross domestic product. The consumption of these materials, fuel oil and others will attract taxes including VAT which will be payable to the government hence increasing government revenue while the cost of these raw materials will be payable directly to the producers.

6.3.3 Boost of the surrounding business enterprises

The project will employ quite a number of people to work in it. These people will need goods and services to be supplied by the business enterprises within the project area. For instance, motorbikes and local PSVs will be ferrying workers to and from the site. The enterprises within the project area will benefit from increased customer base from construction crew as well as people who will be visiting the energy recovery facility during operational phase of the project.

6.3.4 Transfer of Skills

The project will emphasize on the use of appropriate technology in project development. Technology will also be applied to ensure that the project is furnished with up graded structures as required by the laws of the locals and international standards. The project will employ a substantial number of skilled employees some of whom might not be available in the project locality. Through interactions of the locals with the skilled employees from without the area, they will acquire new skills.

6.3.5 Expansion of local centres

During construction and operation of the proposed project, it is anticipated that the local centres will benefit due to the volumes of people, businesses and transactions that will be carried out within the area. Also, the influx of workers within the project will cause expansion of the local infrastructure e.g. housing. This will contribute to growth and expansion of the centres.

6.3.6 Gains in the local and national economy

The total economic transactions in the area will significantly improve. The quantity of economic activities will increase in both volume and diversification due to this construction in the area. This will translate to direct fiscal revenue through the payment of taxes. The project will also lead to growth of the national economy through increased fiscal revenue through the payment of taxes by people employed either directly or indirectly by the project, and also by companies that service the project directly/indirectly

6.3.7 Climate change mitigation and adaptation

Upon completion, the proposed project proposes to install solar Pv system as its alternative source of power which will enable them avoid reliance on diesel powered gensets and the already overwhelmed

KPLC grid. Solar energy is a clean type of energy. However, Kenya has over relied on fossil fuels for the provision of energy to meet the energy needs. Fossil fuels have been the major culprits on the issue of climate change being caused by the release of greenhouse gases such as CO₂ in the atmosphere. Consequently, solar energy is among the clean sources of energy one of the. As such, the solar PV power will also contribute to reducing the use of fossil fuels resulting in lower greenhouse gases (GHGs) emissions thus promoting the mitigation and adaptation of climate change. It is anticipated that the project will have a carbon sequester or carbon emission reduction.

6.3.8 Security Improvement

Once the project has been implemented a competent security firm will be contracted to man the facility in addition to government police officers. Moreover, the facility will be lit throughout its vicinity. This will greatly boost the security in the project site and its neighboring environs.

6.3.9 Use of appropriate technology

The project will emphasize the use of appropriate technology in the proposed project development. Technology will also be applied to ensure that the project is furnished with upgraded facilities as required by the laws of the locals and international standards.

6.3.10 Poverty reduction

The growth of trading centres in the area, creation of employment opportunities provision of reliable power source, reduced health hazards, creation of market for locally available raw materials among others will consequently lead to poverty reduction among the people.

6.3.11 Optimal Use of the Land

The proposed project will create a high-rise commercial building, the design which has incorporated an optimal use of the available land. Land is a scarce resource in Kenya and through construction of the proposed development will ensure optimal use of land. Land in Kenya is currently a scarce resource and its use should be maximized as well as be executed in such a way that it's sustainable.

6.4 Negative Impacts and their Mitigation Measures

6.4.1 Biodiversity Loss

Project related activities such as excavations, establishment of access routes and clearing of vegetation to pave way for various project structures will greatly contribute to a loss of biodiversity. The loss will not be limited to floral species but also to faunal species thriving within the area as well as the burrowing animals and invertebrates. Biodiversity survey undertaken during the ESIA process established that the larger project area is rich on both flora and fauna that could be affected by the project footprint.

Mitigation Measures

- Rehabilitation and revegetation of excavated areas after construction

- Site clearance and cutting of trees to be restricted to project areas only
- Minimum disturbances to soil cover and also care will be taken not to damage adjoining trees.
- Trees cut to be compensated at the minimum of a 1:2 at basis. Planting locations could be either onsite or in the neighborhood.

6.4.2 Dust Pollution

During construction stage the air quality of the area will be directly affected and made worse by dry, windy and dusty weather when such season is prevalent. The impact will be a major challenge especially during site clearance and structures construction and movement of building materials to and from the site.

The frequent upwelling of dust as consequence of construction may impact on workers causing asthma and other respiratory conditions. Further, increase movement of construction equipment will also increase the emission of pollutants. The people in the immediate project vicinity as well as commuters in open vehicles will be affected directly.

Mitigation Measures.

- To be limited by means of wetting (particularly in dry season), covering with foil or working in small sections so that the trenches are backfilled with excavated soil within shortest possible period (maximum 2-3 days).
- Settled areas within project access routes will be identified and maximum speeds of project vehicles will be established within these areas. iv. Speed limit of 15km per hour will be posted and enforced to reduce airborne fugitive dust caused by vehicular traffic.
- Construction materials will be delivered in bulk to avoid repetitive movements of delivery vehicles
- Construction materials and stockpiled soils will be covered if they are a source of fugitive dust.
- Transportation of materials will be done in such a manner that they do not fly or fall off the vehicle by covering or wetting friable materials.

6.4.3 Air emissions/ greenhouse gases.

Project construction activities will contribute to emissions of pollutants and greenhouse gases. Construction vehicles, equipment and machinery which majorly will be diesel run will generate emissions and generation of greenhouse gases.

Mitigation Measures.

- The proposed Energy Generating Facility shall utilise methane gas (produced by the stabilisation ponds) to generate power and hence reduce greenhouse gases.

- Vehicles to be used during the construction phase are to be kept in good working condition and should not be the source of excessive fumes.

6.4.4 Noise and Excessive Vibration Pollution.

During the construction, there is the potential for permissible/acceptable human noise levels that may be temporarily exceeded due to the operation of Lorries, moving machines and equipment in the working zone of the power project site. To be affected mostly, are the site workers since noise beyond some level is a nuisance if not maintained within acceptable limits.

Mitigation Measures.

- Road traffic movements shall be scheduled to normal working hours (08H00 –17H00)
- Maintenance of vehicles, equipment and machinery will be regular and up to the satisfaction of the Resident Engineer to keep noise levels at the minimum
- Servicing of all construction vehicles and machinery must be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced
- Temporary noise pollution due to construction works will be controlled by ensuring proper maintenance of equipment and vehicles
- Idling of temporary trucks or other equipment will not be permitted during periods of loading / unloading or when they are not in active use. This practice will be enforced especially near residential and sensitive areas.

6.3.5 Soil Compaction, erosion and soil disturbance

The proposed project has a potential to cause soil compaction as heavy machinery will be used for the establishment of panel stands and the transmission line. Clearing land can lead to habitat loss, while the permanent shading from panels can degrade soil health, although some studies show benefits from redirected water. The heavy metals in some photovoltaic panels can contaminate soil and groundwater if not properly handled during construction and decommissioning.

Mitigation Measures

- Plan for soil remediation and restoration after the operational life cycle to return the land to a healthy state.
- Install sustainable drainage systems that manage water runoff and help it to be absorbed into the ground, preventing erosion and flooding
- Implement techniques like planting native grasses or other ground covers to prevent erosion during and after construction and stabilize the soil.

6.4.6 Surface and Ground Water Contamination

The proposed project has the potential to generate storm water and run-off based on the nature of activities that will be carried out and in consideration of the nature of the soils and topography of the proposed site. The project has impacts on receiving surface and ground waters due to wastewater discharge which may not meet the effluent discharge standards include potential changes in pH, dissolved oxygen, nutrient levels, and presence of pollutants. Other pollutants are project related activities such as excavations, leakage of fuels from vehicles, equipment and machinery.

Mitigation Measures

- Vehicles and machine will be properly surfaced and well maintained to reduce risk of potential oil and fuel spills and leakages.
- Waste water from the project to be properly disposed using the available storm drain systems.
- Effluent /wastewater quality will be tested on a regular basis to ensure that its characteristics are within the set standards Set out in the third schedule of Water Quality Regulations 2006

6.4.7 Health and Social Risks

An influx of workers, competing for available jobs with the local community is expected. This may lead to increased crime rate, competition for limited jobs and competition for housing. Increase in risk of sexually transmitted diseases, such as HIV/AIDS, COVID 19 etc. due to influx of migrant workers; solid waste and effluent discharge from construction camps; risk of increase in vectors of schistosomiasis and malaria due to stagnant water associated with construction works.

Mitigation Measures.

- Capacity building of the workers and staff; to create awareness towards potential risks and recommended preventive measures through training.
- The proponent should ensure public health and safety through the following measures: Provide a small section of the construction site with a shed and a water stand where the food can be served to the construction workers to promote hygiene and health of the employees.
- The workers, immediate neighbours and other stakeholders should be sensitized on the dangers and risk associated with the construction works for enhanced self-responsibility on personal safety.
- Appropriate sanitation conveniences should be provided at the site as required in the OSHA, 2007 and echoed in the Public Health Act.
- Regular screening of workers and locals will be implemented.

6.4.8 Solid Waste Generation

This impact is related to the fact that the proposed project will purchase a considerable amount of raw materials during construction phase. Use of these materials is expected to leave a considerable amount of waste. Wrappers of some of the materials will also be a waste after use. Excavations though minimal are also expected to raise a considerable amount of waste piled within the project site.

The facility will be repaired regularly therefore there is some construction materials which will be rendered unusable. Change of mechanical and electrical components among other things fittings will be inevitable during operation. Appropriate waste management systems are called for.

The intensity of this impact is low and the sensitivity of the receptor is medium resulting in a moderate impact severity before mitigations.

Mitigation measures

- An integrated solid waste management system is recommendable.
- Implementation of the annexed waste management plan will be done to mitigate against this impact.
- The proponent will be responsible for efficient management of solid waste generated by the project during its operation. In this regard, the proponent will provide waste handling facilities such as waste bins and skips for temporarily holding domestic waste generated at the site. In addition, the proponent will ensure that such waste is disposed of regularly and appropriately.

6.4.9 Occupational Health and Safety Hazards

There is possibility of accidents occurring in the process of construction. Risk of occurrence of safety hazards and accidents e.g. fires, falls and other accidents, noise and dust exposure, health risks such as HIV/AIDS infection etc. if adequate safeguard measures are not put in place. Handling of the project structures could pose considerable risks to the workers.

Mitigation Measures.

- Contractor to develop and safe operating procedures for the workers: this will involve creating detailed written instructions and guidelines that outline the specific steps, precautions, and best practices to be followed when carrying out a particular task or operation.
- Safety Training of workers: Provide comprehensive safety training to workers on a regular basis. Ensure workers are aware of potential hazards and understand safety protocols.
- Provide and enforce the use of appropriate PPE, including helmets, gloves, safety boots, and high-visibility vests.
- The following extra mitigation measures are also recommended

Table: OSH 2007 Requirements

Registration of the premises	Registration of the premises registration under the Occupational Safety and Health Act, 2007 Laws of Kenya is mandatory
General register	A general register should be kept within the facility as stipulated in Sec 122&123 of the Occupational Safety and Health Act, 2007.
Posting of abstract of Act, rules and notices	There shall be displayed at prominent places within the site the prescribed abstract of the OSHA and the relevant notices as stipulated in section 121 of the OSHA, 2007.
Incidents, accidents and dangerous occurrences.	Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place.
Insurance	Ensure that the premises are insured as per statutory requirements (third party and WIBA)
Safety, health and environment (SHE) policy	Develop, document and display prominently an appropriate SHE policy for construction works
Health and safety committee	Provisions must be put in place for the formation of a Health and Safety Committee, in which the employer and the workers are represented
Sanitary conveniences	Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers
Medical examination	Arrangements must be in place for the medical examination of all construction employees before, during and after termination of employment
Machinery/equipment safety	▪ Ensure that machinery, equipment, personal protective equipment, appliances and hand tools used in construction do comply with the prescribed safety and health standards and be appropriately installed maintained and safeguarded ▪ Ensure that equipment and work tasks are adapted to fit workers and their ability including protection against mental strain
Storage of materials	▪ Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse ▪ Ensure that items are not stored/stacked against weak walls and partitions

Table 24 OSH 2007 Requirements

6.4.10 Risks associated with labour management.

This includes unfair recruitment process, failure to employ the locals or give them an expected share of employment opportunities during the project operation. Mismanagement or mishandling of laborers is also another issue of concern when it comes to labor management.

This could lead to rioting by workers or by locals and have great impacts on the local socio-economic set up of the area.

Mitigation measures

Among others, risks associated with labour management will be managed by ensuring a fair and transparent process, giving employment opportunities to locals especially on casual laborers and ensuring that children below the age of 18 years aren't employed within the facility. There will also be a grievance redress mechanism in place to ensure that workers grievances are addressed appropriately.

The Proponent's labor and workers management policy, policy on child labor as well as Gender equality and ethnic inclusion policy will be implemented to manage this impact. Both policies are attached to this report.

6.4.11 Increased Traffic

The analysis of the potential project impact discussed in this section is related to the fact that during the implementation of project activities, traffic in the area will increase as a result of project related vehicular movements associated with the transportation of project related materials and equipment that will be brought into the project area.

The current traffic level on the road network within the project area is high owing to the busy status of the Northern bypass and the other roads within the area. The additional traffic will therefore not be much noticeable to the local community members. It is not likely to interfere with the community's regular movements since there will be no closure or diversion of roads

Mitigation Measures

- The contractor will prepare and implement a Traffic Management Plan (TMP) in consultation with the county government and traffic police,
- Installation of temporary directional signage, safety barricades, and traffic cones,
- Use variable message boards or fixed signs to alert drivers and pedestrians of construction zones,
- Restrict movement of heavy construction vehicles to off-peak hours (e.g., early morning, late evening),
- The contractor will engage traffic marshals and flagmen to control flow at busy intersections.

6.4.12 Grievances

Grievances from workers, stakeholders and neighboring communities could arise in the course of project development. This could be related to one or more project impacts affecting the aggrieved, improper labor management, as well as poor interpersonal relationships among workers or workers and the project community.

Mitigation Measures.

- Formation of a project grievance redress mechanism to address all project related grievances
- Inform local residents about ongoing construction activities and potential hazards.
- Address community concerns and establish open lines of communication

6.4.13 Pressure on existing water and energy resources

The proposed project will create demand a lot of water and energy during both construction and operation phase. This has a potential of increasing pressure on the existing supplies within the project area.

Mitigation Measures.

- Drilling of a borehole for water supply independence and reduce pressure on the communal water supply.
- The proponent to consider solar installation as an alternative source of energy that is going to not only be cost friendly but also reliable.

6.4.14 Increased Effluent

The proposed mixed-use development will host a number of units all with ablution sections. This ablution sections coupled with other activities such as cleaning will generate considerable quantities of effluent. This could be a burden to the existing sewage management infrastructures with the locality.

Mitigation Measures.

- Making lines more visible with diverters, using specialized tower designs,
- Rerouting lines away from critical habitats.
- Managing vegetation within the right-of-way can help minimize habitat loss and fragmentation.

6.4.15 Gender Based Violence, Sexual Exploitation and Abuse

This risk is based on possibility of gender related conflicts that might be directly or indirectly related to the proposed project. Increased workforce in the area that might lead to the locals being sexually harassed by the visiting workers and vice versa. There's also a possibility of employers soliciting sexual favors from the opposite gender so as to give them preference in job allocations or favouritism.

The project may contribute to the rise of gender-based violence and harassment (GBVH) cases, which may include sexual exploitation and abuse (SEA), sexual harassment (SH), and other forms of violence such as physical, sexual, emotional, and financial control. As outlined in the World Bank Good Practice Note on GBV (2019), GBVH can be exacerbated by resettlement and land redistribution processes and a large influx of male workers.

Mitigation Measures.

- Implement a clear human resources policy against sexual harassment in alignment with national law.
- Integrate provisions related to sexual harassment into the employee Code of Conduct (COC)
- Appoint human resources personnel responsible for managing reports of sexual harassment according to policy.
- Ensure that the Contractor's employees, sub-contractors, sub-consultants, and relevant personnel sign and adhere to a Code of Conduct containing provisions for protection against sexual exploitation and abuse.
- Implement provisions that prevent gender-based violence at the community level, including effective community engagement and consultation, especially involving women and girls.
- Review project components known to heighten GBV risk at the community level, such as compensation Projects and employment opportunities for women.
- Develop and execute a SEA action plan with an Accountability and Response Framework, in line with international guidelines.
- Prevention of SEA: Incorporate SEA prevention measures into Codes of Conduct and maintain ongoing staff sensitization.
- Response to SEA: establish procedures for survivor-centred referral and assistance, staff reporting mechanisms, and case oversight, investigation, and disciplinary processes.
- Engage the community with confidential complaints mechanisms and PSEA awareness-raising, using community-based IEC materials and outreach.
- Management and Coordination: Integrate SEA considerations into job descriptions, employment contracts, and performance appraisals; establish policies related to SEA and whistle blower protection; provide training for project management; manage a

coordination mechanism for case oversight, investigations, and disciplinary actions; designate trained PSEA focal points and community liaison officers.

6.5 Unplanned (Contingency) impacts of the proposed Project

Non routine events and unplanned impacts (also known as Contingency Impacts), have also been considered in this EIA report. These include events such as: -

- Floods
- Failure hazards
- Riots/demonstrations /protests
- Accidents and
- Susceptibility of the project to Climate Change

6.5.1 Floods

Increased rainfall as well as increased storm water could cause unexpected flooding, severe erosion, and water course degradation. Increases in water velocity and volume also result in soil being carried down the slopes and to the project area which is not only relatively flat but also an area known for poor drainage poor storm drain structures. Flood risks may occur due to malfunctioning or structural failure.

Proposed mitigation measures

- Designing the project with consideration of flood estimates
- Re-vegetate cleared up areas;
- Encourage ground cover with deeper roots;
- Respect natural contours so that the construction e.g. of the access roads follows natural contours and avoids natural drainage areas, as these areas are likely to be flooded and cause runoff to be displaced to other sites downstream; and
- Construct project access road parallel to the contour of the land to minimise erosion and reduce the runoff rate more effectively.

6.5.2 Failure hazards/ geological hazards

Failure hazards can be due to; the use of inappropriate construction materials, imbalanced mixture or poor mixture of cement, and use of unqualified engineers employed to carry out the construction works or due to natural disasters such as earthquakes and collapsing.

Proposed mitigation measures

- The proponent will recruit qualified and experienced civil and structural engineers to undertake the construction works;
- The proponent shall undertake a geotechnical survey to inform the design and selection of appropriate technology; and
- Structural designs will be developed in accordance with the building standards.

6.5.3 Riots/ demonstrations /protests

Riots are bound to be expected from labourers if the working conditions will not be favorable. They can also be from the local community if they would feel aggrieved with an aspect within the MUD project. Riots might bring work to a halt and can also lead to destruction of the project structures and thus need for proper grievance redress mechanism so that issues at the site will be amicably resolved without impact on the project progress.

Proposed mitigation measures

- Assign representatives for casual labourers; and
- Appropriate working conditions should be offered.
- Implement the Grievance redress mechanism as annexed.
- Have a stakeholder's engagement plan in place and develop modalities of coexisting with the project adjacent community.

6.5.4 Accidents

During both construction and operational phases, there is potential for incidents and accidents being reported. Construction works will involve a number of activities, operations and machinery that could injure workers. Other major causes of the accidents would be improper use of Personal Protective Equipment (PPE), mechanical faults in equipment or vehicles, health of workers, lack of team coordination, third party interference and careless driving on roads. Injuries could range from those which are minor to possible loss of life.

Proposed mitigation measures

- Health and Safety induction before commencing work on site to all workers;
- Personnel will only undertake tasks for which they are trained/ qualified and a formal permit to work system will be in place;
- Routine toolbox talks will be conducted on different topics for all workers;

- All accidents, near misses and incidents will be recorded and such records maintained as part of a health and safety management programme;
- The required/ appropriate PPE will be provided and will be worn by personnel; and
- Drivers to observe Journey Management Plans.

6.6 Positive Impacts during decommissioning phase

6.6.1 Rehabilitation

Upon decommissioning the project, rehabilitation of the project site will be carried out to restore the site to its original status. This will include the replacement of topsoil and re-vegetation that will lead to improved visual quality of the area.

6.6.2 Employment Opportunities

Several employment opportunities will be created for demolition staff.

6.7 Negative Impacts during decommissioning phase

6.7.1 Solid Waste generation

Demolition of the project buildings and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including metals and panels which will undergo recycling. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate and ammonia, which may be released because of leaching demolition waste, are known to lead to degradation of groundwater quality.

Mitigation measures

- An integrated solid waste management system is recommendable.
- Implementation of the annexed waste management plan will be done to mitigate against this impact.
- The proponent will be responsible for efficient management of solid waste generated by the project during its operation. In this regard, the proponent will provide waste handling facilities such as waste bins and skips for temporarily holding domestic waste generated at the site. In addition, the proponent will ensure that such disposed of regularly and appropriately.

6.7.2 Dust

Some minimal quantities of fugitive dust will be generated during demolition works. When decommission is undertaken the proponent will not need to clean up soil since he will just have to unscrew modules and metallic structure from the trackers and pull out the piles from the trackers.

Mitigation Measures.

- To be limited by means of wetting (particularly in dry season), covering with foil or working in small sections so that the trenches are backfilled with excavated soil within shortest possible period (maximum 2-3 days).
- Settled areas within project access routes will be identified and maximum speeds of project vehicles will be established within these areas. iv. Speed limit of 15km per hour will be posted and enforced to reduce airborne fugitive dust caused by vehicular traffic.
- Construction materials will be delivered in bulk to avoid repetitive movements of delivery vehicles
- Construction materials and stockpiled soils will be covered if they are a source of fugitive dust.
- Transportation of materials will be done in such a manner that they do not fly or fall off the vehicle by covering or wetting friable materials.

6.7.3 Noise and Vibration

The demolition will lead to insignificant deterioration of the acoustic environment within the project site and the surrounding area.

Mitigation Measures.

- Road traffic movements shall be scheduled to normal working hours (08H00 –17H00)
- Maintenance of vehicles, equipment and machinery will be regular and up to the satisfaction of the Resident Engineer to keep noise levels at the minimum
- Servicing of all construction vehicles and machinery must be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced
- Temporary noise pollution due to construction works will be controlled by ensuring proper maintenance of equipment and vehicles
- Idling of temporary trucks or other equipment will not be permitted during periods of loading / unloading or when they are not in active use. This practice will be enforced especially near residential and sensitive areas.

7: ANALYSIS OF PROJECT ALTERNATIVES

This chapter contains an analysis of alternatives in terms of project site, design, construction techniques and “no project alternative”.

7.1 Proposed Development Alternatives

The EIA project report has been prepared for submission to NEMA: facts, findings and recommendations/proposals of which are based on the proposed site, design, materials and the proposed technology. This would help in evaluating and examining the effects of the project to the environment. The positive impacts of the projects will be enhanced while the negative ones will be mitigated to minimize their effects.

The alternatives to the project are different ways to achieve the same purpose and need that the proposed project will achieve.

The alternative consists of the proponent/applicant’s final proposal with the inclusion of the legal guidelines, regulations and procedures as stipulated in the EMCA 2015 which aims at reducing environmental impacts to the maximum extent practicable. Appropriate Environmental Management Plans have been prepared as per the proposed project

7.2 Project Site Alternative

The proponent acquired the parcel of land with the purpose of developing it with a viable project. Relocation option to a different site is not an option for the project implementation since the proponent has no alternative site for relocation. This is the only piece of land the proponent has and it was procured for the purpose of the proposed project.

7.3 No Project Alternative

The no project alternative in respect to the proposed project implies that the status quo is maintained. The option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however involve several losses both to the area residents and the community as a whole. The community members will continue to walk for long distances to look for the facility while the proponent will have the land underutilized.

The No Project Option is the least preferred from the socio-economic and partly environmental perspective.

7.4 The proposed development alternative

Under the proposed development alternative, the developer of the proposed development project would be issued with an EIA License. In issuing the license, NEMA would approve the proponent's proposed commercial project, provided all environmental measures are complied with during the construction period and operational phases. This alternative will consist of the applicant's final proposal including NEMA regulations and procedures as stipulated in the environmental impacts to the maximum extent practicable.

7.5 Analysis of Alternative Construction Materials and Technology

The proposed project will be constructed using modern, locally and internationally accepted materials to safeguard public health, safety, security and environmental aesthetic requirements.

Equipment that saves energy and water will be given first priority without compromising on cost or availability factors. The concrete pillars and walls will be made using locally sourced stones, cement, sand (washed and clean), metal bars and fittings that meet the Kenya Bureau of Standards (KEBS) requirements.

Beautiful and durable re-enforced concrete roofs with tile profile will be used because they are good in heat insulation as compared to the iron sheet roofs, and afford more security. This will ensure that the rainwater harvested will be utilized in other areas such as watering the flower areas. Heavy use of timber during construction will be discouraged because of destruction of forests. The exotic species would be preferred to indigenous species in the construction where need will arise. However, this construction methods and technologies to be used will require every little timber.

7.6 Waste Water Management alternatives

Five locally available technologies are discussed below: -

7.6.1 Alternative One - Use of stabilization ponds/lagoons

This refers to the use of a series of ponds/lagoons which allow several biological processes to take place, before the water is released to the environment. The lagoons can be used for aquaculture purposes and irrigation. However, they occupy a lot of space and are exposed to weather and are less costly. No chemicals are used and heavy metals usually sink to the bottom and decomposition processes take place. They are usually a nuisance to the public because of smell from the lagoons. This option is not preferable in the area because it requires a lot of space and also the local community is not likely to accept the option.

7.6.2 Alternative Two - Use of Constructed/Artificial wetland

This is one of the best methods that can be used in raising the quality of life and health standards of local communities in the area. Constructed wetland plants act as filters for toxins.

The advantages of the system are that it is a simple technology with low capital and maintenance costs. However, they require space and a relatively longer time to function. Long term studies on plant species on the site will also be required to avoid weed invasion. Hence it is not the best alternative for this kind of project.

7.6.3 Alternative Three - Connection to the sewer line system

Connection to the sewer line is both environmentally friendly and economically the best option. Though a good alternative, this option is not viable because the area is not served with a conventional sewer line.

7.6.4 Alternative Four - INSITU Sewage Treatment Plant (STP)

This is a specialized, compact sewage treatment system (STP) designed for on-site treatment, allowing treated water to be reused for irrigation or cleaning while ensuring NEMA compliance. The system purifies sewage directly at the source, eliminating the need for large sewer networks. The system is ideal for limited urban space, with options for underground, above-ground, or skid-mounted units. It allows for water recycling thereby reducing the overall water costs for commercial complexes and enhances environmental Protection through Minimized pollution.

Given the size and magnitude of the project, this is a viable option. Since the project area is not served with a sewer line, this option is the most viable and applicable for the proponent.

7.7 Solid waste management alternatives

A lot of solid wastes will be generated from the proposed project. An integrated solid waste management system is recommended. First, the proponent will accord priority to reduction at source of the waste materials. This option will demand solid waste management awareness program in the management and the workers. Notices for proper waste management handling may be posted at strategic places for the sake of visitors. Secondly, recycling, reuse and compositing of the waste will be the second alternative in priority. This will call for a source separation program to be put in place. The recyclables will be sold to waste buyers within the region. The third priority in the hierarchy of options is combustion of the waste that is not recyclable. Finally, sanitary land filling will be the last option for the proponent to consider.

7.8 Water Supply

Water is becoming a scarce resource by the day in the area and generally in all parts of the county. Therefore, the proponent will have to look into methods of sustaining water supply for the proposed project.

The following are the options.

7.8.1 Alternative one - Rain Water Harvesting

Rain water flowing into drainage systems during wet seasons can be harvested and used for various purposes. In addition, a lot of water can also be harvested from roofs of buildings that will be put up in the project site. This water can be used watering flower gardens and grass lawns, flushing toilets and general cleaning.

7.8.2 Alternative two – Tanker/Browsers Water Supply

These are usually licensed by Water Resources Authority (WRA) to supply water to clients when normal water supply system is cut-off. The proponent can use these services as a supply option.

However, this option is not sustainable since it's expensive and there is no guarantee of being supplied with clean water.

7.8.3 Alternative three – Borehole Drilling

The proponent has considered drilling a borehole onsite. This is a good option considering the availability of ground water deposits within the project area. A hydrogeological survey has been undertaken to support this idea. A borehole would ensure constant and reliable water supply, cushioning the development from regular water rationing by the Water service provider (NCCWSC).

The developer has already opted for this as one of the preferred options.

7.8.4 Alternative four – Combined Water Supply

It would be important for the developer install large water storage tanks within the project site. The option of connecting to the region's water reticulation system coupled with rainwater harvesting and borehole drilling is recommended as the best option. This option will guarantee adequate water supply to the project site during construction and operational phases of the project.

8. CLIMATE RISK AND VULNERABILITY ASSESSMENT

8.1 Introduction

Climate change is a reality and is one of the greatest threats facing the world in the 21st century with the scientific consensus pointing to severe consequences. If not addressed, it will have significant and long-lasting impacts on the lives of people around the globe. Taking action to mitigate and adapt to climate change is therefore not optional, but an urgent necessity. While the effects of climate change are already being observed, it is generally accepted that if the global temperature rise reaches 1.5°C above pre-industrial levels, the impacts on natural and human systems will be severe and potentially irreversible. It is causing tangible impacts including rising sea levels, melting ice sheets, ocean acidification, and freshwater scarcity, which threaten ecosystems and human health globally. Many of these changes, driven by human-caused greenhouse gas emissions, are occurring at an accelerating rate, with recent years being the hottest on record.

The adoption of the Paris Agreement on Climate Change, followed by its signing by nearly 200 countries, marked a historic turning point in global climate action. Under the Paris Agreement, signatory nations committed to limiting the average global temperature increase to well below 2°C, aiming for 1.5°C. In line with this global goal, Kenya has committed to developing and implementing an ambitious Climate Action Plan (CAP) under C40's Deadline 2020 programme. This plan will align with international climate targets and contribute to mitigating climate change impacts at both the national and global levels.

8.2 Kenya Climate

Kenya's climate is highly diverse, with variations primarily influenced by altitude. The highlands experience a moderate mean annual temperature of around 15°C, while the lowland areas in northern and eastern Kenya can reach temperatures as high as 29°C. In contrast, the coastal region and the shores of Lake Victoria in the far west enjoy a tropical climate, with temperatures typically ranging between 23°C and 27°C. Annual precipitation in Kenya varies significantly across the country, with amounts ranging from as low as 200mm in the arid northern and eastern regions, characterized by steppe landscapes, to more than 1,600 mm in the western areas. The highland regions of Kenya experience a more moderate climate, with annual precipitation totals ranging between 800 mm and 1,000 mm.

Kenya has two rainy seasons (bimodal precipitation regime) – a major one from March to May and a minor one from October to December.

8.2.1 Projected Climate Changes

Kenya is projected to experience rising temperatures and more unpredictable rainfall, leading to increased frequency of extreme weather events like droughts and floods. In response to rising greenhouse gas (GHG) concentrations, air temperatures over Kenya are projected to increase by 1.2 to 3.2°C (very likely range) by 2080, relative to the baseline year of 1876. The extent of this temperature rise will depend on the future GHG emissions scenario (Figure below). Compared to pre-industrial levels, median climate model projections indicate a temperature increase of approximately

1.4°C by 2030, and 1.7°C by both 2050 and 2080, under the low emissions scenario (RCP2.6). Under the medium to high emissions scenario (RCP6.0), median temperature increases are projected to reach 1.3°C by 2030, 1.6°C by 2050, and 2.2°C by 2080.

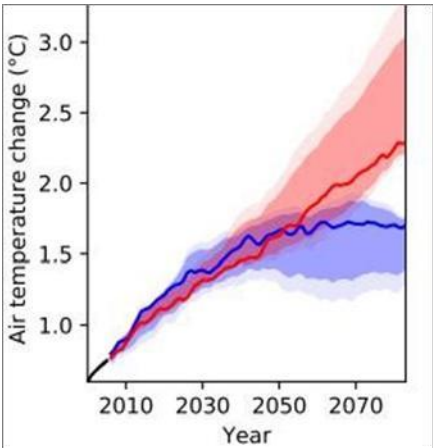


Figure 5: Air temperature projections for Kenya for different GHG emissions scenarios

8.2.2 Very Hot Days

In line with rising mean annual temperatures, the annual number of very hot days (days with daily maximum temperature above 35°C) is projected to rise substantially and with high certainty, in particular over central and eastern Kenya. Under the medium/high emissions scenario RCP6.0, the multi-model median, averaged over the whole country, projects 25 more very hot days per year in 2030 than in 2000, 36 more in 2050 and 59 more in 2080. In some parts, especially in northern and eastern Kenya, this amounts to about 300 days per year by 2080.

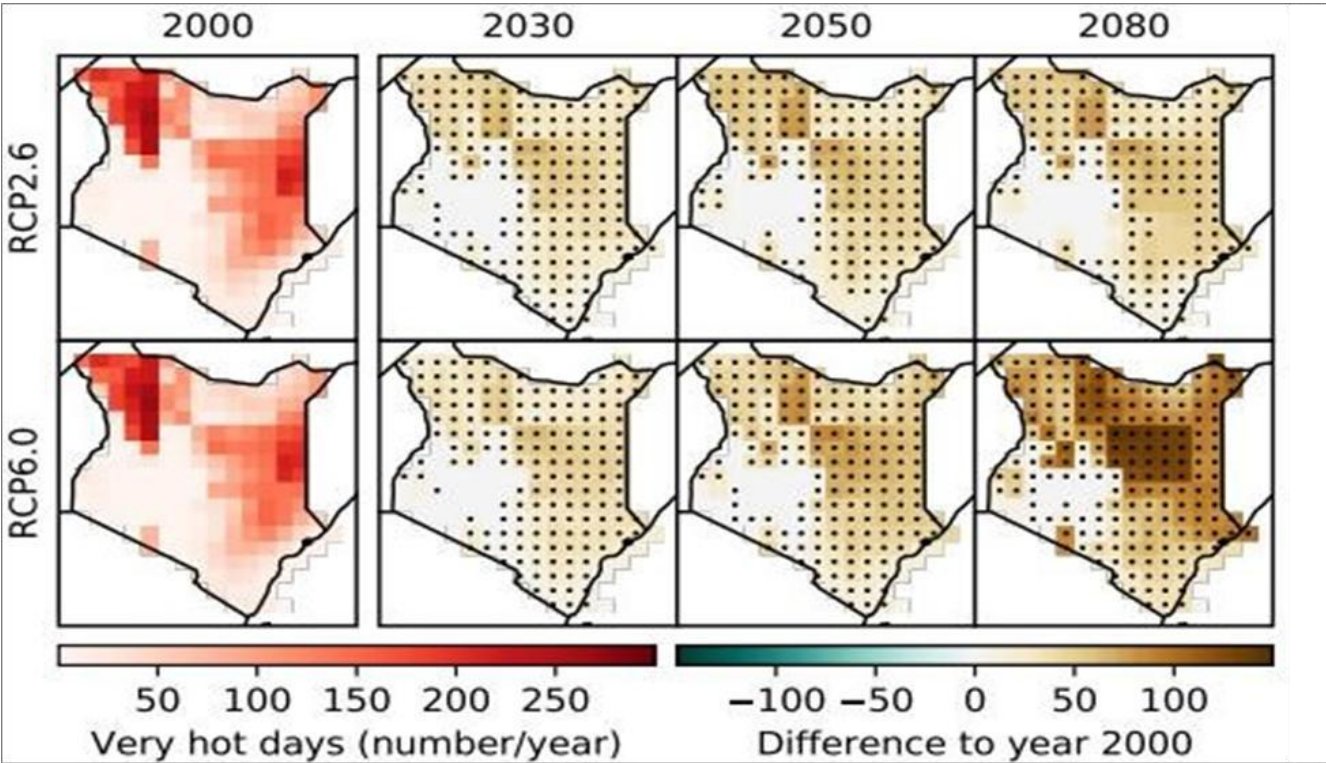


Figure 6: Projections of the annual number of very hot days (daily maximum temperature above 35 °C) for Kenya for different GHG emissions scenarios

8.2.3 Sea Level Rise

In response to globally increasing temperatures, the sea level off the coast of Kenya is projected to rise (Figure 4). Until 2050, very similar sea levels are projected under both emissions scenarios. Under RCP6.0 and compared to year 2000 levels, the median climate model projects a sea level rise by 10 cm in 2030, 21 cm in 2050, and 40 cm in 2080. This threatens Kenya's coastal communities and may cause saline intrusion in coastal waterways and groundwater reservoirs.

8.2.4 Precipitation

Future projections of precipitation in Kenya are less certain than those for temperature change, primarily due to the high natural year-to-year variability in rainfall patterns. Among the three climate models used for this analysis, one model predicts either no change or a slight decrease in mean annual precipitation under the RCP6.0 scenario, while the other two models project an increase under the same emissions scenario. For the RCP2.6 scenario, median model projections suggest a slight increase in precipitation towards 2030, followed by an overall decrease towards the end of the century. Under RCP6.0, however, the projected increase in precipitation is expected to intensify after 2050, with an estimated rise of 53 mm per year by the end of the century, compared to 2000 levels. Higher emissions pathways indicate an overall wetter future for Kenya, with increased rainfall likely

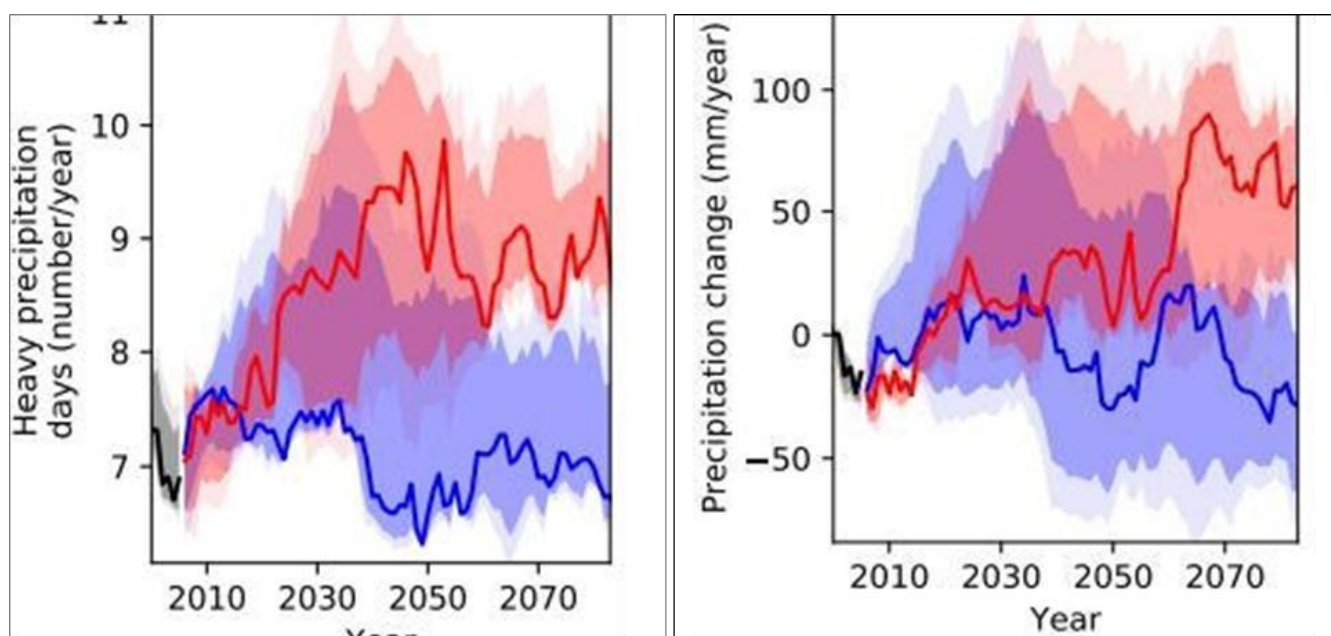


Figure 7: Projections of the number of days with heavy precipitation over Kenya for different GHG emissions scenarios, relative to the year 2000 in certain regions.

In response to global warming, heavy precipitation events are expected to become more intense in many parts of the world due to the increased water vapour holding capacity of a warmer atmosphere. At the same time, the number of days with heavy precipitation events is expected to increase. This tendency is also found in climate projections for Kenya as outlined in the Figure above, with climate models projecting an increase in the number of days with heavy precipitation, from 7 days per year in 2000 to 9 days per year in 2080 under RCP6.0. Under RCP2.6, the number of days with heavy precipitation remains unchanged.

8.3 Climate Change Impacts to Key Sectors

8.3.1 Infrastructure

Climate change is projected to severely impact Kenya's transport infrastructure through extreme weather events like floods and droughts. High precipitation and temperatures will cause infrastructure damage, leading to increased maintenance costs. Since road transport is vital for agriculture, trade, and access to services, especially in rural areas, investing in climate-resilient road networks is essential. Additionally, road transport accounts for 99% of non-aviation transport GHG emissions in Kenya.

Extreme weather events will have devastating impacts on human settlements and economic sites, particularly in densely populated urban areas like Nairobi and Mombasa. Informal settlements, which often lack stable infrastructure and are built in high-risk areas such as riverbanks and coastal zones, are especially vulnerable. These areas experience severe flooding, leading to loss of housing, water contamination, and even death. Residents, who typically have low adaptive capacity due to poverty and lack of infrastructure, are particularly affected. In Nairobi's Kibera settlement, for instance, over 50% of residents reported flooding during the 2015 rainy season, resulting in deaths, disease outbreaks, and destruction of property.

8.3.2 Ecosystems

Climate change is expected to significantly impact tropical ecosystems, though the exact extent remains uncertain. Rising temperatures, more frequent and intense droughts, and changing conditions are putting wetlands, river systems, and forests at risk of transformation. These changes can lead to habitat loss for both plants and animals, disrupt forest succession, and increase the spread of invasive species. Additionally, factors such as low agricultural production and population growth may drive further agricultural expansion, leading to deforestation, land degradation, and forest fires, which will negatively affect biodiversity.

8.3.3 Agriculture

Smallholder farmers in Kenya face growing challenges due to the unpredictability of weather patterns caused by climate change. Since most crops rely on rainwater, yields are increasingly affected by erratic rainfall, while the limited use of irrigation (only 28% of the potential irrigated area in 2003) further exacerbates the situation. This is due to poor extension services, irrigation management, lack of credit, and technical equipment. The primary irrigated crops are vegetables, fruit, coffee, rice, and maize. The uncertainty in water availability projections translates into high variability in drought predictions. According to median projections, the national crop land area exposed to drought

annually will only slightly increase due to global warming, though other models predict a much stronger rise. Under RCP6.0, the range of drought exposure for crop land widens from 0-0.8% in 2000 to 0-1.6% in 2080, with the very likely range increasing from 0-1.9% to 0-9.8%. Some models project a fivefold increase in drought exposure, while others show no change. Climate change will have a negative impact on yields of millet and sorghum.

8.3.4 Water Resources

Current projections of water availability in Kenya show high uncertainty, with median models suggesting an increase under RCP6.0 and no change under RCP2.6. However, when factoring in population growth (SSP2 projections), per capita water availability is projected to decline significantly by 73% under RCP2.6 and 63% under RCP6.0 by 2080, compared to 2000 levels. While population growth is the primary driver, these projections emphasize the need for investment in water-saving measures. Regional projections show varying trends: under RCP2.6, water availability will decrease by up to 25% in western Kenya and increase by up to 25% in southern Kenya by 2080. Under RCP6.0, the focus shifts to eastern Kenya, where water availability is expected to increase by up to 80%.

8.4 Nairobi City County

Nairobi acknowledges both the current and future threats posed by climate change and the urgent need for targeted action at the city level. The Nairobi Climate Action Plan (CAP) is a direct response to this climate crisis, aiming to achieve its goals through a transformational approach. The plan focuses on leveraging the city's unique strengths and capacities while considering the broader context of regional and global climate challenges.

8.4.1 Nairobi Current Situation

Results from the Nairobi City inventory indicated that, in 2016, the total greenhouse gas (GHG) emissions in Nairobi amounted to 4.7 million metric tons of CO₂ equivalent (MtCO₂e), which translates to approximately 1.2 tons of CO₂ equivalent (tCO₂e) per person. The transport sector was identified as the largest contributor to these emissions, accounting for a significant portion of the city's overall carbon footprint. This highlights the urgent need for targeted action in reducing emissions from transportation, which is a major driver of air pollution and climate change in Nairobi. Efforts to transition to cleaner and more sustainable transport systems will be crucial for reducing GHG emissions and achieving the city's climate goals.

8.4.2 Future Projections

Through the analysis of future climate projections and historical trends, three key climate hazards have been identified as prominent drivers of change in Nairobi: flooding and storms, extreme heat, and drought. A Climate Rapid Assessment (CRA) has further highlighted the potential impacts of these hazards, which may pose significant risks to the city's social, natural, and economic capital. These risks include damage to infrastructure, disruption of livelihoods, loss of biodiversity, and strain on water resources.

8.4.3 Climate Change Adaptation

Climate change can impact the proposed mixed-use development through increased structural risk from extreme weather (floods, fires, storms), leading to higher insurance costs and repair expenses. Rising temperatures drive higher cooling energy demands, while improved energy efficiency is essential for long-term resilience. The proponent therefore faces pressure to adopt "green" standards to maintain asset value.

Direct Impacts of Climate Change

- **Structural Damage & Maintenance:** Increased frequency of floods, and storms causes severe, costly damage to property.
- **Energy Consumption & Costs:** Rising temperatures increase the demand for air conditioning, elevating energy use and operating costs.
- **Increased Insurance Premiums:** Due to a high number of billion-dollar, weather-related events, insurance costs are rising, significantly impacting the financial viability of properties.
- **Reduced Asset Value:** Older buildings lacking modern, climate-resilient features may lose value, while "green" buildings are becoming more desirable.
- **Regulatory & Compliance Pressure:** Governments are implementing stricter regulations and building codes to improve energy efficiency, forcing costly retrofits on older structures.
- **Supply Chain Disruptions:** Extreme weather affects the construction industry by causing project delays, higher costs for materials, and damage to work in progress, according to ecam.com

Adaptation Strategies:

- **Borehole Drilling:** To provide reliable water even when supply is affected by weather patterns.
- **Solar Installations:** To ensure a reliable source of energy that is green.

- Retrofitting: Upgrading insulation, windows, and HVAC systems for better energy efficiency.
- Resilient Design: Incorporating flood-resistant materials, improving building envelopes, and installing on-site renewable energy sources.
- Green Building Standards: Investing in, for example, sustainable materials and designs that reduce carbon emissions and operational costs.

8.5 Greenhouse gas (GHG) Emissions During Construction

This project is expected to generate greenhouse gas (GHG) emissions during the construction phase, primarily from the use of vehicles, machinery, and the activities of workers. To estimate these emissions, the following assumptions were made, utilizing the carbon calculation tool available at <http://carbonneutral.com.au/> as outlined in the Table below.

Description	Qty	Fuel Type	Consumption (L)	CO ₂ Emissions (t)
Diesel Heavy 4WD ...	1	Diesel	1260	4.27
Diesel Medium 4WD...	1	Diesel	945	3.2

Table 25 Possible Greenhouse gas (GHG) Emissions During Construction

GHG emissions during the operational phase of the project will arise from;

- Operation of the wastewater treatment components,
- Energy use.
- Waste generation
- Fossil fuel combustion – Generator and LPG
- Water consumption and
- Transport aspects.

The main sources of emissions will include the release of carbon dioxide (CO₂) and nitrous oxide (N₂O), which are produced during the wastewater treatment processes and fossil fuel combustion. These emissions are largely a result of the biological and chemical treatments used to process and treat wastewater as well as use of fuel in running the generators and LPG at the kitchens.

Effective mitigation strategies, such as optimizing treatment processes and incorporating renewable energy sources, will be key in reducing these emissions over the long term. Aerobic wastewater treatment systems produce primarily CO₂, whereas anaerobic systems produce a mixture of methane (CH₄) and CO₂.

8.6 Possible Impact Matrix (Rating)

The Climate Risk Impact Rating for the proposed mixed-use development provides a structured assessment of how climate-related threats such as extreme weather, rising temperatures, and altered rainfall patterns could affect the project's infrastructure, ecosystems, public health, and community livelihoods. Using a standard Risk Matrix approach, each climate risk is rated based on Table 10.1 below.

Table 26: Climate Risk Rating and Mitigation Measures.

Risk Category	Climate Risk	Likelihood (L)	Consequence (C)	Significance	Remarks / Mitigation Measures
Hydrology & Flooding	Increased rainfall intensity leading to flooding of the area	3 – Possible	4 – Major disruption to infrastructure	Medium	Buffer zones; climate- resilient infrastructure; improve drainage capacity.
Water Quality	Prolonged drought periods reducing dilution of pollutants	3 – Possible	3 – Moderate degradation of water quality	Medium	Establish wastewater controls, revegetation to reduce runoff, wetland restoration
Infrastructure Damage	Heat stress and storm events damaging project infrastructures.	2 – Unlikely	2 – Major repair costs	Low	Use of climate- resilient materials and engineering standards
Livelihoods	Climate variability affecting informal activities within the area.	2–Possible	2–Moderate impact on income	Medium	Support livelihood diversification, climate-smart projects.

9: ENVIRONMENTAL MANAGEMENT/MONITORING PLAN

9.1 Introduction

The proponent of the proposed mixed use development project acknowledges the fact that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public, and socio-economic well-being of the residents. Thus, the focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a programme of continuous improvement.

An Environmental Management Plan has been developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project. The EMP has been developed to provide a basis for an Environmental Management System (EMS; ISO 14001 principles) for the project. IFC Policy on Social and Environmental Sustainability including the IFC Performance Standards (PS) and the Environmental, Health & Safety (EHS) Guidelines which cover key areas of environmental and social impacts and issues that have been used in developing the EMP. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the EMP. As such, the EMP will be subject to a regular regime of periodic review. In general, monitoring the project will include the following:

Construction phase

- Monitor that occupational health and safety measures are carried out in accordance with IFC's General Environmental, Health and Safety Guidelines.
- Monitor those impacts from construction such as erosion and sedimentation, solid and sanitary waste disposal, hazardous materials (including fuels and lubricants) management, are being mitigated in accordance with IFC's General Environmental, Health and Safety Guidelines Erosion.
- If applicable, monitor that any cultural heritage that may be found or affected during construction is treated in accordance with IFC P.S. 8.
- Respond to and record community grievances.
- If applicable, monitor habitat and species impacts in accordance with IFC P.S. 6 and/or the Project's biodiversity management plan.
- If applicable, monitor that temporary worker housing is constructed and maintained in accordance with Workers' Accommodation: Processes and Standards: A Guidance Note by IFC

Operation and decommissioning phases

- Monitor for potential cumulative impacts.
- Ensure that restoration of any disturbance during construction and demolition has occurred.

Tables 9-1, 9-2 and 9-3 are the core of this EMP for the construction, operational and decommissioning phases of the proposed project respectively. In general, the tables outline the potential safety, health and environmental risks associated with the project and detail all the necessary mitigation measures, their financial costs, as well as the people responsible for their implementation and monitoring. The EMP will be used as a checklist in future environmental audits.

9.2 Construction Phase Environmental and Social Management Plan

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the construction phase of the proposed project are outlined Table 8-1 below.

Table 9-1 Construction Phase Environmental and Social Management Plan for the Proposed Project

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh.)
Minimize extraction site impacts and ensure efficient use of raw materials in construction				
High Demand of Raw materials	Source building materials from local suppliers who use environmentally friendly processes in their operations	Contractor	Throughout construction period	100,000
	Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered	Contractor	Throughout construction period	500,000 p.a.
	Ensure that damage or loss of materials at the construction Site is kept minimal through proper storage.	Contractor	Throughout construction period	200,000 p. a
	Use at least 5%-10% recycled, refurbished or salvaged materials to reduce the use of raw materials and divert material from landfills.	Contractor	Throughout construction period	100,000
Minimize vegetation disturbance at and or around construction site				
Vegetation disturbance and Tree cutting	Ensure proper demarcation and delineation of the project area to be affected by construction works.	Contractor	Construction phase	400,000
	Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage	Contractor	Throughout the phase	2000,000
	Designate access routes and parking within the site	Contractor	Throughout the phase	150,000
	Design and implement an appropriate programme to help in re-vegetation of the surrounding of the project area after construction by donating some seedlings to the community.	Proponent / Contractor	Throughout the phase	200,000

Reduce stormwater, runoff and soil erosion				
Increased storm water, runoff and soil erosion	A storm water management plan that minimizes impervious area infiltration by use of recharge areas and use of detention and/or retention with graduated outlet control structure will be designed	Contractor	Throughout the phase	2,000,000
	Apply soil erosion control measures such as leveling of the project site to reduce run-off velocity and increase infiltration of storm water into the soil.	Contractor	Throughout the phase	
	Ensure that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site	Contractor	Throughout construction period	
	Ensure that any compacted areas are ripped to reduce run-off.	Contractor	2 months	
Minimize solid waste generation and ensure efficient solid waste management during construction				
Increased solid waste generation	Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3. Composting and reuse 4. Combustion 5. Sanitary land filling	Contractor	Throughout construction period	150,000
	Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities they will be needed rather than cutting them to size, or having large quantities of residual materials	Contractor	One-off	100,000
	Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed of.	Contractor	One-off	100,000
	Ensure that damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles and glass will be recovered for refurbishing and use in other projects	Contractor	One-off	50,000
	Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time	Contractor	Throughout construction period	100,000

	Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements	Contractor	One-off	200,000
	Purchase of perishable construction materials such as paints should be done incrementally to ensure reduced spoilage of unused materials	Contractor	Throughout construction period	250,000
Reduce dust emissions				
Dust emission	Ensure strict enforcement of on-site speed limit regulations	Contractor	Throughout construction period	100,000
	Avoid excavation works in extremely dry weathers	Contractor		
	Sprinkle water on graded access routes when necessary to reduce dust generation by construction vehicles	Contractor		
	Personal Protective equipment to be worn	Contractor		
Minimization of exhaust emissions				
Exhaust emission	Vehicle idling time shall be minimized	Contractor	Throughout construction period	0
	Alternatively, fueled construction equipment shall be used where feasible equipment shall be properly tuned and maintained	Contractor		0
	Sensitize truck drivers to avoid unnecessary racing of vehicle engines at loading/offloading points and parking areas, and to switch off or keep vehicle engines at these points	Contractor		60,000
	Regular servicing and maintenance of the generator to reduce on emissions.	Contractor		300,000
	Comply with the provisions of Air Quality Regulations, 2014 regarding ambient air quality levels.	Contractor		300,000
Minimization of Noise and Vibration				
	Sensitize construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.	Contractor		100,000

Noise and Vibration	Sensitize construction drivers to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as residential areas	Contractor	Throughout construction period	10,000
	Ensure that construction machinery is kept in good condition to reduce noise generation	Contractor		10,000
	Ensure that all generators and heavy-duty equipment are insulated or placed in enclosures to minimize ambient noise levels	Contractor		50,000
	The noisy construction works will entirely be planned to be during daytime when most of the neighbors will be at work.	Contractor		30,000
	Comply with the provisions of Noise Prevention and Control Rules 2005, Legal notice no. 24 regarding noise limits at the workplace	Contractor		60,000
Minimization of Energy Consumption				
Increased energy consumption	Ensure electrical equipment, appliances and lights are switched off when not being used	Contractor	Throughout construction period	0
	Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy	Contractor		50,000
	Ensure planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts	Contractor		100,000
	Monitor energy use during construction and set targets for reduction of energy use.	Contractor		50,000
Minimizing Occupational Health and safety incidents				
	Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable	Contractor	Continuous	100,000

Incidents, accidents and dangerous occurrences.	from the local Occupational Health and Safety Office (OHSO) are in place.			
	Enforcing adherence to safety procedures and Preparing a contingency plan for accident response in addition, safety education and training shall be emphasized.	Contractor,	Continuous	50,000
Insurance	Ensure that the premises are insured as per statutory requirements (third party and workman's compensation)	Contractor	Annually	2,000,000
Safety, Health and Environment (SHE) policy	Develop, document and display prominently an appropriate SHE policy for construction works	Contractor	One-off	200,000
Health and safety committee	Provisions must be put in place for the formation of a Health and Safety Committee, in which the employer and the workers are represented	Contractor	One-off	100,000
Sanitary conveniences	Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers	Contractor	One-off	250,000
Medical examination	Arrangements must be in place for the medical examination of all construction employees before, during and after termination of employment	Contractor	Continuous	300,000
Machinery/ equipment safety	Ensure that machinery, equipment, personal protective equipment, appliances and hand tools used in construction do comply with the prescribed safety and health standards and be appropriately installed, maintained and safeguarded	Contractor	One-off	150,000
	Ensure that equipment and work tasks are adapted to fit workers and their ability including protection against mental strain	Contractor	Continuous	100,000
	All machines and other moving parts of equipment must be enclosed or guarded to protect all workers from injury	Contractor	One-off	100,000
	All machine guards must be of substantial construction, constantly maintained and kept in position while the machines being guarded are in motion or in use.	Contractor	Continuous	100,000

	Equipment such as fire extinguishers must be examined by a government authorized person. The equipment may only be used if a certificate of examination has been issued	Contractor	Continuous	150,000
	Reports of such examinations must be presented in prescribed forms, signed by the examiner and attached to the general register	Contractor	Continuous	
Storage of materials	Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse	Contractor	Continuous	50,000
	Ensure that items are not stored/stacked against weak walls and partitions	Contractor	Continuous	100,000
	Ensure that materials are stored in such a manner as not to interfere with the adequate distribution of natural or artificial light and the natural ventilation systems	Contractor	Continuous	50,000
	Ensure that materials are stored on firm foundations not liable to overload any floor.	Contractor	Continuous	50,000
Safe means of access and safe place of employment	Securely fence or cover all openings in floors	Contractor	One-off	50,000
	Ensure that construction workers are not locked up such that they would not escape in case of an emergency	Contractor	Continuous	50,000
	Necessary precautions including warning signs must be put in place to prevent injury to employees and other persons at workplace from falling objects and objects ejected from machines and work processes.	Contractor	Continuous	30,000
Emergency preparedness and evacuation procedures	Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency	Contractor	One-off	10,000
	Such procedures must be tested at regular intervals	Contractor	Every 3 months	20,000
	Ensure that adequate provisions are in place to immediately stop any operations where there is an imminent and serious danger to health and safety and to evacuate workers	Contractor	One-off	200,000
	Provide measures to deal with emergencies and	Contractor	Continuous	150,000

	accidents including adequate first aid arrangements			
First Aid	Well stocked first aid box which is easily available, accessible and of prescribed standard should be provided within the premises	Contractor	One-off	100,000
	Provision must be made for persons to be trained in first aid, with a certificate issued by a recognized body.	Contractor	One-off	100,000
Social vices	Establish sensitization initiatives /programs targeting locals e.g., on HIV/AIDS prevention	Contractor	Continuous	500,000
	Establish a grievance redress mechanism (GRM) for the project and to ensure effective management of arising issues.			
	Mainstream issues of gender, persons with disability into the overall project framework.			
	Prioritise employment of local labour where possible			
Environmental monitoring of the project				
Environmental concern during the construction phase	Due to the magnitude of the project the proponent will liaise with the environmental consultants throughout the construction phase and ensure that the Conditions of approval are adhered to.	Proponent, Contractor and EIA Lead Expert	Throughout construction phase	1,000,000

Table 27 Construction Phase Environmental and Social Management Plan for the Proposed Project

9.3 Operational Phase EMP

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the operational phase of the project are outlined in Table 9-2.

Table 9-2 Environmental Management Plan for the Operational Phase of the Proposed Project

Expected Negative impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
1. Minimization of solid waste generation and ensuring more efficient solid waste management				
Solid waste generation	Provide solid waste handling facilities such as waste bins and skips	Proponent	One-off	100,000
	Engage and contract a NEMA Licensed waste handler and transport to regularly collect, transport and dispose of waste within a NEMA licensed waste disposal facility.	Proponent	Throughout operation phase	500,000
	Ensure that solid waste generated is regularly disposed of appropriately at authorized dumping sites	Proponent	Continuous	100,000
	Donate redundant but serviceable equipment to charities and institutions	Proponent	Continuous	50,000
	Comply with the provisions of Environmental Management and Co-ordination (Waste Management) Regulations 2006	Proponent	Continuous	300,000
2. Minimization of Hazardous waste generation and ensuring more efficient Hazardous waste management				
Hazardous Waste generation	Provide temporary storage of hazardous wastes such as used oil, spent solvents, cleaning-rags on-site in portable tanks and dispose of in permitted hazardous landfills in accordance with applicable regulatory requirements or in their absence consistent with GIIP as reflected in IFC's General EHS guidelines.	Proponent	One-off	200,000
	Implement monitoring activities such as regular visual inspection of hazardous waste storage and collection areas, regular audits, tracking of waste generation by type and amount and keeping manifests that document the amount of waste generated and its destination.	Proponent	One-off	300,000
3. Minimization of E-Waste generation and ensuring more efficient management				
	Contract a legitimate and reputable enterprise licensed by the relevant regulatory agency to undertake recycling of e-waste and require them to follow good international industry practice for the waste being handled.	Proponent	Continuous	500,000

E-Waste generation	Ensure compliance with NEMA e-waste guidelines of 2010 on collection, sorting, recycling and disposal of e-waste so as to ensure enhanced environmental conservation.	Proponent	Continuous	300,000
4.Minimize risks of liquid waste release into environment				
Liquid waste release into the environment	Provide adequate and safe means of handling liquid waste at the premises such as by designing and installing effluent management systems specifically for the treatment and disposal of domestic effluent that will be discharged from staff quarters and residential.	Proponent	One-off	50,000
	Comply with the provisions of Environmental Management and Co-ordination (Water Quality) Regulations 2006	Proponent	Continuous	250,000
5.Minimize energy consumption				
Energy Use	Switch off electrical equipment, appliances and lights when not being used	Proponent	Continuous	–
	Monitor energy use during the operation of the project and set targets for efficient energy use through implementation of energy management programs.	Proponent	Continuous	20,000
	Sensitize workers to use energy efficiently	Proponent	Continuous	30,000
6.Minimization of health and safety impacts				
Health and safety risks	Implement all necessary measures to ensure health and safety of workers, occupants and the general public during operation of the commercial building as stipulated in the Occupational Safety and Health Act,2007	Proponent	Continuous	1,500,000
7.Ensure the general safety and security of the premises and surrounding areas				
Safety and security risks	Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises.	Proponent	Continuous	1,000,000
8.Minimize visual intrusion and visual contrast				
Visual Intrusion and contrast risks	Ensure various installation are with lower reflectivity	Proponent	One-off	Project Budget.

Table 28 Environmental Management Plan for the Operational Phase of the Proposed Project

9.4 Decommissioning Phase

In addition to the mitigation measures provided in Tables 9-1 and 9-2, it is necessary to outline some basic mitigation measures that will be required to be undertaken once all operational activities of the project have ceased. The necessary objectives, mitigation measures, allocation of responsibilities, time frames and costs pertaining to prevention, minimization and monitoring of all potential impacts associated with the decommissioning and closure phase of the project are outlined in Table 8-3.

Table 9-3 Environmental and Social Management Plan for the Decommissioning Phase of the Proposed Project

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
1. Demolition waste management				
Demolition waste	Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3. Composting and reuse 4. Combustion 5. Sanitary land filling	Resident Project Manager & Contractor	One-off	500,000
	All buildings, machinery, equipment, structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible	Resident Project Manager & Contractor	One-off	200,000
	All materials must be removed and recycled, reused or disposed of at a licensed disposal site	Resident Project Manager & Contractor	One-off	1,000,000
	Where recycling/reuse of the machinery, equipment, implements, structures, partitions and other demolition waste is not possible, the materials should be taken to a licensed waste disposal site	Resident Project Manager & Contractor	One-off	500,000
	Donate reusable demolition waste to charitable organizations, individuals and institutions	Resident Project Manager & Contractor	One-off	300,000
2. Rehabilitation of project site				
Site degradation	Implement an appropriate re-vegetation programme to restore the site to its original status (where possible)	Resident Project Manager & Contractor	One-off	500,000
	Consider use of indigenous plant species in re-vegetation	Resident Project Manager & Contractor	One-off	500,000
	Trees should be planted at suitable Locations so as to interrupt sight lines (Screen planting), between the adjacent area and the development.	Resident Project Manager & Contractor	Once-off	400,000
3. Fugitive dust emissions management				

Fugitive dust emissions	Sprinkle water on graded access routes when necessary to reduce fugitive dust emissions during decommissioning phase	Resident project Manager and Contractor	Throughout the decommissioning phase	100,000
	Creating access roads for the vehicles involved in transportation of materials from the site during the decommissioning phase	Proponent and contractor	One-off	300,000
	Workers involved in decommissioning work should be trained on such work especially in handling of hazardous and e-waste.	Resident Project Manager and Contractor	One-off	500,000
	Workers should be provided with appropriate PPE's for undertaking decommissioning work.	Project Manager	Throughout the decommissioning phase	300,000
4. Noise and vibration Management				
Noise and Excessive Vibration	Sensitize construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.	Project Manager and Contractor	Throughout the decommissioning phase	100,000
	Sensitize construction drivers to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as residential areas	Project Manager and Contractor	Throughout the decommissioning phase	50,000
	Ensure that construction machinery is kept in good condition to reduce noise generation	Project Manager and Contractor	Throughout the decommissioning phase	250,000
	Ensure that all generators and heavy-duty equipment are insulated or placed in enclosures to minimize ambient noise levels	Project Manager and Contractor	Throughout the decommissioning phase	300,000
	The noisy construction works will entirely be planned to be during daytime when most of the neighbours will be at work.	Project Manager and all site workers	Throughout the decommissioning phase	50,000
	Comply with the provisions of Noise Prevention and Control Rules 2005, Legal notice no. 24 regarding noise limits at the workplace	Project Manager and all site workers	Throughout the decommissioning phase	100,000

Table 29 Environmental and Social Management Plan for the Decommissioning Phase of the Proposed Project

10: CONCLUSION AND RECOMMENDATIONS

It is quite evident that the construction and operation of the proposed mixed-use development will have positive impacts not only to the developer and the local community within the project area but to Kenya in general.

The proposed construction of the development will Create space for various commercial ventures and enterprises, Increased income to the proponent from lease of units and their operation activities and create job opportunities during construction and operational phases, open up the area to similar and complementing developments, enhance urban life by incorporating various services, Put into a commercial use the already idle parcel of land. Additionally, and most importantly, the development will host the proponent's headquarters (Unaitas Sacco) and open up a banking branch which will be a first within the immediate neighborhood.

The identified negative effects, most of which shall be experienced during construction phase are generally minor and can be minimized by appropriate mitigation measures. These include impacts such as increased pressure on the existing infrastructure, pollution (air, water, soil), crime during the construction phase, social crime, and increased waste (solid and liquid) generation, among others. The occupational safety, Health, and Environment is one major issue of great concern both in the construction and operation of the development

The proposed project design has integrated mitigation measures with a view to ensuring compliance with all the applicable laws and procedures, as well as the legislation and regulatory framework that governs environmental management. To this effect, the proposed project shall be constructed in line with the required planning, architectural, and structural standards of the local council, Lands, and MOH. During project implementation and operation, Sustainable Environmental Management (SEM) shall be ensured, avoiding inadequacy/improper use of natural resources.

Considering the positive socio-economic and environmental benefits that will accrue as a result of the proposed development, and the ESIA report as well as other studies having found no major unmitigable impacts to arise from the proposed development, it is our conclusion that the project is environmentally, socially and economically viable. The proponent as well as their contractors and subcontractors will adhere to the mitigation measures recommended herein and will further still implement the proposed Environmental and Social Management and monitoring Plans (ESMMP) and the proponent's ESMS to the letter.

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Government of Kenya (2012): *The Land Registration Act*, Government Printer, Nairobi

Government of Kenya (2012): *The National Land Commission Act*, Government Printer, Nairobi, Kenya.

Government of Kenya (2013): *The Wildlife Act, 2013*. Government Printer, Nairobi, Kenya.

Government of Kenya (2015) Nairobi. *National Energy and Petroleum Policy, 2015*.

- Certificate of incorporation
- KRA PIN Certificate
- Land ownership – Title Deed
- Approved Architectural Drawings
- Geotechnical investigation report
- Traffic Management Plan
- Certified Bill of Quantity
- Duly Filled Public Participation Questionnaires
- PPC attendance lists and Minutes
- Evidence of Public notices for PPC meetings
- Letter to the NGAO Highridge Location
- Experts practicing licenses.



REPUBLIC OF KENYA

THE CO-OPERATIVE SOCIETIES ACT
(Cap. 490, Section 6 (3))

Certificate of Registration

REGISTRATION No. CS/6760

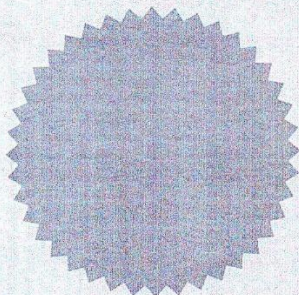
I hereby certify that the society under the name of

UNAITAS SAVINGS AND CREDIT CO-OPERATIVE SOCIETY LIMITED

and its by-laws have this day been duly registered by me in the Register of Co-operative Societies, in pursuance of the provisions of the Act and the Rules made thereunder.

Given under my hand at Nairobi

this 14TH *day of* MAY, ~~xx~~ 1993



[Signature]
F.F. ODHIAMBO
Commissioner for Co-operative Development

	KENYA REVENUE AUTHORITY	Taxpayer Registration Certificate	Document Number: 6367795
General Data of the Taxpayer			
Name	UNAITAS SACCO LIMITED		
Taxpayer PIN	P051105701J	TaxPayer Category	DOMESTIC
Registration Date	Oct 8, 2009		
Activity	Other monetary intermediation		
Contact Information			
District	MURANGA NORTH	City/Town	MURANGA
Street / Road	MURANGA	Building	MURAMATI
Area Name	64	LR Number	
P.O. Box	10200 - 1145		
Main Email Address	ckimuge@yahoo.com		
Tax Obligation		Obligation Register Date	
INCOME TAX COMPANY (IT2C)		MAR 28, 1995	
PAYE INCOME TAX WITHHOLDINGS (P10)		DEC 31, 2010	
INCOME TAX WITHHOLDINGS (IT.WHT)		AUG 31, 2011	
*This certificate is computer generated and therefore not signed. It is valid certificate issued under the authority of KRA.			



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

ENVIRONMENT MANAGEMENT AND COORDINATION ACT, Cap 387

Experts License - Associate/Lead Experts

License No.:

NEMA/ENVIS/EL/0237

Application Reference No.:

NEMA/ENVIS/ELA/02948

M/S James Muiruri Kamande

of P.O.BOX 72925, 00200, City Square

is licensed to practice in the capacity of a **Lead Expert**

registration number **7290**

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

Issued Date: **4th January 2026**

Expiry Date: **31st December 2026**

David Ongare

For DIRECTOR GENERAL

National Environment Management Authority

P.T.O.



ISO 9001 : 2015 Certified



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY
ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT, Cap 387

Experts License - Firm of Experts

License No.:

NEMA/ENVIS/ELI/F0066

Application Reference No:

NEMA/ENVIS/EL/00304

M/S Greenlite Ventures Limited

(individual or firm) of (address) **P.O.BOX 72925, 00200, City Square**

is licensed to practice in the capacity of a **Firm of Experts** registration number **NEMA/ENVIS/ELI/F0066** in accordance with the provision of the Environmental Management and Coordination Act cap 387.

Issued Date: **22nd January 2026**

Expiry Date: **31st December 2026**

David Ongare

For DIRECTOR GENERAL

National Environment Management Authority

P.T.O.



ISO 9001 : 2015 Certified