

**ENVIRONMENTAL IMPACT ASSESSMENT
STUDY REPORT
FOR
THE PROPOSED RESIDENTIAL APARTMENTS
DEVELOPMENT ON PLOT NO. NAIROBI/BLOCK 22/232
LOCATED ALONG LAIKIPIA ROAD IN KILELESHWA
AREA OF NAIROBI CITY COUNTY**



This Environmental Impact Assessment (EIA) Study Report is submitted to the National Environment Management Authority (NEMA) in conformity with the requirements of the Environmental Management and Coordination Act, Cap 387 and the Environmental (Impact Assessment and Audit) Regulations, 2003

EIA Firm of Experts

Space Planners Ltd,
P.O. Box 157 – 00600,
Nairobi.



Project Proponent

Central Park Suites Ltd,
P.O. Box 43942 - 00100,
Nairobi.

29th April 2026

Declaration

This Environmental Impact Assessment Study Report for the **Proposed Residential Apartments Development** on Plot No. Nairobi/Block 22/232 located along Laikipia Road in Kileleshwa area of Nairobi City County has been prepared by **Space Planners Limited, EIA/Audit Firm of Experts (NEMA Reg. No. 10,492)**, in accordance with the Environmental Management and Coordination Act Cap 387 and the Environmental (Impact Assessment and Audit) Regulations 2003 for submission to the National Environment Management Authority (NEMA).

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Central Park Suites Limited,
P.O. Box 43942 - 00100,
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Signed:  Date: 29 April, 2026

Name: Li Jun chen

Designation: Director



SPACE PLANNERS LTD

This Environmental Impact Assessment (EIA) Study Report has been prepared by Space Planners Limited, EIA/Audit Firm of Experts (NEMA Reg. No. 10,492).

Report Type:	Environmental Impact Assessment Study Report
Project Name:	Proposed Residential Apartments Development on Plot No. Nairobi/Block 22/232 located along Laikipia Road in Kileleshwa area of Nairobi City County
Proponent:	Central Park Suites Limited, P.O. Box 43942 - 00100, Nairobi.

We, the undersigned, certify that the particulars in this report are accurate to the best of our knowledge and report has been prepared in accordance with the Environmental Management and Coordination Act, Cap 387 and the Environmental (Impact Assessment and Audit) Regulations, 2003.

Name	Designation	NEMA Reg. No.	Signature	Date
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Project Data Sheet

Project Title	Proposed Residential Apartments Development
Plot Number	Nairobi/Block 22/232
Project Proponent	Central Park Suites Limited
Postal Address	P. O. Box 43942 - 00100, Nairobi
KRA PIN Number	P052422014I
Project Location	Laikipia Road, Kileleshwa area, Nairobi City County
GPS Coordinates	-1.273389, 36.793477
Plot Size	0.3313 hectares
Project Scope	2 basements: parking purposes Ground Floor: parking purposes Mezzanine floor: recreational/amenities Typical 1 st to 22 nd floor: residential apartments
Housing Units	180 residential apartments (108No. two-bedroom units, 54No. three-bedroom units, 12No. three-bedroom duplex units, and 6No. four-bedroom duplex units)
Auxiliary Amenities	Children play area, swimming pool, fitness centre, private spa, residents lounge, co-working space/meeting rooms, and management offices
Parking	170 bays
Project Budget	KES 1,551,171,893.00
Energy Supply	Onsite KPLC transformer, Solar Power, and Generator
Water Supply	NCWSC water supply, Borehole water, and Rainwater
Liquid Waste Management	NCWSC conventional sewer system and on-site Sewer Treatment Plant (STP)
Solid Waste Management	NCWSC conventional sewer system Private licensed waste collectors

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Acronyms

CBD	Central Business District
CCTV	Closed-Circuit Television
CECM	County Executive Committee Member
CPP	Consultations and Public Participation
DOSHS	Directorate of Occupational Safety and Health Services
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
EMP	Environmental Management Plan
EPRA	Energy and Petroleum Regulatory Authority
ERP	Emergency Response Plan
GPS	Global Positioning System
GRS	Grievance Redress System
IUCN	International Union for Conservation of Nature
KEBS	Kenya Bureau of Standards
KPLC	Kenya Power and Lighting Company
LED	Light-Emitting Diode
MRI	Monthly Rental Income
NCA	National Construction Authority
NCC	Nairobi City County
NCWSC	Nairobi City Water and Sewerage Company
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NET	National Environment Tribunal
PAP	Project Affected Persons
PPE	Personal Protective Equipment
SDGs	Sustainable Development Goals
STP	Sewer Treatment Plant
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
TOR	Terms of Reference
VAT	Value Added Tax
WRA	Water Resources Authority

Executive Summary

The proponent, **Central Park Suites Limited**, has proposed to construct **23-level residential apartments** on Plot No. Nairobi/Block 22/232 located along Laikipia Road in Kileleshwa area of Nairobi City County (NCC). The project will contribute to bridging the housing shortage in the area while upholding environmental sustainability and best practices. It is also in line with the Government's National Housing Policy aimed at facilitating the progressive realization of the right to adequate housing by all and promoting the development of housing that is functional, healthy, aesthetically pleasant, and environmentally friendly. At the time of our site visit, the subject property was characterized by *residential maisonette with a servant quarter* which will be demolished to pave way for the construction of the proposed development upon acquisition of a demolition permit from Nairobi City County.

Scope

The scope of the report is to describe the nature of the project and the physical extent of the project site and its immediate environs, document all the baseline information, describe the legal and regulatory framework associated with the project, analyze the project alternatives, assess the environmental impacts, and develop feasible mitigation measures for the anticipated negative impacts including designing the Environmental Management Plan (EMP) for the project while maximizing on the anticipated positive impacts.

EIA Objectives

The objective of the EIA is to identify, predict and evaluate the economic, environmental, and social impacts of development activities, to provide information on the environmental consequences for decision-making, and to promote environmentally sound and sustainable development through the identification of appropriate alternatives and mitigation measures.

Project Objectives

The objective of the proposed development is to construct a **23-level residential building comprising 180 residential apartments (108No. two-bedroom units, 54No. three-bedroom units, 12No. three-bedroom duplex units, and 6No. four-bedroom duplex units), 170 parking bays, children play area, swimming pool, fitness centre, private spa, residents lounge, co-working space/meeting rooms, and management offices with associated amenities** in Kileleshwa area.

Methodology

The methodology used for the preparation of this EIA Study Report is stated below:

- i. Environmental Screening of the proposed project in line with the Second Schedule of EMCA Legal Notice No. 31 of 2019 and the EIA team established that the proposed development falls under **High-Risk Projects (urban development including establishment of new housing estate developments exceeding one hundred housing units)** which requires submission of the EIA Study Report to NEMA under Section 58 (2) of the act.
- ii. A scoping exercise that identified the key issues to be addressed in the assessment including environmental, social, health and safety concerns.
- iii. A site reconnaissance and physical evaluation of the project site to assess the baseline information of the project area using a prepared checklist with a specific focus on environmental and human safety issues that are likely to be affected.
- iv. Preparation of Terms of Reference (TOR) and submission to the authority for approval in line with regulation 11 of the Environmental (Impact Assessment and Audit) Regulations, 2003 (*Attached is the TOR approval (Ref. No. NEMA/ENVIS/EIA/TOR/00421)*).
- v. Review the environmental setting of the area, proposed project designs, nature of the proposed activities, implementation plan/schedules, and other available relevant data/information.
- vi. Review of the policy, legal, and institutional framework on the environment and socio-economic matters pertaining to the proposed project.
- vii. Consultations and Public Participation (CPP) with the Project Affected Persons (PAP) through public meeting(s) and key informant interviews.
- viii. Preparation of an EIA Study Report and the development of an EMP outlining the responsibilities, schedules, monitorable indicators, and time frames for submission to NEMA.

Potential Positive Impacts

The positive impacts associated with the proposed project include the following among others:

- i. The development will provide 180 residential apartments and therefore contributing to the additional supply of local housing in the area.
- ii. The proposed project will enhance convenience to the residents through the provision of recreational facilities within the same development such as swimming pool, fitness center, a children play area, and co-working spaces.

- iii. Creation of employment opportunities throughout the project cycle such as construction workers, security personnel, pool safety coordinators, fitness trainers, domestic workers, waste transporters, cleaners, and a property manager among others
- iv. The proposed project will generate additional revenue to the National Government through taxes such as Value Added Tax (VAT) on building materials and professional services from architectural, structural and environmental consultancy services; Pay-As-You-Earn (PAYE) on employment income; excise duty on materials; Monthly Rental Income (MRI) on rental income; and revised ground rent among others.
- v. The County Government will benefit through the provision of fees from building plans, construction permits, utilities, levies, and revised land rates among others.
- vi. The proponent will generate income through the sale and/or lease of the residential apartments.
- vii. The development will provide a market for goods and services throughout the project cycle such as building materials (cement, sand, ballast, steel, and aluminium etc.) and professional services such as architectural, engineering, and environmental consultancy services among others.

Potential Negative Impacts and Mitigation Measures

The anticipated negative impacts associated with the proposed project and their mitigation measures include the following:

Impact	Mitigation Measures
Soil Erosion	<ul style="list-style-type: none"> ▪ Obtain an excavation permit before the construction begins. ▪ Use of standard equipment for the excavation work and no blasting of rocks. ▪ Implement erosion and sediment control measures including silt traps, sediment fences, and temporary bunds. ▪ Control excavation works especially during the rainy/wet conditions.
Air Pollution	<ul style="list-style-type: none"> ▪ Screen the entire site using dust screens/nets to control and arrest construction-related dust. ▪ Sprinkle water in the work areas twice every day to prevent fugitive dust violations. ▪ Provide adequate and appropriate Personal Protective Equipment (PPE) such as masks to the workers in dusty areas. ▪ Cover the loaded vehicles with clean impervious sheeting to prevent wind-blown dust dispersion from the vehicles. ▪ Sensitize workers and residents on air quality management.
Noise and Excessive Vibrations	<ul style="list-style-type: none"> ▪ Construction activities will be undertaken on weekdays between 0800hrs to 1800hrs and on Saturdays between 0800hrs to 1300hrs. ▪ No construction work will be undertaken on Sundays. ▪ Provide adequate and appropriate PPE such as earmuffs to the workers in noisy environment.

	<ul style="list-style-type: none"> ▪ Sensitize workers and drivers on minimal permissible noise levels during the toolbox talks. ▪ Schedule all noisy activities concurrently to reduce the exposure period. ▪ Use construction equipment fitted with noise abatement devices as much as practicable.
Traffic Density	<ul style="list-style-type: none"> ▪ Ferry building materials and construction waste during the off-peak hours. ▪ Engage traffic marshals to control traffic in and out of the site. ▪ Provide temporary car parking spaces for the construction vehicles within the property to prevent disruption along the access road. ▪ Provide separate entry and exit points to ensure smooth traffic flow with the development. ▪ Install traffic control/warning signs to inform motorists and public of the potential hazards. ▪ Install automated double-lane vehicle screening with appropriate security controls such as resident access cards to minimize delays and improve throughput at the entry. ▪ Provide designated internal areas for pick-up and drop-off zones within the development to prevent roadside stopping and circulation conflicts.
Solid Waste	<ul style="list-style-type: none"> ▪ Design and implement a Waste Management Plan for the entire project cycle. ▪ Provide a centralised Waste Collection Centre (WCC) for solid waste management within the development. ▪ Provide properly labelled and colour-coded receptacle bins for segregation of waste within the site. ▪ Segregate non-hazardous waste into organic and non-organic fractions before final disposal. ▪ Engage a NEMA-registered waste transporter(s) to collect and dispose of segregated waste at designated disposal sites.
Liquid Waste	<ul style="list-style-type: none"> ▪ Construct a mini-Sewer Treatment Plant (STP) for pre-treatment of all liquid waste prior to final discharge into the existing conventional sewer line. ▪ Extend the connection of the proposed development to the existing conventional sewer system upon acquisition of a connection permit from Nairobi City Water and Sewerage Company (NCWSC). ▪ Design and construct an internal reticulation system which can consistently handle the loads at peak volumes. ▪ Obtain a site toilet from NCC before the construction begins. ▪ Provide sufficient and suitable sanitary conveniences for the construction workers and ensure that they are kept clean at all times. ▪ Ensure proper decommissioning of the sanitary conveniences once the construction works are completed. ▪ Install hygiene awareness signs at strategic points within the site and sensitize the construction workers on hygiene during the toolbox talks.
Water Demand	<ul style="list-style-type: none"> ▪ Extend the connection of the main water supply to the proposed development upon acquisition of a connection permit from NCWSC. ▪ Drill a borehole to supplement the existing NCWSC water supply subject to the acquisition of an authorization permit from the Water Resources Authority (WRA) and a separate EIA license from NEMA. ▪ Harvest rainwater for reuse to supplement the existing county water supply. ▪ Install water-efficient fixtures and fittings within the development such as dual-flush toilets, sensor-operated faucets, and low-flow showerheads to

	<p>minimise water consumption.</p> <ul style="list-style-type: none"> ▪ Monitor the water consumption within the development every month.
Energy Demand	<ul style="list-style-type: none"> ▪ Install an onsite transformer to supply power to the development subject to the acquisition of a connection permit from Kenya Power & Lighting Company (KPLC). ▪ Install solar panels to provide alternative renewable energy to the development. ▪ Install energy-efficient fixtures and fittings within the development such as LED bulbs and photocell sensor lights to minimise energy consumption. ▪ Monitor the energy consumption within the development every month.
Stormwater Drainage	<ul style="list-style-type: none"> ▪ Install rainwater-harvesting and storage facilities within the development to reduce runoff volume. ▪ Use of permeable pavements such as grass block pavers or interlocking cement blocks to allow stormwater infiltration. ▪ Construct gently sloping internal drainage channels covered with gratings to collect and channel runoff toward the nearby river to reduce localized flooding. ▪ Construct retention basins to temporarily hold water during high intensity rainfall. ▪ Undertake comprehensive landscaping within the open spaces by planting trees and grass to promote stormwater infiltration rates.
Health and Safety Risks	<ul style="list-style-type: none"> ▪ Register the site as a workplace with the Directorate of Occupational Safety and Health Services (DOSHS) before the construction begins. ▪ Develop an Emergency Response Plan (ERP) to manage the occurrence of anticipated hazards during the construction phase. ▪ Obtain insurance covers against accidents for all the workers before the construction begins. ▪ Provide adequate and appropriate PPE and ensure that all workers wear them at all times. ▪ Provide first aid facilities and ensure that the workers are trained in emergency response. ▪ All workers shall be sensitized before construction begins on how to control accidents related to construction. ▪ Keep a record of the public emergency service telephone numbers including Police, Fire brigade, and Ambulance at strategic points.
Fire Risks	<ul style="list-style-type: none"> ▪ Hire a competent authorized contractor to do the electrical works on site. ▪ Provide adequate firefighting equipment at strategic places within the property. ▪ Train staff on the use of the available firefighting equipment. ▪ Conduct annual fire drills to sensitize the workers and residents.
Security Risks	<ul style="list-style-type: none"> ▪ Engage security personnel to guard the site and monitor the movement of people in and out of the property at all times. ▪ Install security lights around the property and ensure they are switched on during the night hours. ▪ Construct a gatehouse to enhance security within the site.
Loss of Vegetation	<ul style="list-style-type: none"> ▪ Transplant the conservation-sensitive species such as <i>hibiscus fragilis</i> to the riparian buffer zone along the nearby Kirichwa Ndogo River. ▪ Obtain a tree-cutting clearance certificate from NCC before cutting down the

	<p>trees and adhere to the conditions therein.</p> <ul style="list-style-type: none"> ▪ Undertake a comprehensive landscaping exercise spaces by planting indigenous trees, grass, and shrubs within the open spaces.
Conflict with Neighbors	<ul style="list-style-type: none"> ▪ Establish a Grievance Redress Mechanism that is easily accessible to all stakeholders. ▪ Ensure continuous communication between the proponent and stakeholders on the progress of the project and its effects.

Conclusion and Recommendations

The proposed project will have numerous socio-economic benefits such as provision of housing, revenue generation to the government, and the creation of employment opportunities among others. The Environmental Impact Assessment (EIA) has identified several negative impacts and a comprehensive Environmental Management Plan (EMP) has been developed to mitigate and manage these risks effectively. In light of the EIA findings and the mitigation measures outlined, it is our recommendation that the project be allowed to proceed subject to the full and effective implementation of the EMP.

CHAPTER ONE: INTRODUCTION

1.1 General Overview

Kenya's rapidly growing population and high rate of urbanization have placed immense pressure on the country's housing sector. According to the Africa Housing Finance Yearbook 2024 published by the Centre for Affordable Housing Finance in Africa (CAHF), the annual housing demand in the country stands at approximately 250,000 units. However, the supply remains significantly lower with only approximately 50,000 units supplied each year resulting in an 80% housing deficit. This shortfall is particularly concentrated in the Nairobi Metropolitan Area, underscoring the urgent need for expanded residential developments. In response, the Government of Kenya has introduced several policies and planning frameworks aimed at addressing the housing crisis such as the National Housing Development Programme and urban zoning reforms. These initiatives aim to increase housing supply across all income levels by promoting affordable housing development, streamlining building regulations, and encouraging private sector participation.

In light of the above, the proponent **Central Park Suites Limited** has proposed to construct **180 residential apartments** on Plot No. Nairobi/Block 22/232 located along Laikipia Road in Kileleshwa area of Nairobi City County. The proposed development will contribute to bridging the housing shortage in the area while upholding environmental sustainability and best practices. The proponent recognizes that they have a responsibility to the environment beyond legal and regulatory requirements and are committed to minimizing environmental impacts and continually improving and monitoring the environmental performance of the proposed development and its surroundings and has therefore engaged the environmental experts to carry out the Environmental Impact Assessment (EIA) in accordance with the Environmental Management and Coordination Act (EMCA) CAP 387. The EIA team has evaluated the possible environmental, occupational health and safety impacts of the proposed development during the project cycle and in turn, proposed suitable methods of mitigating the anticipated negative impacts. This will not only achieve a safe and clean environment but also ensure that the proposed project activities are in conformity with the existing environmental legislation.

1.2 Objectives of the EIA

The overall objective of EIA is to ensure that environmental concerns are integrated in the proposed project in order to contribute to sustainable development.

The specific objectives are:

- i. To identify potential environmental impacts of the proposed project and assess the significance of these impacts.
- ii. To assess the relative importance of the various project alternatives.
- iii. To propose mitigation measures for the significant negative impacts of the project on the environment.
- iv. To seek the views and concerns of all the Project Affected Persons (PAP) regarding the proposed project.
- v. To generate baseline data for monitoring and evaluation of how well the mitigation measures are being implemented during the project cycle.
- vi. To develop an Environmental Management Plan (EMP) for the project cycle with mechanisms for monitoring and evaluating the compliance and environmental performance which shall include the cost of mitigation measures and the time frame of implementing the measures.
- vii. To present the results of the EIA in such a way that they can guide informed decision-making.

1.3 Project Objectives

The objective of the proposed development is to construct a **23-level residential building comprising 180 residential apartments (108No. two-bedroom units, 54No. three-bedroom units, 12No. three-bedroom duplex units, and 6No. four-bedroom duplex units), 170 parking bays, children play area, swimming pool, fitness centre, private spa, residents lounge, co-working space/meeting rooms, and management offices with associated amenities** in Kileleshwa area.

1.4 Methodology

The methodology used for the preparation of this EIA Study report is stated in the steps below:

- i. Environmental Screening of the proposed project in line with the Second Schedule of EMCA, Legal Notice No. 31 of 2019 and the EIA team established that the proposed development falls under **High-Risk Projects (Urban development including establishment of new housing estate developments exceeding one hundred housing units)** which requires submission of the EIA Study Report to NEMA under Section 58 (2) of the act.
- ii. A scoping exercise that identified the key issues to be addressed in the assessment including environmental, social, health and safety concerns.

- iii. A site reconnaissance and physical evaluation of the project site to assess the baseline information of the project area using a prepared checklist with a specific focus on environmental and human safety issues that are likely to be affected.
- iv. Preparation of Terms of Reference (TOR) and submission to the authority for approval in line with Regulation 11 of the Environmental (Impact Assessment and Audit) Regulations 2003 (*Attached is the copy of TOR approval (Ref: No. NEMA/ENVIS/EIA/TOR/00421)*).
- v. Review the environmental setting of the area, proposed project designs, nature of the proposed activities, implementation plan/schedules, and other available relevant data/information.
- vi. Review of the policy, legal and institutional framework on the environment and socio-economic matters pertaining to the proposed project.
- vii. Consultations and Public Participation (CPP) with the Project Affected Persons (PAP) through public meeting(s) and key informant interviews.
- viii. Preparation of an EIA Study Report and the development of an EMP outlining the responsibilities, schedules, monitorable indicators and time frames for submission to NEMA.

1.5 Terms of Reference

The following are the TOR developed during the scoping exercise;

- i. The proposed location of the project;
- ii. A concise description of the national environmental legislative and regulatory framework, baseline information and any other relevant information related to the project;
- iii. The objectives of the project;
- iv. The technology, procedures and processes to be used, in the implementation of the project;
- v. The materials to be used in the construction and implementation of the project;
- vi. The products, by-products and waste generated by the project;
- vii. A description of the potentially affected environment;
- viii. The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated;
- ix. Alternative technologies and processes available and reasons for preferring the chosen technology and processes;

- x. Analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies;
- xi. An environmental management plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures;
- xii. Provision of an action plan for the prevention and management of foreseeable accidents and hazardous activities in the course of carrying out activities or major industrial and other development projects;
- xiii. The measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies;
- xiv. An identification of gaps in knowledge and uncertainties which were encountered in compiling the information;
- xv. An economic and social analysis of the project;
- xvi. An indication of whether the environment of any other state is likely to be affected and the available alternatives and mitigating measures.

1.6 Project Justification

Article 43 (1) (b) of the Constitution of Kenya empowers every citizen with a right to accessible and adequate housing and reasonable standards of sanitation. According to the National Housing Corporation Strategic Plan of 2023-2027, there is currently a backlog of 2 million housing units. The deficit is bound to rise due to high urbanization rate and population growth in the country. Nairobi is among the areas affected by the deficit with close to 60 percent of its population living in slums. This calls for the development of housing units to accommodate the expanding urban population and therefore the project will provide additional housing in the area with an aim to bridge the existing demand gap.

1.7 Socio-Economic Benefits

The proposed development will provide the following social economic benefits;

i. Provision of Residential Apartments

The proposed project will provide 180 residential apartments in the Kileleshwa area. This will enhance the overall competitiveness of the area and in turn encourage more development and growth while contributing towards the provision of additional housing in the area.

ii. Provision of Recreational Facilities to the Residents

The proponent will provide recreational facilities within the same development such as swimming pool, fitness centre, a children play area, and co-working spaces.

These facilities will enhance convenience and accessibility to the residents while promoting physical health and well-being, foster social connections and community bonds, and enhance mental health.

iii. Provision of Employment Opportunities

The proposed project will create employment opportunities for both skilled and semi-skilled workers. During the construction phase, the proposed project will employ construction workers such as masons, plumbers, electricians, tilers, and painters among others. For the operation phase, the project will employ security personnel, domestic workers, fitness trainers, pool safety coordinators, waste transporters, cleaners, and a property manager among others.

iv. Provision of Revenue to the National Government

There will be an increase in revenue to the National Government revenue through taxes such as Value Added Tax (VAT) on building materials and professional services from architectural, structural and environmental consultancy services; Pay-As-You-Earn (PAYE) on employment income; excise duty on materials; Monthly Rental Income (MRI) on rental income; and revised ground rent among others.

v. Contribution of Fiscal Revenue to the County Government

There will be an increase in revenue to the County Government through fees from building plans, construction permits, utilities, levies, and revised land rates among others.

vi. Provision of Revenue to the Proponent

There will be an increase in revenue for the proponent through the renting/sale of residential apartments and therefore improving their living standards.

vii. Market for Goods and Services

During the construction phase, the project will require building materials (cement, ballast, sand, stones etc.) and professional services such as architectural, engineering, and environmental consultancy services among others. This will have a positive impact on the economic status of the suppliers and professionals in the country. The local economy of the neighborhood will also receive a boost through the purchase of food items, drinks, and other commodities required by the workers and incoming population.

CHAPTER TWO: PROJECT DESCRIPTION, DESIGN AND IMPLEMENTATION

2.1 Nature of the Project

The proposed project will entail the construction of **180 residential apartments** in Kileleshwa area. The project aims to provide housing infrastructure as well as maximizing the utilization of the property. At the time of our site visit, the subject property was characterized by residential maisonette and a Domestic Servant Quarter (DSQ) which will be demolished to pave the way for the construction of the proposed development upon acquisition of a demolition permit from NCC.

Plate 1: The Site



Source: Fieldwork, 13/02/2026

2.2 Project Location

The subject plot is located along *Laikipia Road* on latitude -1.2733 and longitude 36.7934 in Kileleshwa area of Dagoretti North Sub-county, Nairobi City County. It abuts *Samaritan's Purse* to the west and *Luxehill Villas* to the east as shown in figure 1 below.

Figure 1: Location Map



Source: Google Earth, 2026

2.3 Land Tenure, Size, and Ownership

The subject property is registered as **Plot No. Nairobi/Block 22/232 (Original Number 4857/110)** under the Land Registration Act and the Land Registration (General) Regulations of 2017 on **leasehold interest** for 99 years from 1st August 1988. It measures approximately **0.3313 hectares** and the current registered proprietor is **Central Park Suites Limited** of P.O. Box 43942 - 00100, Nairobi (*Attached is a copy of the ownership documents*).

2.4 Zoning of the Area

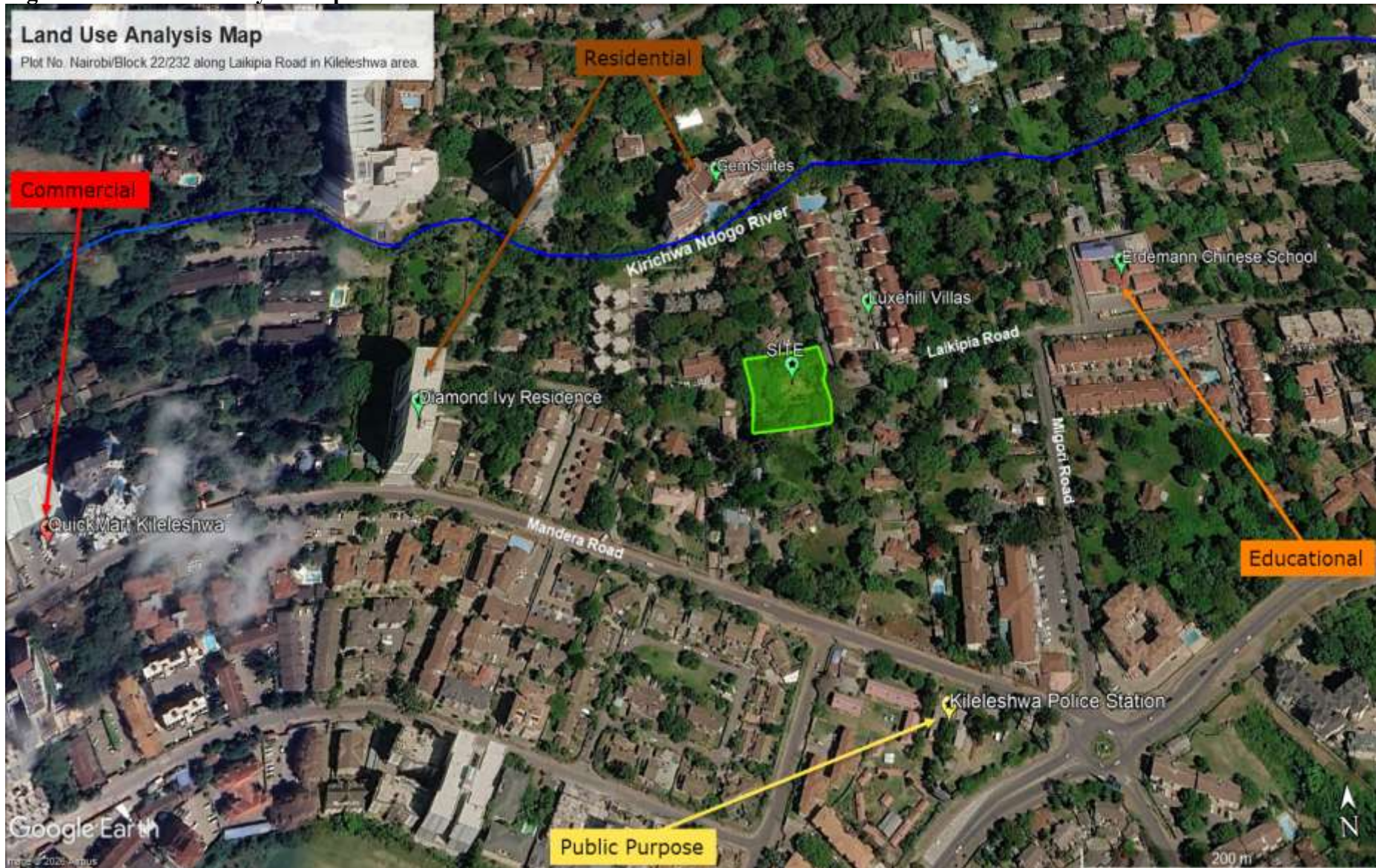
The property is located in **Zone 4C** according to *Sessional Paper No. 1 of 2021 on Nairobi City County Development Control Policy* which allows for **Mixed Developments (Commercial, Residential and Professional Offices)** at a **minimum size of 0.05Ha**. The proponent applied for a *Change of Use* from *Single Dwelling Unit to Multiple Dwelling Units (Apartments)* and approval was granted by NCC. Notable residential developments in the neighbourhood include *Diamond Ivy Residence (G+18)*, *Kaisa Gardens (G+14)*, and *Avic Park Apartments (G+11)*. Other land uses within a radius of 500 meters from the project site include *Educational (Erdemann Chinese School)*, *Commercial (QuickMart Kileleshwa)*, and *Public Purpose (Kileleshwa Police Station)* as shown in figure 2 (*Attached is the Change of Use approval (Ref. No.: PLUPA-COU-003924-N)*).

Plate 2: Residential Apartments in the Neighbourhood



Source: Fieldwork, 13/02/2026

Figure 2: Land Use Analysis Map



Source: Google Earth, 2026

2.5 Project Description

The proponent proposes to construct a **23-level residential building comprising 180 residential apartments (108No. two-bedroom units, 54No. three-bedroom units, 12No. three-bedroom duplex units, and 6No. four-bedroom duplex units), 170 parking bays, children play area, swimming pool, fitness centre, private spa, residents lounge, co-working space/meeting rooms, and management offices with associated amenities** as detailed below:

- i. **Basement 1** comprising 54 parking bays.
- ii. **Basement 2** comprising 54 parking bays and a pump room.
- iii. **Ground floor** comprising 62 parking bays and a management office.
- iv. **Mezzanine floor** comprising children play area, fitness centre, swimming pool, private spa, residents lounge, co-working space/meeting rooms, and management office.
- v. **Typical 1st to 18th floor** comprising 6 units of two-bedroom apartments and 3 units of three-bedroom apartments.
- vi. **19th to 22nd floor** comprising a total of 12 duplexes of three-bedroom typology and 6 duplexes of four-bedroom typology.

**Each unit consists of a lounge, dining, kitchen, DSQ, laundry room, washrooms, and balcony.*

Other salient features include 2 staircases, 4 lift shafts, 2 lift lobby, electrical and mechanical ducts, a boundary wall, driveway, ramps, and passage. More fine details, specifications, and features of the proposed project can be obtained from the drawings (*Attached is the approved architectural plans (Ref. No.: PLUPA-BPM-008951-N)*).

Table 1: Total Number of Apartments

Description	2 Bedroom Units	3 Bedroom Units	3 Bedroom Duplex	4 Bedroom Duplex	Total Units
Typical 1 st to 18 th floor	108 units (6 units * 18 levels)	54 units (3 units * 18 levels)	-	-	162
19 th to 22 nd floor	-	-	12 (6 duplexes * 2 levels)	6 units (3 duplexes * 2 levels)	18
TOTAL	108 units	54 units	12 units	6 units	180 units

Table 2: Total Number of Parking Bays

Description	Parking Bays
Basement 1	54
Basement 2	54
Ground Floor	62
Total	170 bays

2.6 Existing Infrastructure and Services

2.6.1 Roads and Accessibility

The property is accessed via **Laikipia Road** which is tarmacked, in need of rehabilitation, has walkways and streetlights. It connects to Migori Road, Ring Road Kileleshwa, Oloitoktok Road, and Mander Road linking the area to nodes such as *Olunguruone Place Shopping Mall, Lavington Mall, and Yaya Center* for social economic activities. The accessibility of the site will be instrumental during the project cycle. The proponent commissioned a *Traffic Impact Assessment (TIA)* to evaluate the potential effects of the proposed development on the surrounding road network. The findings of the TIA indicate that the *Laikipia Rd/Migori Rd intersection, Ring Rd Kileleshwa/Laikipia Rd intersection, and Ring Road Kileleshwa/Mander Rd/Githunguri Rd/Oloitoktok Rd/Migori Rd intersection* are currently operating at *Level of Service (LOS) C or better* except the *Arboretum Drive/Ring Road Kileleshwa intersection* which operates at *LOS F during the AM peak* signifying minimal congestion and acceptable traffic conditions. To mitigate potential disruptions during the construction phase, a *Traffic Management Plan (TMP)* has been developed outlining practical measures to ensure the smooth flow of traffic along the access roads in order to minimize inconvenience to road users. The proponent is committed to ensuring strict implementation of the TMP during the construction period. *(Attached is the Traffic Impact Assessment Report).*

Plate 3: Laikipia Road



Source: Field Work, 13/02/2026

2.6.2 Water Supply

The general area as well as the site is served with water from the Nairobi Water and Sewerage Company (NCWSC). During the construction period, water will be required for *cement mixing, curing of concrete, suppressing dust, cleaning, and drinking among others*. On occupation, water will be used for *domestic purposes such as drinking, flushing the toilet, showering, and cleaning among others*. The estimated daily water demand during the construction and operation phases of the development will be approximately $10m^3$ and $60m^3$ respectively. The sources of water for the proposed development will be from the *NCWSC main water supply, an onsite borehole, and harvested rainwater*. The proponent will extend the connection of the main water supply to the proposed development upon the acquisition of a connection permit from NCWSC. The developer will also *drill a borehole* as an alternative source of water subject to the acquisition of an authorization permit from the Water Resource Authority (WRA) and harvest rainwater for reuse to supplement the existing main water supply. The proponent will further provide water storage tanks with a capacity of approximately $300m^3$ able to serve the residents for at least five (5) days.

2.6.3 Energy Supply

The general area as well as the site is served by electricity from the Kenya Power & Lighting Company (KPLC) main grid. During the construction and occupation phases, energy will increase as a result of consumption in the running of construction equipment such as *air compressors*; running of household equipment such as *washing machines, refrigerators, cookers, and air conditioners*; and *lighting purposes* among others. The estimated annual energy demand during the construction and operation phases of the proposed development will be approximately $200 MWh$ and $900 MWh$ respectively. The sources of energy for the proposed development will be from the *main grid, solar energy, and a generator*. The proponent will apply for an *onsite transformer* for power supply within the proposed development subject to the acquisition of a connection permit from KPLC. The developer will also install *solar panels* to provide alternative renewable energy and a generator as a backup source of energy for the development.

Plate 4: Electricity Transformer (L) and Streetlight (R) along Laikipia Road

Source: Field Work, 13/02/2026

2.6.4 Liquid Waste Management

The general area as well as the site is served by the NCWSC conventional sewer system. The estimated quantity of liquid waste to be generated during the operational phase of the proposed development is approximately $45 \text{ m}^3 \text{ per day}$. The proponent proposes to construct a *mini-Sewer Treatment Plant (STP)* for pre-treatment of liquid waste prior to final discharge into the existing 225 mm diameter conventional sewer line. The treatment plant will reduce pollutant load, improve effluent quality, and enhance the hydraulic and operational efficiency of the downstream sewer network. The pre-treatment of wastewater before discharge into the sewer system will minimize the risk of sewer blockages, odour generation, excessive sludge accumulation, and overloading of the municipal sewer infrastructure. The proponent will obtain the connection permit from NCWSC before extension and connection of the proposed development to the existing conventional sewer system. All sanitary works shall be undertaken to the satisfaction of the relevant County Government Health Department.

Plate 5: Sewer Manhole along Laikipia Road

Source: Field Work, 13/02/2026

2.6.5 Solid Waste Management

The solid waste within the area is managed by private waste transporters who collect the waste twice every week. *Construction and demolition waste* is anticipated to be generated during the construction phase and the composition will include *demolition debris, excavated soil, construction debris, pieces of wood and metal, glass, broken ceramics, plastic, paper, and food waste* among others. During the operation phase, *municipal solid waste* is anticipated to be generated and will consist of *food waste, paper, plastics, metals, rags, wrappers, bags, boxes, empty bottles, empty containers, and e-waste* among others. The estimated quantity of the municipal solid waste that will be generated during the operation phase will be approximately *300 kilograms per day*. The proponent shall provide a *Waste Collection Centre (WCC)* for waste management within the property. All solid waste generated from the proposed project will be segregated, reused where feasible, and transported for final disposal at designated disposal sites by a licensed waste transporter.

2.6.6 Storm Water Management

The stormwater in the general area is managed by the closed and open drains located along the access roads that channel the runoff into the *Kirichwa Ndogo River*. The subject property drains its stormwater through natural infiltration while the excess flows into the open drains along the access road. For stormwater management within the property, the proponent will construct internal drains, harvest rainwater for reuse, and plant indigenous trees within the open spaces to increase the infiltration rate.

Plate 6: Open Drains along Laikipia Road

Source: Field Work, 13/02/2026

2.6.7 Security

The subject plot has been secured with a combination of a precast concrete wall and a live fence complemented by a gate with a guardhouse. There are street lights installed along the access road that are used to light up the area therefore promoting its security while improving the safety of the drivers, riders, and pedestrians during the night. The security in the area is also beefed up by the nearby *Kileleshwa Police Station* which is located approximately 250 meters south of the project site. The developer shall construct a boundary wall with an access gate and a gatehouse to enhance site security. During occupation, the proponent shall beef up security by installing CCTV cameras at strategic points within the premises and engaging the services of licensed security personnel to enhance the overall safety of the property and monitor the movement of people in and out of the property.

Plate 7: Plot Fencing

Source: Field survey, 13/02/2026

2.6.8 Telecommunication

The tech ecosystem in Kenya is rapidly growing with telecommunication services being the core infrastructure. The area is well covered by mobile telecommunication such as *Safaricom, Telkom, and Airtel networks*. Other telecommunication services in the area include fiber optics provided by *Safaricom Home Fiber, Liquid Telecom, and Zuku Fiber*. All these will facilitate communication during the project cycle.

2.7 Pre-Construction Stage

This stage shall involve:

- i. Appraisal of the baseline conditions to determine supply and demand for the required infrastructural services.
- ii. Preparation of the architectural and structural designs and submission to NCC for approval.
- iii. Preparation of an EIA Study Report and submission to NEMA for licensing.
- iv. Obtaining demolition, tree cutting clearance certificate, and excavation permits from NCC before the construction begins.
- v. Obtaining a Compliance Certificate from the National Construction Authority (NCA) before the construction begins.

2.8 Construction Stage

2.8.1 Construction Inputs

The project inputs will include the following:

- i. The materials that shall be used will include natural and machine-cut stones, cement, sand, ballast, ceramic fixtures, steel, wood, glass, painting materials, roofing materials, plastic, electrical and mechanical fixtures. All these shall be obtained from licensed dealers who have complied with the environmental management guidelines and policies and approved by the Kenya Bureau of Standards (KEBS).
- ii. Several machines shall be used which will include earth-moving equipment (excavators and loaders), material handling equipment (cranes and hoists), construction equipment (concrete mixers and vibrators), and engineering vehicles (tippers).
- iii. The project will require a labor force of both skilled and non-skilled workers. The skilled personnel will include the project consultants (architect, engineers, quantity surveyor, health and safety officer and environmental experts) and the contractor with a team of foreman, masons, carpenters, plumbers, electricians and casual labourers among others.
- iv. Other construction inputs will include water from NCWSC or borehole and electricity from the main grid or provided by a generator.

2.8.2 Construction Activities

i. Site Preparation

The construction works will commence with the demolition of the existing structures followed by site clearing which will involve cutting down of the existing trees and clearing of any shrubs or grass. Thereafter, the site office, material storage area, and site toilet will be constructed at a designated place using corrugated iron sheets in accordance with the permit conditions from NCC. The setting out will then be carried out to define the building layout in accordance with approved drawings under the supervision of the project architect.

ii. Excavation Works

The proposed project involves excavation to a depth of approximately six (6) meters to accommodate two (2) basement levels. The site is characterized by reddish-brown stiff moist clay soil and transitional layer of reddish to greyish slightly/moderately weathered weak fractured agglomerate rock. Excavation will be undertaken using a staged approach supported by a perimeter earth retention system consisting of contiguous bored piles with reinforced concrete capping beams and multi-level anchors or struts under the supervision of the project engineers. This system is designed to maintain excavation stability, prevent ground collapse, and protect adjacent properties.

Bulk excavation will proceed in layers, beginning with the clay stratum using hydraulic excavators, followed by excavation through the lateritic layer using ripping or light mechanical breaking while the localized rock excavation will be carried out using hydraulic breakers. Excavation faces will not be left unsupported and stabilization measures will be applied progressively in tandem with excavation. Groundwater ingress will be managed through sump pumping and wellpoint dewatering systems where necessary. All dewatering discharge will be passed through sediment control measures prior to release to prevent contamination of surface water systems. The suitable excavated materials will be reused on-site or in other construction projects while the unsuitable soils will be disposed of at designated disposal sites by licensed waste transporters in compliance with waste management regulations.

iii. Structural Steelworks

The structural elements which include the strip footings, retaining walls, shear walls, slabs, beams, columns, and column bases will be constructed using reinforced concrete. The structural steel will be used to reinforce the concrete since it is weak in tensile strength. Structural steelworks will involve steel cutting, welding and fixing on an already constructed formwork before concreting is carried out. The steelworks shall be carried out by steel fixers under strict supervision from the project engineer.

iv. Concrete Works

The construction of the proposed development will be carried out in line with the approved architectural & structural plans and comply with the specifications issued and approved by the project team. Concrete works will involve the mixture of cement, sand, and ballast in the specified ratios and poured into already constructed formwork. The poured concrete will be cured for a specified period approved by the project engineer. The concreting will be supplemented by concrete mixers and vibrators.

v. Masonry Works

The interior and exterior walls shall be built using machine-cut stones sourced from licensed suppliers. The walls will be constructed using cement and sand mortar at specified ratios approved by the project engineer.

vi. Mechanical and Electrical Works

This phase will involve the installation of water and wastewater piping, electrical fixtures and appliances including lighting fixtures within the proposed development by licensed electricians and plumbers. This will be followed by the connection of the electrical and mechanical configuration to the existing power and water supply lines upon acquisition of the connection permits from KPLC and NCWSC respectively. The proponent shall also construct a *mini STP* with related internal reticulation system for pre-treatment of the liquid waste from the development before final discharge into the existing conventional sewer system. All the work will be carried out by a licensed electrician and plumber.

vii. Interior and Exterior Finishes

After concrete and masonry works are completed, plastering will be carried out both internally and externally in line with the specifications of the architect. The plastering will ensure the building is structurally strong, protect it from weather effects and give it an attractive look. Thereafter, aluminium powder-coated doors, Unplasticized Polyvinyl Chloride (UPVC) windows and toughened glass railings for the balconies will be installed. This will be followed by the painting of the building using cement primer and eco-friendly zero-Volatile Organic Compounds (VOC) paints. Finally, the installation of ceramic/porcelain tiles on the floor and walls will be carried out by a licensed tiler.

viii. Final Clean Up and Landscaping

The final cleanup will be carried out once the construction activities are completed. All the solid waste generated during the construction phase will be reused where feasible and/or disposed of at designated approved sites by licensed waste transporters.

Thereafter, the proponent will undertake a comprehensive landscaping exercise by planting indigenous trees within the open spaces. The residents shall be sensitized to practice apartment gardening within their residential units during the operation phase.

2.9 Operational Stage

The project will be used for **residential purposes** and the operational activities will involve the following:

- i. **Residence:** A total of *180 families* will reside within the development. Operational activities will include *cooking, laundry, cleaning, and resting activities within the residential apartments.*
- ii. **Recreational Activities:** There will be recreational and leisure activities within the same development from the swimming pool, fitness centre, and the children play area. These activities will promote residence's physical health and well-being, foster social connections and community bonds, and enhance mental health.
- iii. **Property Management:** The proponent shall engage the services of a management company to ensure the following:
 - a) Collect service charges from the occupants and ensure monthly monitoring of energy and water consumption within the development.
 - b) Ensure regular cleaning of the common areas within the development such as the recreational facilities, lobbies, parking bays, driveways, corridors, and staircases.
 - c) Ensure regular inspection and maintenance of the electrical and mechanical equipment such as the generator and lifts among others.
 - d) Ensure regular collection and disposal of the solid waste from the development.
 - e) Ensure security measures are adhered to within the property by engaging the services of licensed security personnel to safeguard the property and monitor the movement of people and vehicles in and out of the site.

2.10 Decommissioning Phase

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the expiry of the project lifespan. If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/ decommissioning of the site. The following should be undertaken to restore the environment:

- i. Give notices of at least three (3) months of the intention to redevelop the property and/or demolition of the development to the tenants.
- ii. Apply for a demolition permit from the Nairobi City County Government.

- iii. Prepare a decommissioning plan and submit it to NEMA for approval at least three (3) months prior to the demolition exercise.
- iv. Dismantle the equipment including the electrical and mechanical fixtures/fittings.
- v. Demolish the existing structures and remove the debris from the site while adhering to all the relevant environmental legislation.
- vi. Backfill the surface openings with a suitable material such as pebbles and/or demolition debris.
- vii. Undertake soft landscaping by planting indigenous trees, grass, and flowers. The site should be well landscaped by flattening the mounds of soil.
- viii. Fence and signpost unsafe areas until natural stabilization occurs.

The major emphasis here will be the restoration of the affected environment, proper disposal of dismantled materials and protection of public health and safety.

2.11 Products, By-Products, and Wastes

- i. **Products:** The final product will be **180 residential apartments**.
- ii. **By-Products:** The by-products will include;
 - a) The excavated soils and rocks will be reused for landscaping and backfilling purposes within the site and in other construction sites.
 - b) Large pieces of timber/wood/steel generated during the construction phase will be transported back to the contractor's yard for reuse in future while the small pieces of timber/wood will be used for fuel and steel sold to licensed scrap metal dealers.
 - c) Empty cans or drums will be used to store water whereas the damaged ones will be sold to licensed scrap metal dealers.
- iii. **Wastes:** Solid and liquid waste will be generated during the entire project cycle. The anticipated waste will include *construction & demolition waste and municipal solid waste* during the construction and operation phases respectively. All liquid waste will be channeled to *mini-sewer treatment plant* for pre-treatment of liquid waste before final discharge into the existing conventional sewer line whereas the solid waste will be segregated, reused and/or recycled where appropriate and disposed of at designated disposal sites by a licensed waste transporter.

2.12 Project Budget and Duration

The proposed project is estimated to cost **one billion five hundred fifty-one million one hundred seventy-one thousand eight hundred ninety-three Kenyan shillings only (KShs 1,551,171,893.00)**. The project implementation work is estimated to take 2 years (*Attached is the Bill of Quantities*).

CHAPTER THREE: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK-

EIA is an instrument for environmental management and development control. It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound. It is a requirement that all developers conduct EIAs before undertaking any development projects. EIAs are carried out in order to identify potential positive and negative impacts associated with the proposed development with a view of taking advantage of the positive impacts and developing mitigation measures for the negative ones. There are several policies, laws and regulations that govern the protection, conservation and exploitation of natural resources coupled with provisions for environmental management. These national policies, laws and regulations cover infrastructure, water, agriculture, forestry and health just to mention a few. The national environment action plan documents cover policy directions regarding the integration of environmental concerns including EIA into the development planning process. Some of the key national laws, policies and regulations that govern the management of environmental resources in the country are discussed herein.

3.1 POLICIES

3.1.1 The National Environmental Action Plan (NEAP)

The NEAP was a deliberate policy effort to integrate environmental considerations into the country's economic and social development initiatives/plans. Section 37 of the EMCA stipulates that NEMA shall formulate the National Environment Action Plan (NEAP) and shall ensure that it has undertaken public participation before the adoption of the plan. The NEAP framework (2009-2013) recognizes the intertwined linkages between economic growth and the environment in Kenya. It highlights priority themes and activities for the country towards achieving a sustainable environment. The policy framework among others proposes the integration of environmental concerns into regional and local development plans, promotion of appropriate land uses and enforcement of EMCA and its subsidiary, and other relevant legislation. The policy framework also advocates for efficient water harvesting, storage, and usage. In human settlements and infrastructure, this policy framework recognizes the associated environmental issues. These include waste management, sanitation, diseases, land-use changes in conservation areas, demand for water, energy, construction materials, pollution, land degradation, biodiversity loss, etc. Multiple stakeholders' involvement inclusive of the private sector is advocated for within the implementation of this framework towards the achievement of sustainable development goals. The framework also advocates for monitoring and evaluation to ensure effective and efficient environmental policy implementation.

The proponent has commissioned the EIA experts to undertake the EIA for the proposed development in adherence with this policy.

3.1.2 National Policy on Water Resources Management and Development (1999)

While the National Policy on Water Resources Management and Development (1999) enhances a systematic development of water facilities in all sectors for promotion of the country's socio-economic progress, it also recognizes the by-products of this process as wastewater. It therefore calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. The same policy also requires that such projects undergo comprehensive EIA that will provide suitable measures to be taken to ensure environmental resources and people's health in the immediate neighborhood and further downstream are not negatively impacted by the emissions.

All liquid waste generated from the proposed project will be channeled into the STP for pre-treatment before final discharge into the existing conventional sewer system.

3.1.3 National Housing Policy for Kenya, 2016

The Sessional Paper No. 3 of 2016 on National Housing Policy is expected to ensure the progressive realization of the right to accessible and adequate housing and reasonable standards of sanitation for every person as per Article 43 of the Constitution. High urbanization and demographic dynamics in the region are driving demand for real estate and infrastructure. Rapid urbanization being experienced worldwide has brought about many challenges, the most critical being a general deterioration of the living standards of an increasing majority of urban dwellers. The problem of urban housing in the country is characterized by an acute shortage in the number of dwellings, overcrowding in the existing housing stock as well as the existence of sub-standard human settlements such as slums and squatter settlements.

The proposed project aims to provide residential apartments in Kileleshwa area.

3.1.4 Sustainable Development Goals (SDGs)

On 25th September 2015, countries adopted the United Nations Sustainable Development Goals (SDGs) aimed at contributing towards ending poverty, protecting the planet, and ensuring prosperity for all as part of a new sustainable development agenda. The SDGs have very significant implications for investment needs and the role of the public sector is fundamental and pivotal. At the same time, the contribution of the private sector is indispensable. The proponent has committed to the SDGs through the proposed development in the following ways:

Goal 3: Good Health and Well Being

The project will contribute to improved health and productivity through the provision of a safe and clean environment by ensuring all liquid waste is channeled into the STP for pre-treatment before final discharge into the existing conventional sewer system, and that the solid waste is collected and transported for final disposal at designated disposal sites by a licensed waste transporter.

Goal 6: Clean Water and Sanitation

The proponent is committed to providing adequate sanitary facilities during the project cycle. All liquid waste will be channeled into the STP for pre-treatment prior to final discharge into the existing conventional sewer system. This shall improve water quality and sanitation by ensuring zero proportion of untreated wastewater is not discharged into the environment.

Goal 7: Affordable and Clean Energy

The implementation of an energy management system through the installation of energy-efficient fixtures and fittings shall contribute to increased energy efficiency. The developer shall also install solar panels as a source of renewable energy for the proposed development. Additionally, the integration of a solar-powered STP will ensure sustainable and energy-efficient treatment of wastewater, further reducing operational energy demand. The project design has incorporated a centralized courtyard that will promote natural lighting and ventilation within the development. This will reduce dependence on artificial lighting and mechanical ventilation during daytime, thereby contributing to additional energy savings while enhancing indoor environmental quality and occupant comfort.

Goal 8: Decent Work and Economic Growth

The creation of employment opportunities during the project cycle shall contribute to reducing the proportion of youth not in employment. The proponent shall ensure an environment that emphasizes the protection of labor rights and promotes a safe and healthy environment for all workers during the project cycle.

3.2 LEGAL FRAMEWORK

3.2.1 The Constitution of Kenya 2010

The Constitution of Kenya is the supreme law of the Republic of Kenya and binds all persons and all State organs at all levels of government. It provides the broad framework regulating all existence and development aspects of interest to the people of Kenya, and along which all national and sectorial legislative documents are drawn.

In relation to the environment, Article 42 of Chapter 4 on the Bill of Rights confers to every person 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 measures, particularly those contemplated in Article 69, and to have obligations relating to the environment fulfilled under Article 70.

The proponent will therefore adhere to the provisions of the EMP provided in this report to ensure the residents and general public right to a clean and safe environment is not infringed.

3.2.2 Environment Management and Coordination Act, Cap 387.

This is the framework law on environmental management and conservation. It provides for environmental protection through: Environmental Impact Assessment; Environmental Audit; Environmental Monitoring; and Environmental Restoration Orders, Conservation Orders, & Easements. Section 58 of the Act directs that any proponent for any project listed on the Second Schedule to undertake and submit to the authority an Environment Impact Assessment in the prescribed form while giving the prescribed information which shall be accompanied by the prescribed fee. The act further states that the EIA studies and reports shall be conducted by authorized individual experts or firm of experts in accordance with the EIA regulations, guidelines, and procedures issued thereunder.

The proponent has engaged the services of licensed firm of experts to conduct this EIA Study in line with the provisions of this Act.

3.2.3 The Environmental (Impact Assessment and Audit) Regulations, 2003

These regulations stipulate how an EIA Study Report should be prepared and specifies all the requirements that must be complied with. It highlights the stages to be followed, information to be made available, role of every stakeholder and rules to be observed during the EIA Study report-making process. Regulation 4 (1) states that no proponent shall implement a project likely to have a negative environmental impact or for which an EIA is required under the Act or these Regulations unless an EIA has been concluded and approved in accordance with these regulations. Regulation 11 (1) states that an EIA study shall be conducted in accordance with terms of reference developed during the scoping exercise by the proponent and approved by the Authority. Regulation 17 (1) stipulates that during the process of conducting an EIA study under these regulations, the proponent shall in consultation with the Authority, seek the views of persons who may be affected by the project. Regulation 31 states that an environmental audit study shall be undertaken on new projects undertaken after the completion of an environmental impact assessment study report.

The proponent has engaged the services of a licensed firm of experts to undertake this EIA Study in line with these regulations.

3.2.4 The Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009

These regulations aim to ensure the maintenance of a healthy environment for all people in Kenya, the tranquility of their surroundings, and their psychological well-being by regulating noise levels and excessive vibration. Regulations 3 and 4 prohibit any person to cause excessive vibrations which exceed 0.5 centimeters per second beyond the property boundary which annoys, disturbs, injures, or endangers the health, or safety of others and the environment. Regulation 13 also requires that the construction equipment shall not perform any work outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the second schedule to these regulations.

The contractor shall ensure that all construction activities are undertaken between 0800hrs to 1800hrs on weekdays and 0800hrs to 1300hrs on Saturdays only and that all machinery used is in good working condition to reduce frictional noise.

3.2.5 The Environmental Management and Co-Ordination (Air Quality) Regulations, 2024

The objective of these regulations is to provide for the prevention, control, and abatement of air pollution to ensure clean and healthy ambient air. These regulations prohibit any person from engaging in open burning; emitting any liquid, solid or gaseous substance or depositing any such substance in levels exceeding those set-out in these regulations; and engaging in spray painting save for in the manner permitted by this Regulation and the Act. Regulation 19 requires the owners or operators of any facility to ensure the ambient air quality at their property boundary do not exceed the limits as prescribed in the first schedule. Regulations 37, 38, and 39 further prohibit any person operating construction equipment, handling construction material, undertaking demolition of structures, stockpiling and storing materials to allow emissions of particulate matter in a manner likely to cause ambient air quality levels to be exceeded.

The proponent shall screen the entire site to control and arrest construction-related dust and sprinkle water in the work areas to prevent fugitive dust violations.

3.2.6 Environmental Management and Co-ordination (Water Quality) Regulations, 2024

These regulations provide for the sustainable management of water resources including prevention of water pollution and protection of water sources. It is an offence under Regulation 4 (2) for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution. It further requires proponents to have a valid Effluent Discharge License (EDL) before discharging any

effluent from point sources, industry, or sewage treatment works into the aquatic environment. Regulation 14 (1) also requires every licensed person generating and discharging effluent into the environment to carry out effluent discharge quality and quantity monitoring in accordance with methods and procedures of sampling and analysis prescribed by the Authority and to submit records of effluent discharge quality and quantity monitoring to the Authority at least once in every six months or as the Authority may prescribe.

All liquid waste shall be channeled into the STP for pre-treatment prior to final discharge into the existing conventional sewer system.

3.2.7 Environmental Management and Co-ordination (Waste Management) Regulations, 2024

These regulations apply to the handling, storage, transportation, segregation and destruction of waste. Regulation 4 makes it an offence for any person to dispose hazardous waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle. Regulation 5 requires waste generators to collect, segregate and dispose the waste by minimizing the waste generated through the adoption of cleaner production methods. Waste generators are also required to segregate waste as per regulation 7 and ensure the segregated waste is placed in a clearly labelled and color-coded receptacles, bins, containers, and bags as set out in the second schedule.

The proponent shall provide colour-coded receptacles for segregation of waste and engage the services of licensed waste transporters to dispose of the waste at designated disposal sites during the project cycle.

3.2.8 Climate Change Act, 2016

This Act of Parliament was formulated to provide for a regulatory framework for enhanced response to climate change and provide mechanisms and measures to achieve low carbon climate development. It has provided incentives that are geared towards encouraging innovations that are centered on climate change mitigation and enhancing climate change resilience and low carbon development for the sustainable development of Kenya. Climate change is an international agenda and every stakeholder must take an active role in the mitigation of the effects of climate change. Section (2) of this act states that this Act shall be applied in all sectors of the economy by the national and county governments to mainstream climate change responses into development planning, decision making, and implementation; build resilience and enhance adaptive capacity to the impacts of climate change.

The proponent has undertaken GHG Emissions and Climate Change Vulnerability Assessment which has recommended adaptation and mitigation measures such as rainwater harvesting; planting of trees and grass; use of solar energy; use of water and energy efficient fixtures/fittings; and waste management through the engagement of a licensed waste transporter to collect and dispose of the solid waste regularly.

3.2.9 The Sustainable Waste Management Act, 2022

This is an Act of Parliament that establishes the legal and institutional framework for the sustainable management of waste and ensures the realization of the constitutional provision on the right to a clean and healthy environment. Section 12 of the act states that all public and private sector entities shall segregate non-hazardous waste into organic and nonorganic fractions; that the segregated waste shall be placed in properly labelled and colour-coded receptacles, bins, containers and bags and that all waste service providers shall collect, handle and transport segregated waste. Section 19 states that private sector entity shall prepare a three-year waste management plan and submit an annual monitoring report to the Authority which shall specify the actual quantities of waste generated by the entity the waste management methods applied by the entity; and any other information that the Authority may require.

The proponent shall prepare a three-year Waste Management Plan for the project cycle which will include provision of waste segregation receptacles and engagement of services of NEMA-registered waste service providers to collect and dispose of segregated waste to designated disposal sites.

3.2.10 The Physical and Land Use Planning Act No. 13 of 2019

The objectives of development control are to ensure orderly physical and land use development; to ensure optimal land use; to protect and conserve the environment; and to promote public safety and health among others. Section 57 (1) states that a person shall not carry out development within a county without development permission granted by the respective County Executive Committee Member (CECM). Section 58 (1) and (2) further state that a person shall obtain development permission from the respective CECM by applying for development permission from that CECM in the prescribed form and after paying the prescribed fees and that an applicant for development permission shall provide documents, plans, and particulars as may be required by the respective CECM to indicate the purposes of the proposed development. Section 58 (3) stipulates that an applicant for development permission shall indicate the proposed uses to which the land shall be put, the population density to which the land shall be subjected, and the portion of the land the applicant shall provide for easements as a consequence of the applicant's proposed development.

The change of use and architectural plans for the proposed project have been submitted and approved by NCC.

3.2.11 County Government Act, 2012

The Act provides for county governments' powers, functions, and responsibilities to deliver services. The functions which local governments carried out were effectively transferred to the county governments. The Act gives the county the responsibility of planning and co-coordinating all developments within their areas of jurisdiction. Part XI (sections 102-115) of the Act provides for planning principles and responsibilities of the county governments. The land use and building plans provided for in the Act are binding on all public entities and private citizens operating within the particular county. The plans for the proposed project must be approved by the County Government and the County Government may also issue directives and authorizations on various aspects e.g., waste management and fire emergency preparedness among others.

The change of use and architectural plans for the proposed project have been submitted and approved by NCC.

3.2.12 Occupational Safety and Health Act, 2007

This is an act of Parliament to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The key areas addressed by the Act include: General duties including duties of occupiers, self-employed persons and employees. Enforcement of the act including powers of an occupational safety and health officer; Health General Provisions including cleanliness, ventilation, lighting and sanitary conveniences; Machinery safety including safe handling of transmission machinery, hand-held and portable power tools, self-acting machines, hoists and lifts, chains, ropes & lifting tackle, cranes and other lifting machines, steam boilers, air receivers, refrigeration plants and compressed air receiver; Safety General Provisions including safe storage of dangerous liquids, fire safety, evacuation procedures, precautions with respect to explosives or inflammable dust or gas; Chemical safety including the use of material safety data sheets, control of air pollution, noise and vibration, the handling, transportation and disposal of chemicals and other hazardous substances materials; Welfare general provisions including supply of drinking water, washing facilities, and first aid.

The proponent will ensure that the contractor includes adequate measures to promote the health and safety of the workers and the general public during the construction phase.

3.2.13 Public Health Act Cap 242

This Act concerns the protection of public health in Kenya and lays down rules relative to, among other things, food hygiene and protection of foodstuffs, the keeping of animals, protection of public water supplies, the prevention and destruction of mosquitos, and the abatement of nuisances including nuisances arising from sewerage. Section 116 requires that the local authorities (county governments) take all lawful, necessary, and reasonably practicable measures for maintaining its district (counties) at all times in clean and sanitary condition, and for preventing the occurrence therein of, or for remedying or causing to be remedied, any nuisance or condition liable to be injurious or dangerous to health, and to take proceedings at law against any person causing or responsible for the continuance of any such nuisance or condition. Sections 136 and 138 state that all collections of water, sewage, rubbish, refuse and fluids that permit or facilitate the breeding or multiplication of pests shall be termed nuisances and are liable to be dealt with in the manner provided by this Act and that no person shall within a township permit any premises or lands owned or occupied by him or over which he has control to become overgrown with bush or long grass of such a nature as, in the opinion of the medical officer of health, to be likely to harbor mosquitoes.

The proponent will engage the services of licensed waste transporters to dispose of the solid waste at designated disposal sites and all liquid waste shall be channeled into the STP for pre-treatment before final discharge into the existing conventional sewer system.

3.2.14 The Water Act, 2016

This Act of Parliament provides for the regulation, management, and development of water resources, water, and sewerage services. Section 9 states that every person has a right to access water resources. Section 11 states the establishment of the Water Resources Authority (WRA) whose functions are stipulated in section 12 and include but are not limited to receiving water permit applications for water abstraction, the collection of water permit fees, and water use charges. Section 63 of the act states that every person in Kenya has the right to clean and safe water in adequate quantities and to reasonable standards of sanitation as stipulated in Article 43 of the Constitution. Section 143 states that a person shall not, without authority conferred under this Act willfully obstruct, interfere with, divert or obstruct water from any watercourse or any water resource, or negligently allow any such obstruction, interference, diversion, or abstraction; or throw, convey, cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive matter or thing into or near to any water resource in such manner as to cause, or be likely to cause, pollution of the water resource.

The proponent shall extend the connection of the main water supply to the proposed development upon acquisition of a connection permit from NCWSC. The proponent shall also apply for an authorization permit from WRA before drilling the borehole.

3.3.15 The Water (Resources) Regulations, 2025

The purpose of these regulations is to provide a comprehensive legal framework for the regulation, management, and protection of water resources and water use activities in Kenya. Regulation 52 (1) and (4) requires a person intending to abstract ground water shall apply for *authorisation* from WRA and that the application shall be accompanied by a *hydrogeological survey report* where any borehole or well is intended to be equipped with a motorised pump. Regulation 53 (1) states that WRA may notify the person constructing the borehole or well to conduct any tests to the existing well and to submit the results of such tests including the rate of pumping and rest levels of water to WRA in cases where proposed borehole or well is being constructed within five hundred metres of an existing borehole or well.

WRA shall require an applicant in regulation 70 as a condition to the grant of a permit to provide evidence of compliance with the provisions of the Environmental Management and Coordination Act on integrated environmental assessments.

The proponent has undertaken a hydrogeological survey for the proposed borehole and shall apply for an authorization from WRA and a separate EIA license before drilling works begin.

3.2.16 Energy Act, 2019

The act establishes an Energy and Petroleum Regulatory Authority (EPRA) mandated to perform all function that pertains to energy production, transmission, setting and enforcing of energy policies, public education and enforcing energy conservation strategies, prescribing the energy licensing process and issuing of licenses that pertain to the energy sector in Kenya. Sections 117-126 of the Act provide the factors that shall be taken into consideration before the issuance of the license. It states the need and expression of an entity to conserve and protect the environment and natural resources in accordance with the EMCA Cap 387. Moreover, the Act gives provisions for the need to protect the health and safety of users of energy by providing an enabling environment of operation that protects the health and safety of users of the service for which the license or permit is required and other members of the public affected by the undertaking.

The proponent will install an onsite transformer to provide power supply to the proposed development subject to the acquisition of a connection permit from KPLC.

3.2.17 Land Registration Act, 2012

This Act aims to rationalize the registration of titles to land and to give effect to the principles and objects of devolved government in land registration. Section 26 (1) of the Act states that the certificate of title issued by the Registrar upon registration, or to a purchaser of land upon a transfer or transmission by the proprietor shall be taken by all courts as prima facie evidence that the person named as proprietor of the land is the absolute and indefeasible owner, subject to the encumbrances, easements, restrictions and conditions contained or endorsed in the certificate, and the title of that proprietor shall not be subject to challenge, except on the ground of fraud or misrepresentation to which the person is proved to be a party; or where the certificate of title has been acquired illegally, unprocedurally or through a corrupt scheme. A certified copy of any registered instrument, signed by the Registrar and sealed with the Seal of the Registrar, shall be received in evidence in the same manner as the original.

A copy of the ownership document is attached to this report.

3.2.18 The National Land Commission Act, 2012 (No. 5 of 2012)

The act provides for the management and administration of land. Section 5 of the Act outlines the functions of the Commission, pursuant to Article 67(2) of the Constitution as follows: to manage public land on behalf of the national and county governments; to recommend a national land policy to the national government; to advise the national government on a comprehensive programme for the registration of title in the land throughout Kenya; to conduct research related to land and the use of natural resources and make recommendations to appropriate authorities; to initiate investigations, on its own initiative or a complaint, into present or historical land injustices, and recommend appropriate redress; to encourage the application of traditional dispute resolution mechanisms in land conflicts; to assess tax on land and premiums on immovable property in any area designated by law, and to monitor and have oversight responsibilities over land use planning throughout the country.

The subject plot is private property owned by the proponent and does not constitute part of any disputed public utility.

3.2.19 National Construction Authority Act, 2011

The act is set to streamline, overhaul and regulate the construction industry in Kenya for sustainable development. The NCA establishes the authority and confers on its power to register contractors within the construction industry. The act requires all the contractors, both foreign and local contractors to be registered with the authority. The act also regulates the practices of a foreign contractor by limiting their work to only tender work. The foreign contractors are licensed for only a specific period and once they certify they are in Kenya for that specific time.

The foreign contractors must also produce a certificate of compliance. Furthermore, they must lodge an affidavit with the NCA that once the project they have been licensed is over, they shall wind up their business. This prevents them from engaging in any other construction in the country.

The proponent shall engage an NCA-licensed contractor and ensure all skilled construction workers and site supervisors are duly accredited by the National Construction Authority.

3.3 INSTITUTIONAL FRAMEWORK

3.3.1 National Environment Management Authority (NEMA)

The objective and purpose for which NEMA is established is to exercise general supervision and coordinate all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. A Director General appointed by the president heads NEMA. The Authority is mandated to co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plan, programmes and projects with a view to ensuring the proper management and rational utilization of the environmental resources on a sustainable yield basis for the improvement of the quality of human life in Kenya and identify projects and programmes or types of projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under EMCA.

The EIA Study Report is submitted to the authority for review and licensing. The proponent shall work in liaison with the authority in complying with the provisions of EMCA and any other subsidiary legislation under the Act.

3.3.2 Nairobi City County Government

The County Government is mandated to control developments within their area of jurisdiction. Part of the development control is the compliance and enforcement department. The developer is required under the building code by-laws to notify the planning authority before commencement of the construction. The county officers from different departments (Public Health, Environment, Fire, and Planning) will visit the site during the construction stage to check compliance with the approved drawings.

The proponent shall notify NCC before the commencement of the construction works and shall adhere to all the laid out by laws.

3.3.3 Directorate of Occupational Safety and Health Services (DOSHS)

The directorate will be responsible for the provision of occupational health and safety permits for workplaces and conducting inspections to ensure conformance to the Occupational Safety and Health Act, 2007. The core roles and functions of the directorate include:

- i. Workplace Inspection and Audits for compliance with safety laws, issuing improvement or prohibition notices to minimize hazards.
- ii. Registration and Licensing of workplaces and certifies plants (boilers, lifting equipment) to ensure they are safe for operation.
- iii. Accident Investigation & WIBA Processing to ensure injured workers are compensated.
- iv. Medical Surveillance to monitors workers' health through examinations to identify potential work-related health risks.
- v. Advisory and Training on Occupational Safety and Health to employers and employees.

The proponent will register the site as a workplace with DOSHS and obtain the requisite permits before the construction begins.

3.3.4 Water Resources Authority (WRA)

The Water Resources Authority is established under Section 11 of the Water Act 2016. It is responsible for the sustainable management of the nation's water resources through:

- i. Implementation of policies and strategies relating to the management of water resources;
- ii. Development of principles, guidelines and procedures for the allocation of water;
- iii. Development of catchment-level management strategies including the appointment of catchments area advisory committees;
- iv. Regulate and protect the quality of water resources from adverse impact; and
- v. Classify, monitor and allocate water resources.

The proponent shall obtain an authorization permit from WRA before drilling the proposed borehole and adhere to the conditions therein.

3.3.5 National Construction Authority (NCA)

The National Construction Authority is a state corporation established under Section 3 of the NCA Act No. 41 of 2011 with a mandate to oversee the construction industry and coordinate its development. The Authority is also responsible for registration and classification of contractors, promotion of quality assurance, and enforcement of compliance with established construction standards.

The proponent shall ensure that all construction works are undertaken by a contractor duly registered and licensed by the National Construction Authority

CHAPTER FOUR: BASELINE INFORMATION

4.1 PHYSICAL ENVIRONMENT

4.1.1 Climate

According to the Nairobi County Integrated Development Plan (CIDP) of 2023-2027, Nairobi area has a fairly cool climate resulting from its high altitude the county lies at an altitude of 1,795 metres above sea level. The sunniest and warmest part of the year is from December to March. Temperatures range from a low of 10°C to a high of 29°C. It has a bi-modal rainfall pattern. The long rains season falls between March and May with a mean rainfall of 899 millimetres (mm) while the short rains season falls between October and December with a mean rainfall of 638 mm. The mean annual rainfall is 786.5 mm.

4.1.2 Ambient Air Quality

The site was evaluated for ambient air pollutants and suspended particulate matter on 31st March 2026. The sky was predominantly covered by clouds but there were occasional breaks in the clouds allowing sunlight to filter through intermittently. The weather conditions were sunny with slight cloud cover indicating moderate atmospheric stability and favourable conditions for ambient air and noise quality sampling. The equipment in use for the Air Quality Measurement was the Bosean Air Quality Detector Model TZ01PRO, a portable multi-parameter air quality monitor capable of real-time measurement of airborne dust, fumes, and aerosols. The measurements of *Particulate Matter (PM_{2.5})*, *Total Volatile Organic Compounds (TVOCs)*, *Carbon Monoxide (CO)*, *Carbon Dioxide (CO₂)*, and *Formaldehyde (HCHO)* were taken alongside noise level readings under similar weather conditions and time.

Baseline air quality and noise measurements were carried out across five (5) sampling locations as tabulated in table 3 and shown in figure 3 below:

Table 3: Sampling Locations and Coordinates

Sample Code	Longitude	Latitude	Media
AQ/N1	1°16'25.28''S	36°47'35.64''E	Air and Noise
AQ/N2	1°16'25.13''S	36°47'37.29''E	Air and Noise
AQ/N3	1°16'23.41''S	36°47'37.19''E	Air and Noise
AQ/N4	1°16'23.61''S	36°47'35.57''E	Air and Noise
AQ/N5	1°16'24.51''S	36°47'36.41''E	Air and Noise

Figure 3: Air and Noise Sampling Points



Source: Google Earth, 2026

The results of the ambient air quality within the property boundary are presented in Table 4 below:

Table 4: Ambient Air Quality Sampling Results

Sampling Location	HCHO (mg/m³)	PM_{2.5} (µg/m³)	CO (ppm)	CO₂ (ppm)	TVOCs (mg/m³)
AQ/N1	0.024	9	0	405	0.025
AQ/N2	0.035	9	1	495	0.012
AQ/N3	0.023	7	0	410	0.031
AQ/N4	0.024	9	0	446	0.041
AQ/N5	0.016	10	0	463	0.007
TWA OELs: (ASHRAE/NIOSH/OSHA)	0.1 mg/m³	15 µg/m³	35 ppm	1000 ppm	2.444 (mg/m³)

Source: Air Quality Measurement Report

The results and observations made on-site during the sampling exercise are discussed below:

i. Particulate Matter (PM_{2.5})

The concentrations for PM_{2.5} were consistent across all points (7–10 µg/m³) well below the World Health Organization (WHO) guideline of 15 µg/m³ (24-hour mean) likely due to the natural vegetation and absence of heavy vehicular or industrial activity nearby.

ii. Total Volatile Organic Compounds (TVOCs)

The levels of TVOCs ranged from 0.007 mg/m³ to 0.041 mg/m³ which remained significantly lower than the ASHRAE limit of 2.444 mg/m³ suggesting minimal industrial or chemical emissions within the vicinity. These levels comply with occupational health guidelines and minimize the risk of headaches, respiratory irritation, and other health issues commonly associated with VOC exposure.

iii. Formaldehyde (HCHO)

The levels of HCHO were found to be between 0.016 mg/m³ to 0.035 mg/m³ which are within the NIOSH ceiling limit of 0.1mg/m³ indicating good ventilation and limited off-gassing from surrounding materials.

iv. Carbon Monoxide (CO)

The CO levels were within safe limits with highest level of CO concentrations at 1 ppm still under the ASHRAE indoor guideline of 35 ppm. Accumulation of carbon monoxide can decrease indoor air quality and when combined with other pollutants it can form ground level ozone when released outdoors.

v. Carbon Dioxide (CO₂)

The levels CO₂ were found to be between 405 to 495 ppm which are within the ASHRAE's 1,000 ppm recommendation indicating good air exchange. Keeping CO₂ levels within this range reduces global CO₂ emissions which could lead to climate change, rising temperatures, more extreme weather events or pose serious health problems.

The current occupational exposure levels for PM_{2.5}, CO, CO₂, HCHO, and TVOCs are within established OELs with no effect/harm to the environment. This baseline survey establishes a foundation for providing initial levels for comparison with future monitoring efforts and informs the development of an Environmental Management Plan.

4.1.3 Ambient Noise Levels

The ambient noise levels were measured using auto range sound level meter with an omnidirectional microphone which was calibrated using the Kenya Bureau of Standards laboratory procedure MET/15/CP/02: Sound level meter calibration and in accordance with the requirements of IEC60651 and IEC60804. The noise levels were carried out across the five (5) sampling locations as per table 3 and figure 3 above on 31st March 2026. The results of the noise level measurements within the site are presented in table 5 below:

Table 5: Ambient Noise Quality Sampling Results

Location	Noise Level Leq dB (A)	TLV dB (A) (daytime)	Remarks
AQ/N1	40.3	50	Within limits
AQ/N2	43.2	50	Within limits
AQ/N3	43.4	50	Within limits
AQ/N4	42.5	50	Within limits
AQ/N5	41.2	50	Within limits

Source: Noise Quality Measurement Report

The measured noise levels across the project site ranged between 40.3 dB(A) and 43.4 dB(A) which were within the permissible daytime limit of 50 dB(A) for mixed residential areas, indicating a generally quiet and stable acoustic environment consistent with the surrounding residential setting.

The noise levels were found to be within the recommended threshold levels as provided for under EMCA noise and vibration pollution for mixed-use residential with some commercial and places of entertainment during the daytime.

4.1.4 Topography

The general area gently slopes northwards towards *Kirichwa Ndogo River* with an elevation ranging from 1765 to 1730 meters above sea level. The project site lies at an altitude of approximately *1720 meters above sea level* and gently slopes northwards towards Laikipia Road.

4.1.5 Geology and Soils

The subject property is generally characterized by *reddish-brown, stiff moist clay soil* up to a depth of 2 meters from the original ground level followed by a transitional layer of reddish to greyish slightly/moderately *weathered weak fractured agglomerate rock* to about 13 meters. A light grey to dark grey moderately *weathered weak fractured agglomerate rock* was encountered between the 13 meters to 15 meters below ground level. The soils and rocks will be excavated to pave way for the construction of the foundation and basements subject to the acquisition of an excavation permit from NCC.

The estimated volume of excavation will be *approximately 13,000m³*. The excavated soils and rock debris will be reused for backfilling and landscaping purposes within the site and in other construction sites. The variations in the strength and degree of weathering of the underlying tuff have significant implications for foundation design, drainage, and overall construction planning. These factors have been carefully considered in the proposed development strategy to ensure structural integrity and minimize environmental impacts. (*Attached is the Geological Investigation Report*).

4.1.6 Hydrology

The site **does not** border any river or stream. The closest surface water body is *Kirichwa Ndogo River* at a distance of approximately 150 meters north of the project site. The proponent proposes to drill a borehole to abstract groundwater to supplement the county water supply line. A *hydrogeological survey for the proposed borehole* was undertaken in April 2026 and the study concludes that, on the basis of hydrogeological evidence, the investigated site is located in an area with medium to high groundwater potential. The study further states that the main aquifers are expected to be along the Old Land Surfaces (OLS), weathered and fractured volcanic rocks while shallow, medium and deep aquifers are expected in this area. The hydrogeological survey recommends an *8.5-inch diameter borehole to be drilled* at the identified location within the site to a *minimum depth of 350 meters and a maximum depth of 380 meters bgl* with prospects of higher yields of about *6-10m³/hr*.

The proponent shall obtain an *authorization permit* from the WRA and a *separate EIA License* from NEMA before drilling works begin. The developer shall also undertake landscaping within the designated open spaces by planting indigenous trees and grass. This intervention will enhance soil infiltration, stabilize the land surface, attenuate surface runoff, and contribute to the protection of downstream watercourses and the overall watershed. (Attached is the Hydrogeological Survey Report).

4.2 BIOLOGICAL ENVIRONMENT

4.2.1 Flora

The project site has a moderately diverse vegetation assemblage comprising 114 individual plants across 37 species consisting of 96 trees and 18 shrubs & ornamental species. A site walk-through and visual identification approach was used to catalogue the floral diversity. Plant species were identified using morphological features and matched with scientific data. Their conservation status was retrieved from the International Union for Conservation of Nature (IUCN) Red List of Threatened Species as tabulated below:

Table 6: Tree Species Inventory

SN	Common Name	Origin	IUCN Status	Quantity
1.	Jacaranda Tree	Exotic	LC	22
2.	Cassod Tree	Exotic	LC	10
3.	Large-leaved Dragon Tree	Exotic	LC	11
4.	Chinese Tallow Tree	Exotic	LC	6
5.	Loquat Tree	Exotic	LC	5
6.	Nandi Flame	Indigenous	LC	2
7.	Trumpet Tree	Indigenous	LC	2
8.	Acacia Tree	Indigenous	LC	4
9.	Bottle Brush Tree	Exotic	LC	3
10.	Avocado Tree	Exotic	LC	2
11.	Travelers Palm Tree	Exotic	LC	2
12.	Rubber Tree	Exotic	LC	2
13.	Pawpaw Tree	Exotic	DD	2
14.	Palm Tree	Exotic	LC	2
15.	Neem Tree	Exotic	LC	2
16.	Ash Tree	Exotic	LC	3

17.	Durban Tree	Exotic	LC	2
18.	Candelabra Tree	Exotic	LC	1
19.	Yellow Oleander Tree	Exotic	LC	1
20.	Whistling Pine	Exotic	LC	1
21.	Shiny Karamu Tree	Exotic	LC	1
22.	Thika Palm Tree	Exotic	LC	1
23.	Potato Tree	Exotic	LC	1
24.	Nile Tulip Tree	Indigenous	LC	1
25.	Sacred Coral Tree	Indigenous	LC	1
26.	African Sandalwood Tree	Indigenous	LC	1
27.	Bunya Pine Tree	Exotic	LC	1
28.	Money Tree	Exotic	LC	1
29.	White Sapote Tree	Exotic	LC	1
30.	Frangipani Tree	Exotic	LC	1
31.	Cypress Tree	<i>Cupressus lusitanica</i>	LC	1
Total				96

Table 7: Shrub and Ornamental Species Inventory

SN	Common Name	Origin	IUCN	Count
1.	Bougainvillea Shrub	Exotic	LC	9
2.	Golden Dewdrop Shrub	Exotic	LC	5
3.	Hibiscus Shrub	Exotic	CR	1
4.	Bamboo Shrub	Exotic	LC	1
5.	Snake Plants Shrub	Exotic	LC	1
6.	Kei Apple Shrub	Indigenous	LC	1
Total				18

The vegetation is predominantly composed of ornamental, fruit, and landscaping species, indicating a highly modified and managed environment with minimal natural regeneration. The flora is largely dominated by exotic (introduced) species such as *Jacaranda mimosifolia*, *Senna siamea* (Cassod tree), and *Bougainvillea spp.*, which are widely used for ornamental, shading, and boundary demarcation purposes. A smaller proportion of the vegetation consists of indigenous species such as *Acacia spp.*, *Euphorbia ingens*, *Dovyalis caffra*, *Spathodea campanulata*, and *Osyris lanceolata*, contributing modestly to the ecological value of the site.

The floral biodiversity assessment against the IUCN Red List indicates that the majority of recorded species fall under *Least Concern (LC)*. However, conservation-sensitive species identified include *hibiscus fragilis (Critically Endangered, (CR))*. Although these species occur in low numbers, their presence warrants consideration in site management to ensure their protection. The *hibiscus fragilis* will be transplanted to the riparian buffer zone along the nearby Kirichwa Ndogo River. The trees will be cut down to pave the way for the proposed development upon the acquisition of a tree-cutting clearance certificate from the Nairobi County Director of Forestry. The developer is committed to environmental sustainability and will implement a comprehensive soft landscaping plan which will include planting of indigenous trees and grass within the designated open spaces. (*Attached is the Floral Biodiversity Assessment Report*).

Plate 8: Vegetation within the Site



Source: Fieldwork, 13/03/2026

4.2.2 Fauna

The site lies within a highly modified urban environment dominated by built structures, paved surfaces, and constant human activity. As a result, the original habitat has been substantially altered, supporting only a limited faunal community. Field surveys confirmed the absence of endangered, threatened, or endemic species, with observations consisting of urban-adapted such as small invertebrates such as *earthworms, ants, grasshoppers, butterflies and spiders*; *vertebrates like lizards and birds*; and *domestic animals such as cats and dogs*. Although the resident avifauna is dominated by resilient, non-specialist species and no critical nesting sites or migratory pathways were identified, potential secondary impacts such as noise, artificial lighting, and building surfaces should not be overlooked.

To minimize risks, the project will integrate targeted mitigation measures including dust and noise suppression, controlled vegetation clearance, and adoption of bird-friendly design elements (e.g., non-reflective glazing and green landscaping). These measures will ensure that impacts on urban biodiversity remain negligible.

4.3 SOCIO-ECONOMIC ENVIRONMENT

4.3.1 Administrative Units

Nairobi County is divided into eleven (11) administrative units comprising 31 divisions, 72 locations, and 136 sub-locations as per the National Government Administration offices (NGAO). The administrative units include Dagoretti, Embakasi, Kamukunji, Kasarani, Kibra, Langat, Makadara, Mathare, Njiru, Starehe, and Westlands. *The project is located in Kileleshwa Sub Location, Kileleshwa Location, Dagoretti District of Nairobi City County.*

4.3.2 Demographic Patterns

According to the Kenya Population and Housing Census 2019, Kenya had a population of 47,564,296 distributed between 1,506,888 households. Nairobi County's population in 2019 was 397,073 distributed within the seventeen (17) sub-counties whereas Dagoretti Sub County had a population of 434,208. The Sub County's population is projected to rise to 498,655 by 2027 and therefore growing at the rate of over 4.1% per annum which is above the national average of approximately 2.3% per annum. This, therefore calls for the development of infrastructure and social amenities to support the population.

4.3.3 Socio-Economic Activities

The key economic activities undertaken within the county include manufacturing, financial activities, wholesale and retail trade, construction activities, transport and real estate sector. Other economic activities practiced and are not fully utilized with potential for further growth include urban agriculture and ICT. These activities have contributed to the country's Gross Domestic Product (GDP). The social-economic activities in the area are concentrated at a radius of 1,000 meters from the project site include *Kasuku Centre and Olenguruone Place Shopping Mall* which houses supermarkets, bar & restaurant, leisure and recreation areas, merchandise, services, and financial institutions. Some of the facilities located within the shopping mall include *Artcaffe Kileleshwa, Fantasia Grill, Chowpaty Kileleshwa, Impresso Espresso Patisserie, Kileleshwa Green Grocer, Ital Drycleaners Ltd, and Med Market Pharmacy* among others.

Other commercial activities include light industries such as *TotalEnergies Kileleshwa Petrol Station* and *Shell Gas Station Arboretum*. These activities will support the incoming population in their day-to-day demand for goods and services.

4.3.4 Health Institutions

The major health institutions serving the residents in the area are found approximately 1,000 meters from the project site and include *Lavington Children Hospital, Kileleshwa Medical Plaza, Sleep Diagnostic & Treatment Centre, AIC Kijabe Hospital - Westlands Medical Centre, The Mater Hospital (Westlands), and Westlands Hospital (Level 4)*. Access to health facilities will enhance the provision of medical care to the incoming population and is part of the Government Agenda on Universal Health Care.

4.3.5 Educational Institutions

The area has seen an increasing number of educational institutions due to the increasing population. The different education facilities found in the area at a radius of 1,000 meters from the project site include *Jabali Kindergarten, Kileleshwa Primary School, St. George's Primary School, Kiota School Kindergarten, Rowdha International Academy, Kenya High School, Erdemann Chinese School, and Kenton College Preparatory School*. These institutions will serve the residents of the proposed development.

4.3.6 Religious Institutions

The religious institutions found in the neighbourhood at a radius of 1,000 meters from the project site include churches, mosques, and temples. Some of the institutions include *Kileleshwa PCEA Church, Kileleshwa Covenant Community Church, SDA Church Kileleshwa, Umala Parish Catholic Church, Holy Trinity Catholic Church Kileleshwa, Parklands Baptist Church, Living Faith International, Dar Ul Arqam Mosque, Masjid Ibrahim Mosque, Westlands Mosque, and Shree Hanuman Temple*. These institutions will provide places of worship for the incoming population.

CHAPTER FIVE: IMPACT ASSESSMENT AND MITIGATION MEASURES

The proposed project will affect the environment both positively and negatively during the construction and operation phases. This chapter will assess the impacts that are likely to occur and how the project will interact with the environment. Adequate, cost-effective and feasible measures have been recommended to avoid, minimize, mitigate, or compensate any potential negative impacts. The potential receptors of the anticipated impacts will include the following:

- i. Immediate residential developments such as *Luxehill Villas and St Joseph's Apartment - Kileleshwa*.
- ii. Institutions such as *Samaritan Purse and Erdemann Chinese School*.
- iii. The project personnel including *consultants and construction workers*.

5.1 ANTICIPATED IMPACTS

The proposed project will affect the environment both positively and negatively during the construction and operation phases. This chapter will assess the impacts that are likely to occur and how the project will interact with the environment. Adequate, cost-effective and feasible measures have been recommended to avoid, minimize, mitigate, or compensate any potential negative impacts. The anticipated impacts of the proposed project on the environmental elements are categorized into five (5) major parameters: the **type of impact** is described as either direct or indirect; the **nature of the impact** as positive or negative; the **duration** may be short-term, medium-term or long term; the **extent** is evaluated in terms of being local, regional or national and the **magnitude** as being low, medium or high. The following criteria was used to evaluate the significance of the impact of the proposed project on the physical and biological environment:

Table 8: Assessment Criteria for Significant Impacts

S/N	Impact	Classification
1.	Impact Type	Direct: The impacts will be generated directly from project activities. Indirect: The impacts are generated from secondary sources.
2.	Impact Nature	Positive: The impacts will affect the environment positively. Negative: The impacts will affect the environment negatively.
3.	Impact Duration	Short Term: The potential impacts only last for a short time during the construction period or less. Medium Term: The potential impacts last for approximately 10 years or half the lifetime of the project. Long Term: Impact will remain after operational life of project but

		appropriate mitigation measures have been used to reduce the impacts.
4.	Impact Extent	Local: Impacts extend beyond the project site. Regional: Impacts extend beyond the administrative area. National: Impacts are considered nationally.
5.	Impact Magnitude	Low: The magnitude of the impacts has minimal effect on the environment. Medium: The magnitude of impacts is significant and can be reversed with mitigation measures. High: The magnitude of impacts is significant and mitigation measures can only reverse a very small portion.

Based on information gathered during both the desktop and field study, the potential environmental impacts for the proposed project are as tabulated below:

Table 9: Anticipated Impacts during the Project Cycle

S/N	Impact	Type	Duration	Extent	Magnitude
1.	Soil Erosion and Contamination	Direct	Short term	Local	Medium
2.	Air Pollution	Direct	Short term	Local	Medium
3.	Noise and Excessive Vibrations	Direct	Short term	Local	Medium
4.	Traffic Density	Direct	Long term	Regional	Medium
5.	Solid Waste	Direct	Long term	Local	Medium
6.	Liquid Waste	Direct	Long term	Regional	Medium
7.	Water Demand	Direct	Long term	Regional	Medium
8.	Energy Demand	Direct	Long term	Regional	Medium
9.	Health and Safety Risks	Direct	Short term	Local	Medium
10.	Fire Risks	Direct	Short term	Local	Medium
11.	Security Risks	Indirect	Long term	Local	Medium
12.	Storm Water Drainage	Direct	Long term	Regional	Medium
13.	Oil Pollution	Direct	Short term	Local	Medium
14.	Loss of Vegetation	Direct	Long term	Local	Medium

5.2 NEGATIVE IMPACTS

5.2.1 Soil Erosion and Contamination

The proposed project will have a negative impact on the geology of the site. This will be as a result of the clearing of the existing vegetation and excavation of the soils and rocks to pave way for the construction of the substructure. The excavation process will involve using standard equipment with no blasting of rocks. The soils will be exposed to weather elements including wind and surface runoff causing soil erosion. The traversing of heavy machinery during the construction will lead to compaction, soil erosion and may lead to contamination of the soil by oil & fuel leaks and hydraulic fluids. Uncontrolled soil erosion can have adverse effects on the local water bodies and lead to air pollution (dust).

Potential Mitigation Measures

- i. Obtain an excavation permit from NCC before the excavation works begin.
- ii. Use of standard equipment for the excavation work and no blasting of rocks within the site.
- iii. Control excavation works especially during rainy/wet conditions.
- iv. Implement erosion and sediment control measures including silt traps, sediment fences, and temporary bunds.
- v. Avoid unnecessary excavations and other soil disturbances that can predispose the soil to the agents of erosion.
- vi. Avoid unnecessary movement of soil materials from the site.
- vii. Regular maintenance of machinery and vehicles away from site to prevent soil contamination from oil spills.
- viii. Provide adequate sanitary conveniences connected to the existing conventional sewer line to prevent soil contamination by untreated effluent.
- ix. Undertake comprehensive landscaping within the open spaces by planting indigenous trees and grass to improve stormwater infiltration rates.

5.2.2 Air Pollution

The proposed project is located in a *Residential Zone* where the major air pollutants are fugitive dust and exhaust emissions from vehicular traffic along the access road. During the construction phase, air quality may decline as a result of an increase in levels of fugitive dust from the excavation works, construction activities, stockpiled earth materials, and concrete mixing. Tiny particulates are a public health hazard and may otherwise create considerable nuisances to the immediate neighbors and the public.

There may be air pollution due to the combustion of fossil fuels expected from construction machinery and emissions from the vehicles. This is expected to be a short-term reversible impact lasting only for the duration of the construction activity.

Potential Mitigation Measures

- i. Screen the entire site to control and arrest construction-related dust.
- ii. Sprinkle water in the work areas twice every day to prevent fugitive dust violations, especially during the dry season.
- iii. Provide adequate and appropriate PPE such as masks to the workers in dusty areas within the site.
- iv. Use of low-emission machinery to minimize the emission of hazardous gases.
- v. Use environmentally friendly fuels and minimize the machinery idling time.
- vi. Regular maintenance of the machinery to minimize the generation of hazardous gases.
- vii. No burning of waste within the site to prevent the release of toxic chemicals and pollutants into the air.
- viii. Cover the loaded vehicles with clean impervious sheeting to prevent the dispersion of particulate matter.
- ix. Cover the stockpiles within the site and install windbreaks, water and/or soil stabilizers to reduce wind-blown dust emissions.
- x. Restrict heights from which materials are to be dropped as far as practicable to minimize the fugitive dust arising from unloading/loading.
- xi. Train all personnel working on the project on air quality management.
- xii. Sensitize the drivers on how to minimize unnecessary trips and idling of engines.
- xiii. Undertake ambient air quality monitoring within the site.

5.2.3 Noise and Excessive Vibrations

The sources of noise pollution and excessive vibrations will include the construction activities such as site preparation through demolition of the existing structures and the cutting of trees; excavation works; operation of earthmoving and excavation equipment; transportation of materials and machinery to the site and operation of the generator and other machinery within the site. The noise and excessive vibrations will be short-term and limited to the construction phase. During the operation phase, noise will be as a result of the residential and recreational activities as well as the generator room.

Potential Mitigation Measures

- i. No blasting of rocks during the excavation period to prevent excessive vibrations.

- ii. Construction activities are to be undertaken between 0800hrs to 1800hrs on weekdays and 0800hrs to 1300hrs on Saturdays only and no construction work will be undertaken on Sundays.
- iii. Install noise shields and barriers on noisy areas and use of noise abatement machinery/devices.
- iv. Install sound-absorbing materials such as acoustic enclosure within the generator room to reduce noise pollution.
- v. Provide adequate and appropriate PPE such as earmuffs to the workers in noisy environments within the site.
- vi. Sensitize workers and drivers on minimal permissible noise during the toolbox talks.
- vii. Schedule on all noisy activities concurrently to reduce the exposure period.
- viii. Reduce idling time on trucks and other noisy equipment by switching them off when not in use.
- ix. Regular maintenance of the machinery and vehicles to reduce frictional noise.
- x. Reroute the trucks used at the site away from noise-sensitive areas where feasible.
- xi. Undertake ambient noise level monitoring within the site.

5.2.4 Traffic Density

The project site is located in an area that is largely occupied by residential developments. The majority of vehicles using the access roads are light vehicles from the different residences; school vans picking up and dropping off children in the area; and a few heavy commercial vehicles such as trucks that deliver goods to different commercial premises and construction sites in the area. The roads tend to be congested during the peak hours (early morning and late in the evening) when the residents leave and come back from work respectively. During the operation phase, the traffic volume will increase as a result of an increase in the number of cars and people accessing the property. Therefore, the proposed development will increase the traffic volume that will have some localized impact on the overall network performance.

Potential Mitigation Measures

- i. Develop a Traffic Management Plan (TMP) to ensure that site vehicles do not interfere with the regular traffic or pose safety hazards to the workers and the public.
- ii. Ferry building materials and waste during off-peak hours.
- iii. Engage traffic marshals to control traffic in and out of the site during the project cycle.
- iv. Install traffic control/warning signs to inform the motorists and public about the potential hazards.

- v. Provide temporary car parking spaces for the construction vehicles for loading/offloading within the site.
- vi. Stagger the deliveries of the building materials and construction waste to minimize queuing of vehicles on and off the site especially during the off-peak period.
- vii. Install track out control mats to stabilize sediment from construction vehicles at the site exit points.
- viii. Ensure that the construction vehicles observe the speed limit and do not cause obstructions along the access road.
- ix. Ensure that the construction vehicles comply with axle load limits.
- x. Provide a billboard at the entrance to notify motorists and the public about the proposed project.
- xi. Train the drivers on traffic management practices such as adhering to speed limit.
- xii. Provide and ensure routine maintenance of the parking bays and related infrastructure.
- xiii. Provide separate entry and exit points to ensure smooth traffic flow with the development.
- xiv. Install automated double-lane vehicle screening with appropriate security controls such as resident access cards to minimize delays and improve throughput at the entry.
- xv. Provide designated internal areas for pick-up and drop-off activities to prevent roadside stopping and circulation conflicts within the development.

5.2.5 Solid Waste

Solid waste will be a negative impact during the project cycle and will include demolition waste, construction waste as well as municipal solid waste. The waste may result in the blockage of drainage systems, choking off water bodies, and have a negative impact on human health if it is not well managed may impact the site soil, fauna, air quality, and the workers' health & safety.

Potential Mitigation Measures

- i. Develop and implement a three-year Waste Management Plan for the entire project cycle indicating the actual quantities, types of waste, and the waste management methods.
- ii. Provide a centralized Waste Collection Centre within the property with appropriate waste receptacles for waste management before final disposal.
- iii. Provide properly labelled and colour-coded biodegradable garbage bags/ bin liners for segregation of waste at source.
- iv. Segregate non-hazardous waste into organic and non-organic fractions before final disposal.

- v. Engage the services of NEMA-registered waste service providers to collect, handle, and transport the segregated and hazardous waste to designated disposal sites.
- vi. Provide adequate and appropriate PPE such as gloves to the workers for safe handling of waste.
- vii. Efficient use of building materials to reduce waste and recycle/reuse where feasible.
- viii. Monitor the type and volume of waste generated within the site.
- ix. Use of an integrated solid waste management system through a waste hierarchy of options: avoidance, source reduction, reuse, repair, refurbishment, recycling, recovery and finally treatment for safe disposal during the project cycle.
- x. Sensitize workers on the reuse of materials where feasible during the toolbox talks.

5.2.6 Liquid Waste

Liquid waste is anticipated to increase as a result of an increase in population during the construction and operation phase. Lack of or inadequate provision of sanitary facilities within the site for use by the workers can lead to ad hoc defecation in secluded areas thus creating unsanitary conditions and sources of fly infestation. This can threaten the health of workers and compromise the air quality in the area. The liquid waste if not well managed may impact on the groundwater, air quality and the health & safety of the workers.

Potential Mitigation Measures

- i. Construct a mini-Sewer Treatment Plant (STP) for pre-treatment of all liquid waste prior to final discharge into the existing conventional sewer line.
- ii. Extend the connection of the STP to the existing conventional sewer system subject to the acquisition of a connection permit from NCWSC.
- iii. Construct an internal reticulation system which can consistently handle the loads during peak volumes.
- iv. Obtain a site toilet permit from NCC before the construction begins and adhere to the conditions thereof.
- v. Provide sufficient and suitable sanitary conveniences for the workers within the site and ensure they are kept clean at all times.
- vi. Proper decommissioning of the sanitary conveniences after the construction phase.
- vii. Install hygiene awareness signs at strategic points and hold regular toolbox talks on hygiene.
- viii. All manholes on the driveways and the parking area shall be installed with double-sealed heavy-duty covers as approved by specialists.

- ix. Regular maintenance of foul water and STP at the premises to prevent clogging and forestall breakdowns and ensure continued efficiency.
- x. Training of workers on hygiene during the toolbox meetings.

5.2.7 Water Demand

The proposed development is anticipated to increase demand on local water resources due to substantial water requirements during both the construction and operational phases. Construction activities will require water for concrete works, dust suppression, equipment cleaning, and general site use. During operational phase, water demand will arise from domestic purposes, sanitary facilities, cleaning services, and general use. This additional demand has the potential to exert pressure on the existing water supply infrastructure within the project area. Without adequate planning and resource management, this may lead to localized supply constraints. Therefore, provision of a reliable and sustainable water supply system will be necessary to meet project needs while minimizing impacts on surrounding users.

Potential Mitigation Measures

- i. Extend the connection of the main water supply to the proposed development upon acquisition of a connection permit from NCWSC.
- ii. Drill a borehole as an alternative source of water for the development subject to the acquisition of an authorization permit from WRA and a separate EIA license from NEMA.
- iii. Harvest rainwater to supplement the NCWSC water supply.
- iv. Provide adequate tanks for water storage purposes within the development.
- v. Install water-efficient fixtures and fittings within the site such as dual-flush toilets, sensor-operated faucets, and low flow showerheads to promote sustainable usage and reduce overall consumption such as 6-litre dual-flush cisterns.
- vi. Encourage reuse/recycling of water during the project cycle where feasible.
- vii. Regular maintenance of all the water components by licensed personnel.
- viii. Install notices and information signs at strategic places to sensitize workers and occupants on water conservation measures.
- ix. Install smart water management systems (IoT-based sensors) to monitor real-time consumption, detect leaks, and optimize usage.
- x. Use automated irrigation systems with soil moisture sensors to prevent overwatering of landscaped areas.
- xi. Incorporation of a greywater reuse system for toilet flushing within the development.
- xii. Train the workers on water conservation measures during the toolbox talks.

xiii. Monitor the water consumption within the development every month.

5.2.8 Energy Demand

There will be an increased use of energy during both the construction and operational phases of the proposed development. During construction, energy will primarily be consumed through the use of petroleum products such as diesel and gasoline to power machinery, transport vehicles, and construction equipment. In the operational phase, electricity will be the primary energy source used for lighting, heating, water pumping, cooking, security systems, and operation of appliances. Energy conservation measures will be integrated to promote efficiency and minimize wastage. The project shall aim for optimal energy use while reducing greenhouse gas emissions associated with energy consumption.

Potential Mitigation Measures

- i. Extend the connection of the power supply from the main grid to the proposed development upon the acquisition of a connection permit from KPLC.
- ii. Install an onsite transformer to supply energy to the proposed development subject to the acquisition of a connection permit from KPLC.
- iii. Install solar panels to provide an alternative source of renewable energy for the development.
- iv. Install a generator as a backup source of energy for the development in case of a power outage.
- v. Install energy-efficient fixtures and fittings within the development such as energy-saving LED fittings, motion sensors, and timer switches that comply with EDGE standards.
- vi. Install smart energy management systems (EMS) with real-time monitoring to optimize energy use, detect inefficiencies, and automate controls.
- vii. Utilize motion sensors and daylight sensors for automated lighting control in corridors, parking areas, and common spaces.
- viii. Install sub-metering systems for different functional areas to improve energy accountability and management.
- ix. Routine inspection and maintenance of electrical components by registered personnel.
- x. Turn off machinery and equipment when not in use as well as put off all lights immediately when not in use.
- xi. Provide notices and information signs at strategic places to sensitize workers and occupants on energy conservation measures.
- xii. Train the workers on energy conservation measures during the toolbox talks.

xiii. Monitor energy consumption with the development every month.

5.2.9 Health and Safety Risks

The sources of occupational risks within the project site will include the handling of heavy machinery, construction noise, and electromechanical works among others. Fugitive dust from construction activities may affect the respiratory system of the workers and the immediate neighbors. The generation of the waste may pose a health and safety risks to the workers. Food for the construction workforce is usually provided by mobile individuals most of which operates without licenses. This can compromise health of the workers especially if such foodstuffs are prepared in unhygienic conditions. The receptors of occupational safety and health impacts will be the workers and the immediate neighbors.

Potential Mitigation Measures

- i. Register the construction site as a workplace with the DOSHS before the construction begins.
- ii. Develop an Emergency Response Plan (ERP) to manage the occurrence of anticipated hazards during the construction phase.
- iii. Provide insurance covers to the workers before the construction begins.
- iv. Provide adequate and appropriate PPE and ensure that all workers wear them at all times.
- v. Provide first aid facilities and ensure that the workers are trained in emergency response.
- vi. Undertake safety awareness through regular safety meetings and training in health and safety.
- vii. Display appropriate precautionary signage at strategic places within the site.
- viii. Undertake a health and safety audit by a registered health and safety adviser.
- ix. Undertake annual risk assessment for the construction site and submit the report to DOSHS.
- x. Establish a safety and health committee within the site and ensure every member undertake a prescribed basic training course in occupational health and safety.
- xi. Sensitize the workers on how to control accidents related to construction during the toolbox talks.
- xii. Keep a record of the public emergency service telephone numbers including Police, Fire brigade, and Ambulance at strategic points.
- xiii. Ensure that the workers are registered with SHIF/NSSF and remit appropriate fees on monthly basis.
- xiv. Provide adequate supply of wholesome drinking water to the workers.

- xv. Sensitize the workers on social issues such as drugs, alcohol, and diseases.
- xvi. Train the workers on safety and health best practices.
- xvii. Install physical barriers and controlled access systems around the swimming pool to prevent unauthorized access especially from children.
- xviii. Develop and display a Swimming Pool Safety Plan at the pool entrance, including rules, emergency procedures, and supervision requirements to enhance pool safety.
- xix. Regular disinfection, filtration, and pH control of the swimming pool water quality in line with public health standards to prevent waterborne diseases.
- xx. Comply with the Occupational Safety and Health Act (OSHA), 2007 and all other relevant regulations governing the health and safety of the workplace.

5.2.10 Fire Risks

Fire outbreaks present a significant risk during both the construction and operational phases of a project. On construction sites, common sources of fire include faulty or overloaded electrical systems, improper handling of electrical installations, welding and cutting works (hot works), improper storage of flammable materials, fuel and gas leaks, and careless disposal of smoking materials. Poor housekeeping practices such as the accumulation of combustible waste can further elevate fire risk. On operation, fire hazards may typically arise from defective electrical wiring, overloaded sockets, unattended cooking appliances, and gas leaks among others. The receptors of the fire risks include the workers within the site and immediate neighbors.

Potential Mitigation Measures

- i. Hire a competent authorized contractor to carry out the electrical works within the site.
- ii. Provide adequate firefighting equipment at strategic places within the property and organize for inspection and maintenance every 6 months.
- iii. Provide and maintain fire detection appliances and ensure they are located in the appropriate places for immediate activation of an alarm or automatic fire extinguishing systems.
- iv. Establish a fire-fighting team and ensure every member undertakes the basic fire safety training course within three months from the date of appointment.
- v. Train the workers in the safe use of firefighting appliances.
- vi. Conduct annual fire drills within the site and ensure records of such drills are kept available for inspection.
- vii. Undertake annual fire safety audit for the workplace by an approved fire safety auditor.
- viii. Mark the fire exit routes and the fire assembly point within the site.

- ix. Post 'No smoking signs' where flammable materials are stored.
- x. Develop and post at the site fire emergency and evacuation procedures.
- xi. Maintain on-site telephone contacts for the fire brigade, G4S fire brigade, and St. Johns ambulance service provider etc.

5.2.11 Security Risks

There is a risk of insecurity which may be caused by unauthorized access to the project site particularly in the absence of fencing, controlled entry points, or a manned gate. Unsecured construction sites may attract intruders seeking to steal materials and equipment increasing the likelihood of pilferage and vandalism while increasing safety risks to construction workers including theft of personal belongings and potential exposure to violent incidents. During the operational phase, inadequate security measures such as lack of fencing, controlled access, and surveillance may expose tenants to burglary, theft, and personal safety threats. Intruders may enter undetected, leading to break-ins, loss of property, and vehicle-related crimes.

Potential Mitigation Measures

- i. Engage licensed security personnel to safeguard the property and monitor the movement of people in and out of the site.
- ii. Construct a boundary wall and gatehouse to enhance the site security.
- iii. Install security lights around the property and ensure they are switched on only during the night hours.
- iv. Install CCTV at strategic points within the site to monitor and enhance the security of the property.
- v. Install motion sensors and intrusion detection systems along the perimeter and critical zones.
- vi. Routine inspection and maintenance of the security lights and CCTV within the site.
- vii. Keep records of all construction workers as per DOSHS requirements.
- viii. Provide access control measures within the development to keep out unauthorized people such as swipe cards, biometric scans, or presenting identification documents.

5.2.12 Storm Water Drainage

The clearance of vegetation and excavation works will lead to increased soil erosion at the project site and the release of sediments into the drainage systems. The construction of the building and pavements will lead to minimal infiltration and increased volume and velocity of the surface run-off. This can lead to increased amounts of stormwater entering the drainage systems, resulting in overflow and damage to such systems.

Potential Mitigation Measures

- i. Construct gently sloping drainage channels covered with gratings to collect and convey stormwater at non-erosive speed to the nearby river to reduce localized flooding.
- ii. Construct retention basins to temporarily hold water during high-intensity rainfall.
- iii. Use of permeable pavements such as grass block pavers or interlocking cement blocks to allow stormwater infiltration.
- iv. Install rainwater-harvesting and storage facilities within the development to reduce runoff volume.
- v. Undertake comprehensive landscaping within the designated open spaces by planting trees, grass, and shrubs to promote stormwater infiltration rates.

5.2.13 Oil Pollution

Oil pollution will have a minor impact primarily resulting from leakage and accidental spillage of fuels and lubricants from machinery and vehicles. Improper storage and handling of petroleum products, on-site equipment servicing that generates waste oils, and inadequate disposal of oil-contaminated materials may lead to oil pollution. Furthermore, spilled oil and grease on exposed surfaces can be transported by stormwater runoff during rainfall events leading to the spread of contaminants into nearby drainage systems and water bodies.

In the operational phase, activities such as vehicle maintenance, generator use, and improper disposal of used oils further contribute to localized soil and water contamination.

Potential Mitigation Measures

- i. Fit all drainage facilities with adequate functional oil-water separators and silt traps.
- ii. Store all oils/grease in the contractor's yard away from the site.
- iii. Routine inspection and maintenance of the machinery away from the site in a well-designed and protected area to avoid oil spillage within the site.
- iv. Engage licensed waste transporters to dispose of oily materials such as oil cans at designated disposal sites.
- v. Prepare an ERP for preventing and dealing with emergencies like oil and fuel spills.

5.2.14 Loss of Vegetation

The project site has a moderately diverse vegetation assemblage comprising 114 individual plants across 37 species consisting of 96 trees and 18 shrubs & ornamental species. During the construction, there will be clearing of vegetation and removal of topsoil to pave the way for the development. The project site is located in an area where there is high human disturbance.

The floral assessment against the IUCN Red List indicates that the majority of recorded species fall under *Least Concern (LC)*. However, conservation-sensitive species identified include *hibiscus fragilis (Critically Endangered, CR)*. Although these species occur in low numbers, their presence warrants consideration in site management to ensure their protection.

Potential Mitigation Measures

- i. Develop and implement a Flora Management Plan (FMP) before site clearance to guide vegetation protection and management.
- ii. Transplant the conservation-sensitive species such as *hibiscus fragilis* to the riparian buffer zones along the nearby Kirichwa Ndogo river.
- iii. Restrict vegetation clearing strictly to the project footprint to minimize ecological disturbance.
- iv. Obtain a tree-cutting clearance certificate from the Nairobi County Director of Forestry before cutting down the trees.
- v. Undertake a comprehensive landscaping exercise after the construction phase by planting indigenous trees and grass within the designated open spaces.
- vi. Sensitize the residents to practice apartment gardening within their residential units during the operation phase.
- vii. Regular inspection and maintenance of the landscaped area by gardeners during the operation phase.
- viii. Monitor planted vegetation survival and growth, replace failed plantings and maintain irrigation during establishment.

CHAPTER SIX: GREENHOUSE GAS (GHG) EMISSIONS AND CLIMATE CHANGE VULNERABILITY ASSESSMENT

6.1 GHG Emissions Assessment

The GHG Emissions Assessment was undertaken for the Proposed High-Rise Residential Development to evaluate projected emissions across *Scope 1, Scope 2, and Scope 3 categories* in accordance with the GHG Protocol Corporate Accounting and Reporting Standard and the IPCC 2006 Guidelines for National Greenhouse Gas Inventories (2019 Refinement). The assessment covered both the construction and operation phases consistent with Good International Industry Practice (GIIP). Given the scale and lifecycle of the proposed project, climate change was identified as a material environmental and financial risk, particularly in relation to embodied carbon, operational energy demand, and long-term asset resilience.

The assessment estimates that construction phase emissions will be approximately **22,935 tCO_{2e}** while operational emissions are projected at approximately **1,049 tCO_{2e} per year** as shown in Table 10 and 11 below. Scope 3 emissions primarily from embodied carbon in construction materials and upstream supply chains constitute the largest share of the project's total carbon footprint.

Table 10: Construction Phase GHG Emissions Summary

Category	Scope	tCO _{2e}	% of Total
Diesel Combustion	Scope 1	2,080	9.1%
Grid Electricity - Site Facilities	Scope 2	300	1.3%
Water consumption	Scope 3	11	0.1%
Embodied Carbon - Materials	Scope 3	20,073	87.5%
Upstream Transport	Scope 3	404	1.8%
Construction Waste to Landfill	Scope 3	67	0.3%
Total Construction Phase Emissions		22,935	100%

The total construction phase emissions are approximately **22,935 tCO_{2eq}** over the project duration with the emission intensity at **577 kgCO_{2e}/m²** which falls within the typical range for RC high-rise residential developments and is consistent with international embodied carbon benchmarks. On a per-unit basis, the construction emissions equate to approximately **127.4 tCO_{2eq} per residential unit** which reflects the carbon-intensive nature of structural materials such as cement and steel which dominate embodied emissions in high-rise construction. Considering a projected occupancy of 618 persons, the construction phase emissions correspond to **37 tCO_{2eq} per person**.

Table 11: Operational Phase GHG Emissions Summary (Annual)

Category	Scope	tCO ₂ e/year	% of Annual Total
LPG Combustion	Scope 1	76	7.2%
Direct fuel combustion	Scope 1	27	2.6%
Refrigerant Leak	Scope 1	61	5.8%
Grid electricity	Scope 2	346	33.0%
Water Consumption	Scope 3	5	0.5%
Solid waste to landfill	Scope 3	44	4.2%
Wastewater treatment	Scope 3	6	0.6%
Resident transport	Scope 3	484	46.1%
Total Annual Operational Emissions		1,049	100%

The annual operational emissions are approximately **1,049 tCO₂eq/year** resulting in an operational carbon intensity of **26.4 kgCO₂/m²/year**. This is within expected ranges for residential buildings relying on grid electricity and LPG for energy. On a per-household basis, operational emissions are approximately **5.4 tCO₂eq per unit per year**. This includes electricity consumption, cooking fuel use, waste generation, and resident transportation. The annual per capita emissions are estimated at **1.7 tCO₂eq per person per year**.

6.2 Climate Change Vulnerability Assessment

Climate Change Vulnerability Assessment evaluates the climate change threats of projects and explores potential interventions that can help to strengthen climate resilience. The assessment was carried out to determine how the design of the project is vulnerable to climate change and recommends some of the appropriate adaptation and mitigation measures to climate-proof the project in line with the provisions of Climate Change Act 2016. The appropriate adaptation and mitigation measures proposed for the project are as tabulated below:

Table 12: Anticipated Risks and Applicable Adaptation and Mitigation Measures

Anticipated Risks	Applicable Adaptation and Mitigation Measures	Relevance
Increased Greenhouse Gas Emissions	a) Use of Green Energy Technologies	<ul style="list-style-type: none"> The incorporation of technologies such as energy-efficient lighting, solar power, and improved insulation will help reduce the carbon footprint of the project thus promoting climate-smart development to lower emissions.

	b) Waste Management	<ul style="list-style-type: none"> Proper solid waste management strategies such as recycling and reduction will minimize the generation of greenhouse gas emissions.
	c) Green infrastructure	<ul style="list-style-type: none"> Comprehensive outdoor and indoor landscaping will help offset carbon emissions by acting as carbon sinks thus reducing greenhouse gas emissions.
Water Scarcity	a) Rainwater Harvesting	<ul style="list-style-type: none"> Harvesting rainwater for reuse will reduce dependence on the existing county supply thus mitigating the risks associated with water scarcity.
	b) Alternative Sources of Water	<ul style="list-style-type: none"> The proponent will drill a borehole subject to the acquisition of an authorization permit from WRA. This will reduce the overdependence of the existing county water.
	c) Efficient Water Use Technologies	<ul style="list-style-type: none"> The installation of water-efficient fixtures and fittings within the project such as low-flow fixtures will help conserve water and thus reducing the overall water demand.
Flooding	a) Rainwater Harvesting	<ul style="list-style-type: none"> Installation of rainwater-harvesting facilities will reduce the amount of stormwater reaching the surface thus mitigating flood risks.
	b) Landscaping	<ul style="list-style-type: none"> Planting indigenous trees within the building line increase soil absorption and stability thus mitigating flood risks.
	c) Stormwater Management Systems	<ul style="list-style-type: none"> The incorporation of effective stormwater management systems, including permeable pavement,

		landscaping and harvesting rainwater will help mitigate flooding risks.
Rising Temperatures	a) Design Strategies and Technologies for Cooling	<ul style="list-style-type: none"> ▪ Some of the passive cooling designs such as natural ventilation, indoor and outdoor landscaping, and energy-efficient cooling systems will be incorporated to help combat rising temperatures in line with the low-carbon development strategies promoted by the Act.
	b) Use of Renewable Energy	<ul style="list-style-type: none"> ▪ The use of renewable sources of energy such as solar panels for lighting and heating water will reduce dependence on the main grid power supply thus reducing emissions.

The proposed development will integrate these adaptation and mitigation measures to address climate change risks and vulnerabilities in compliance with the Climate Change Act of 2016. *(Attached is the Greenhouse Gas (GHG) Emissions and Climate Change Vulnerability Assessment).*

CHAPTER SEVEN: OCCUPATIONAL HEALTH AND SAFETY

Worldwide, construction workers are three times more likely to be killed and twice as likely to be injured as workers in other occupations. In Kenya, though undocumented, it is reported on our dailies that workers are injured or die on construction sites. It is therefore essential that the proponent and contractor ensure the safety and well-being of the workers, the passersby and any other person who may be directly or indirectly associated with the project.

The main hazards and risks of accidents in the construction site can be categorized and described in the following way:

- i. **Physical Risks** such as falls from heights, slips, trips, and contact with moving machinery or equipment.
- ii. **Chemical Risks** such as exposure to harmful substances like asbestos, lead, or hazardous chemicals used in construction processes.
- iii. **Electrical Risks** such as electrocution from exposed wiring or working near power lines.
- iv. **Ergonomic Risks** such as strains from lifting heavy materials or repetitive motion injuries.
- v. **Environmental and Health Risks** such as stress, fatigue, or heatstroke from prolonged physical work in harsh weather conditions.
- vi. **Fire and Explosion Risks:** Flammable materials and faulty equipment can lead to fires or explosions.
- vii. **Noise and Vibration Risks:** Long-term exposure to high noise levels and vibrations from machinery can cause hearing loss or injury.

After the identification of these major risks and the stages when they are likely to occur, efforts should then be focused on how to alleviate these dangers before they happen.

7.1 Principles of Occupational Health and Safety

The principles of environmental health and safety involve three main actions:

- i. **Risk Identification and Assessment:** This shall involve identifying the various hazards and risk at the site that have the potential to occur, all the people who may be at risk such as employees, cleaners, visitors, contractors, and the public, etc. as well as determine whether a control program is required for a particular hazard.
- ii. **Risk Communication:** Risk communication refers to the exchange of real-time information, advice and opinions between workers and people facing threats to their health, economic or social well-being. The ultimate purpose of risk communication is to enable people at risk to take informed decisions to protect themselves and their loved

ones. Risk communication uses many communications techniques ranging from media and social media communications, mass communications and community engagement. It requires a sound understanding of people's perceptions, concerns and beliefs as well as their knowledge and practices.

- iii. **Risk Management:** This involves actions undertaken for the implementation of risk evaluation decisions, monitoring, re-evaluation and prioritizing, and compliance with legal requirements that safeguard health and safety at construction sites. The OHS personnel shall be required to determine if existing control measures are adequate or if more should be done.

7.2 Construction Safety, Emergency Procedures and Action Plan

The site will involve construction activities that are dynamic to the workers engaged in the activities resulting in their exposure to a variety of safety hazards such as falling objects, working from rooftops or scaffolding, exposure to heavy construction machinery, and electrocution while operating electrical equipment in moist areas. It is, therefore, a necessity to develop an Environmental Health and Safety Management Plan to regulate environmentally instigated diseases and occupational safety measures during the construction and operation phases of the proposed project. It is the obligation of the proponent and the contractor to ensure a safe and healthy environment at the workplace and within the neighborhood to prevent occupational diseases, avoid injuries, property damage, control damage to equipment, and enhance environmental sustainability through the developed sound conservation measures.

The following recommendations to ensure the health and safety of the workers and the general public shall be taken into consideration:

- i. Develop and Adapt an Emergency Response Plan (ERP) for the proposed project.
- ii. Create a culture of safety within construction by planning, creating and supporting ongoing OHS awareness campaigns that promote the importance of workplace occupational health and safety with industry stakeholders as well as consumers.
- iii. Increase safety knowledge in the construction site by promoting awareness of the top construction sector hazards (trips and falls from heights, motor vehicle incidents, struck by objects) and how to control these hazards through new and improved information channels.
- iv. Support the role of the supervisor in creating and maintaining a culture that fosters worker participation in identifying and mitigating workplace hazards.

- v. Create a strategy for continuous health and safety learning for the construction workers e.g. conducting regular training sessions and drills on how to handle emergencies and accidents at site.
- vi. Identify, review and enhance health and safety content of apprenticeship training standards to keep abreast with any new methods that are effective in promoting site safety.
- vii. Provide suitable and well-maintained PPE to all the workers and visitors and ensure they are utilized at all times and in the right manner. These include safety boots, helmets, gas masks, gloves and goggles.
- viii. Place visible and readable signs to control the movement of vehicles and notify motorists, pedestrians and workers within and around the site.
- ix. 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
- x. Enclose or isolate hazardous parts of machines or sites within the construction site to minimize exposure.
- xi. Be prepared for unexpected hazards. BE ALERT ALWAYS.
- xii. Prepare and maintain emergency response equipment such as fire extinguishers and first aid kits in readiness for use when need be.
- xiii. Avoid placing unusual strain on equipment or materials Encourage reporting of safety incidents as soon as they occur at the site, so as to enable a quick action to alleviate the extent of the damage.
- xiv. The contractor and his agents shall use barriers and guards as necessary to protect employees from physical hazards.
- xv. A well-stocked First Aid kit shall be provided to take care of accidents that may arise during job executions. This shall be placed under the charge of a responsible person who shall readily be available during working hours.
- xvi. Employees will be expected to take personal responsibility for their safety, the safety of their colleagues, and the general public plan.
- xvii. Comply with the provision of the Occupational Safety and Health Act, 2007.

CHAPTER EIGHT: CONSULTATION AND PUBLIC PARTICIPATION

This chapter describes the process of the public consultation conducted to identify the key issues and impacts of the proposed project. The CPP process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by Section 58 of EMCA 1999 on EIA for the purpose of achieving the fundamental principles of sustainable development. Regulation 17 of the Environmental (Impact Assessment and Audit) Regulations 2003 states that during the process of conducting an Environmental Impact Assessment Study, the proponent shall in consultation with the Authority *seek the views of persons who may be affected by the project*. The views from the local residents, stakeholders, surrounding institutions and development partners who in one way or another would be affected or rather interested in the proposed project were sought through the administering of questionnaires, interviews and public meeting as stipulated in the act.

8.1 Objectives of the Consultation and Public Participation

The objective of the consultation and public participation was to:

- i. Disseminate and inform the stakeholders about the project with special reference to its key components and location.
- ii. Gather comments, suggestions and concerns of the interested and affected parties that may be useful in the decision-making process.
- iii. Disclosure and a good understanding of the project to ensure the anticipated impacts are not overlooked and potential benefits are maximized.
- iv. To facilitate consideration of alternatives and development of mitigation measures and management plans.
- v. Incorporate the information collected in the EIA Study.

8.2 Stakeholders Identification

The process involves the identification of the stakeholders who are directly or indirectly affected by the project as well as those who may have interests in a project and/or the ability to influence its outcome either positively or negatively. The different stakeholder groups identified include but are not limited to the following:

- i. The local community includes the immediate neighbours at a radius of 250 meters from the site.
- ii. Institutions within the local area at a radius of 250 meters from the site.
- iii. Government agencies include the *National Government Administration Officers (NGAO)*.
- iv. Development agencies who will include *NCWSC and KPLC*.

- v. Project personnel.

8.3 Consultation Methods and Techniques

In line with Regulation 17 of the Environmental (Impact Assessment and Audit) Regulations, 2003 on Public Participation, the following methods and techniques were employed in order to gather information, comments and concerns from the identified PAP;

- i. Public meetings
- ii. Administration of questionnaires to the PAP
- iii. One-on-one interviews with the PAP
- iv. Field surveys and observations

8.4 Public Consultation Forums

Prior to the public consultation meetings, appropriate notices including the posters and invitation letters were sent out to the identified stakeholders at least one week indicating the venue and time of the meeting on *18th March 2026 and 1st April 2026*. The public consultative meetings were held at the project site on *25th March 2026 and 8th April 2026* where the local community and relevant stakeholders including the government sector representatives participated.

Plate 9: Onsite Notices



Source: EIA Team

8.5 Stakeholders' Concerns and Responses from Project Consultants

The following concerns were raised by stakeholders during the public meetings and responses from the developer and project consultants:

S/N	Concern	Response
1.	The depth of the proposed borehole	<ul style="list-style-type: none"> ▪ The proposed borehole will be drilled to a depth of approximately 300 metres and all shallow aquifers will be sealed off to prevent over-extraction and safeguard groundwater resources.
2.	Corporate Social Responsibility (CSR) initiatives such as painting the Chief's offices	<ul style="list-style-type: none"> ▪ The developer will consider and implement appropriate CSR initiatives in consultation with the Area Chief's office to ensure alignment with local community needs
3.	Liquid waste management	<ul style="list-style-type: none"> ▪ All liquid waste shall be channeled into the STP for pre-treatment prior to final discharge into the existing conventional sewer system.
4.	Rehabilitation of the Laikipia Road	<ul style="list-style-type: none"> ▪ The developer will liaise with neighbouring property owners to rehabilitate the access road subject to acquisition of requisite permits from the NCC and the relevant road authority.
5.	Commitment by the developer to implementing the proposed mitigation measures	<ul style="list-style-type: none"> ▪ Proposed mitigation measures are legal requirements include in the licensing conditions ▪ A Grievance Redress Mechanism (GRM) will be established to address any emerging concerns during the project cycle
6.	Proposed construction timelines	<ul style="list-style-type: none"> ▪ The overall construction period is expected to take approximately thirty-six (36) months with high-noisy activities likely to generate significant noise and dust completed within 18 months.

The EIA Study Report has assessed the concerns and adequately provided mitigation measures and safeguards that if implemented, the proposed project will marry with the surrounding developments. *Attached are the invitation letters, attendance lists, photographs, and minutes of the public consultative meetings.*

8.6 Grievance Redress System

The proponent will develop a Grievance Redress System (GRS) and make it accessible to all stakeholders internally and externally. The GRS will always seek to address grievances through legally acceptable methods and as fast as possible whilst not preventing any complainants from seeking other legally acceptable methods to justice. Such a GRS should be made available to staff on recruitment and to members of the public either through government agencies/offices through grievance application forms, and internally by establishing procedures for investigation and quick redress that will be recorded and tracked. The GRS shall be monitored through indicators of its efficiency and effectiveness of solving the grievance and producing lessons learnt through which corrective actions can be undertaken to improve the project's health and safety strategies. Additionally, as part of monitoring and review all grievances should be reported to the relevant authorities and the corrective actions taken, to ensure the system is credible and transparent. The process should also be culturally appropriate, transparent and non-coercive.

The developer will set up a team that will oversee implementation of the continuous stakeholder engagement. This will comprise the *Sociologist (Grievance Officer)*, *EHS officer*, *Site supervisor and a community representative*. All information relating to the project will be posted on the information board at the site office as well as posters erected at the gate to inform the neighbors. Any issues arising from the stakeholders in the area will be received by the grievance officer, recorded and addressed accordingly in the shortest possible time. All relevant stakeholders will be informed in advance of the planned project activities. The development of the project will be based on the EIA procedures and EMP provided in this EIA Study Report.

CHAPTER NINE: ANALYSIS OF PROJECT ALTERNATIVES

In order to enable the proposed project to seek different ways of minimizing its impacts on the environment and at the same time achieve its objectives several alternatives were assessed through its architectural and engineering designs and environmental planning through this ESIA to come up with the most suitable options in implementing this project.

9.1 No Project Alternative

This alternative implies that the status quo is maintained with no development of the proposed development. This alternative will ensure there is no interference with the existing conditions and would prevent the realization of any negative impacts resulting to the construction of the residential apartments. However, it means the benefits associated with the proposed development will be foregone and the supply of the residential apartments will not be achieved resulting to pressure on the existing housing units. The neighborhood character and trends show that the area continues to grow with the predominant land uses now being high-rise residential developments as well as other land uses to support these developments such as schools, hospitals and religious institutions. In addition, the site is situated in an area that is not environmentally sensitive hence implementing the project would not pose adverse impacts on the environment.

The 'No Option alternative' is therefore the least preferred and is deemed inappropriate based on economic and environmental considerations.

9.2 Proposed Project Option

The proponent is proposing to construct *180 residential apartments* to cater for the rising demand for housing units in the area. A *Change of Use from Single Dwelling Unit to Multiple Dwelling Units (Apartments)* was applied by the proponent and approval was granted by NCC. The project will have numerous benefits such as the provision of residential apartments, revenue generation to the government, provision of employment opportunities, and the market for goods and services. The EIA has proposed mitigation measures for the anticipated negative impacts and developed an EMP to ensure that the impacts are mitigated to a level of no significance. The proponent will comply with the environmental management practices throughout the project cycle in order to maintain harmonious co-existence with the neighboring developments. *Therefore, this is the best option and should be supported by the authority through the issuance of the EIA License.*

9.3 Alternative Site

An alternative site could be considered for the proposed development if the project presents serious environmental challenges that cannot be managed effectively. However, the proposed mitigation measures considered are adequate to minimize the anticipated negative impacts to levels that do not warrant significant environmental damage. The proposed project complies with the area's development policy (*zoning of the area*) and is compatible with the existing land uses. Additionally, the search for an alternative site would imply an increase in expenditure, time, and additional costs to the proponent. *Hence, this alternative is not considered viable.*

9.4 Alternative Construction Materials and Technologies

The proposed project will be constructed using reinforced concrete, natural stones for the walling, cement for mortar and plaster works, structural steel, metal scaffolds and formwork. The concrete structure will be built using locally sourced materials that meet the KEBS requirements. The metal scaffolds will be advantageous than timber because it will reduce the wasting of trees, has a longer lifetime, provides a steady and firm standing, easily assembled and dismantled and it increases the work efficiency. The technologies available include timber construction, prefabricated concrete panels, concrete frame construction, conventional brick and mortar style, steel and an aluminum frame, and Expanded Polystyrene Technology. The proponent has preferred the use of reinforced concrete construction as the technology is durable, offers outstanding resistance to the explosion and/or impact, and performs well during both natural and manmade disasters. Reinforced concrete can also endure very high temperatures from fire for a long time without loss of structural integrity and the materials are locally available.

9.5 Alternative Sources of Water and Energy

The anticipated increase in water and energy demand for the proposed development will place some amount of strain on the existing infrastructure in the area. The proponent has proposed to *drill a borehole and harvest rainwater* as an alternative source of water for the proposed development. The developer will also apply for an onsite transformer from KPLC for energy supply within the development and install *solar panels* as a source of renewable energy for the proposed development.

CHAPTER TEN: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Environmental monitoring involves the measurement of relevant parameters, at a level of details accurate enough, to distinguish the anticipated changes. Monitoring aims to determine the effectiveness of actions to improve environmental quality. The EMP outlined in the tables 13, 14, and 15 below addresses the identified issues of concern (potential negative impacts) and mitigation measures as well as roles, estimated annual costs and monitorable indicators that can help to determine the effectiveness of actions to upgrade the quality of the environment. Some of the estimated annual costs for the environmental management have been billed in the Bill of Quantities (BQ) and are indicated as BQ cost while other costs will be part of the Operations and Maintenance (O&M) costs during the operation phase of the project. The key responsibilities regarding compliance to this EMP rest on the Contractor during the construction phase. However, the project proponent must ensure adequate monitoring and evaluation for the contractor for no non-conformances either directly or through representatives such as the Project Manager. The contractor will also employ a full time Health and Safety officer to be responsible for the monitoring and implementation of this EMP for the pre-construction and construction phases.

10.1 EMP FOR THE CONSTRUCTION PHASE

Table 13: Environmental Management Plan during Construction Phase

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Soil	Soil Erosion and Contamination	▪ Obtain an excavation permit before the excavation works begins	▪ Excavation permit	Before excavation	Proponent NCC	75,000
		▪ Use of standard equipment for the excavation work and no blasting of rocks	▪ Type of machinery used	Excavation period	Proponent Contractor	0
		▪ Control excavation works especially during rainy/wet conditions	▪ Excavation records	Excavation period	Proponent Contractor	0
		▪ Implement erosion and sediment control measures such as silt traps, sediment fences, and temporary bunds	▪ Presence of silt traps, sediment fences and temporary bunds	Excavation period	Proponent Contractor	0
		▪ Avoid unnecessary excavations and other soil disturbances that can predispose the soil to the agents of erosion	▪ Excavation records	Excavation period	Proponent Contractor	0
		▪ Avoid unnecessary movement of soil materials from the site	▪ Excavation records	Excavation period	Proponent Contractor	0
		▪ Maintenance of equipment and vehicles away from site to prevent soil contamination by oil spills	▪ Soil analysis tests	Continuous	Proponent Contractor	20,000

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
		<ul style="list-style-type: none"> Provide sanitary conveniences connected to the existing sewer line to prevent soil contamination by untreated effluent 	<ul style="list-style-type: none"> Soil analysis tests 	Continuous	Proponent Contractor	0
		<ul style="list-style-type: none"> Landscaping within the open spaces by planting indigenous trees and grass 	<ul style="list-style-type: none"> Number of Indigenous trees planted 	Before operation	Proponent Contractor	BQ cost
Air Quality	Nuisance and adverse health due to fugitive dust and emissions from vehicle and machinery	<ul style="list-style-type: none"> Screen the construction site to control and arrest construction-related dust 	<ul style="list-style-type: none"> Presence of dust screens 	Continuous	Proponent Contractor	BQ cost
		<ul style="list-style-type: none"> Sprinkling of water in work areas to prevent fugitive dust violations 	<ul style="list-style-type: none"> Water use records 	Continuous	Proponent Contractor	BQ cost
		<ul style="list-style-type: none"> Provide adequate and appropriate PPE such as nose masks and goggles to the workers 	<ul style="list-style-type: none"> Presence and usage of PPE 	Continuous	Contractor Workers	50,000
		<ul style="list-style-type: none"> Use of low-emission machinery to minimize generation of hazardous gases 	<ul style="list-style-type: none"> Type of machinery used 	Continuous	Contractor	0
		<ul style="list-style-type: none"> Regular maintenance of machinery and vehicles 	<ul style="list-style-type: none"> Service records 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> Use of environmentally friendly fuels and minimize the machinery idling time 	<ul style="list-style-type: none"> Fuel records 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> Covering of stockpiles within the site to reduce wind-blown dust emissions 	<ul style="list-style-type: none"> Covered stockpiles 	Continuous	Contractor	0
		<ul style="list-style-type: none"> Covering the loaded vehicles/trucks with clean impervious sheeting to prevent the dispersion of particulate matter 	<ul style="list-style-type: none"> Covered trucks 	Continuous	Contractor	0
		<ul style="list-style-type: none"> No burning of waste within the site 	<ul style="list-style-type: none"> Records of complaints 	Continuous	Contractor Workers	0
		<ul style="list-style-type: none"> Training of workers on air quality management 	<ul style="list-style-type: none"> Training records 	Continuous	Contractor Workers	0
		<ul style="list-style-type: none"> Ambient air quality monitoring within the site 	<ul style="list-style-type: none"> Air quality measurements 	Annually	Contractor	40,000
Noise and Excessive Vibrations	Nuisance and adverse health impacts from high noise and vibration levels from machinery and vehicles	<ul style="list-style-type: none"> Construction activities will be carried out on weekdays between 0800hrs to 1800hrs and on Saturdays between 0800hrs to 1300hrs. 	<ul style="list-style-type: none"> Work schedule records 	Continuous	Proponent Contractor	0
		<ul style="list-style-type: none"> No construction work will be undertaken on Sundays 	<ul style="list-style-type: none"> Work schedule records 	Continuous	Proponent Contractor	0
		<ul style="list-style-type: none"> No blasting of rocks during the excavation period to prevent excessive vibrations 	<ul style="list-style-type: none"> Records of complaints 	Excavation period	Proponent Contractor	0
		<ul style="list-style-type: none"> Provide adequate and appropriate PPE such as earmuffs and ear plugs to the workers 	<ul style="list-style-type: none"> Presence and usage of PPE 	Continuous	Contractor Workers	20,000
		<ul style="list-style-type: none"> Install noise shields and barriers on noisy areas 	<ul style="list-style-type: none"> Noise shields/barriers 	Continuous	Contractor	BQ cost

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
		▪ Use of noise abatement machinery/devices	▪ Type of machinery used	Continuous	Contractor	0
		▪ Noisy activities to be scheduled concurrently to reduce the exposure period	▪ Work schedule records	Continuous	Contractor	0
		▪ Regular maintenance of machinery and vehicles to reduce frictional noise	▪ Service records	Continuous	Contractor	BQ cost
		▪ Install sound-absorbing materials such as acoustic enclosure within the generator room to reduce noise pollution	▪ Acoustic enclosure	Before operation	Proponent Contractor	BQ cost
		▪ Training of workers on minimal permissible noise levels	▪ Training records	Continuous	Contractor Workers	20,000
		▪ Ambient noise level monitoring within the site	▪ Noise level measurements	Annually	Proponent Contractor	20,000
Liquid Waste	Health and safety hazards and environmental pollution from poor management of wastes	▪ Construct a mini STP for pre-treatment of all liquid waste prior to final discharge into the existing conventional sewer line.	▪ Mini-Sewer Treatment Plant	During Construction	Proponent Contractor	BQ cost
		▪ Extend the connection of the proposed development STP to the existing conventional sewer system	▪ Sewer connection permit	During Construction	Proponent Contractor NCWSC	BQ cost
		▪ Construct an internal reticulation system which can consistently handle the loads during peak volumes	▪ Monitoring records	During Construction	Contractor	BQ cost
		▪ Obtain a site toilet permit from NCC	▪ Site toilet permit	Before construction	Proponent NCC	10,000
		▪ Provide adequate sanitary conveniences to the workers	▪ Number of sanitary conveniences	Before construction	Proponent Contractor	BQ cost
		▪ Ensure the sanitary conveniences are kept clean at all times	▪ Cleaning records	Continuous	Proponent Contractor	BQ cost
		▪ Proper decommissioning of the sanitary conveniences	▪ Decommissioning plan	Before operation	Contractor	BQ cost
		▪ Install hygiene awareness signs within the site	▪ Presence of hygiene signs	Continuous	Contractor	10,000
		▪ Training of workers on hygiene during the toolbox meetings	▪ Training records	Continuous	Contractor Workers	20,000
Solid Waste	Health and safety hazards and environmental pollution from poor	▪ Develop and implement a Waste Management Plan	▪ Waste Management Plan	Before construction	Proponent, Contractor	10,000
		▪ Provide a centralized waste collection center for waste management with appropriate waste receptacles	▪ Waste collection center ▪ Colour coded waste receptacles	Continuous	Contractor	20,000
		▪ Segregation of non-hazardous waste into	▪ Waste management records	Continuous	Contractor	0

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
	management of wastes	organic and non-organic fractions				
		<ul style="list-style-type: none"> ▪ Engage a NEMA-licensed transporter to collect and dispose of the segregated waste 	<ul style="list-style-type: none"> ▪ Contract with licensed waste transporter 	Continuous	Contractor	50,000
		<ul style="list-style-type: none"> ▪ Provide adequate and appropriate PPE such as gloves to the workers 	<ul style="list-style-type: none"> ▪ Presence and usage of PPE 	Continuous	Contractor Workers	20,000
		<ul style="list-style-type: none"> ▪ Monitor the type and volume of waste generated within the site 	<ul style="list-style-type: none"> ▪ Waste management records 	Continuous	Contractor	0
		<ul style="list-style-type: none"> ▪ Training of workers on solid waste management within the site 	<ul style="list-style-type: none"> ▪ Training records 	Continuous	Contractor Workers	20,000
Water Use	Increased demand on local water resources	<ul style="list-style-type: none"> ▪ Extend the connection of the main water supply to the proposed development 	<ul style="list-style-type: none"> ▪ Water Connection Permit 	During Construction	Contractor NCWSC	BQ Cost
		<ul style="list-style-type: none"> ▪ Drill a borehole as an alternative source of water for the development 	<ul style="list-style-type: none"> ▪ Authorization Permit ▪ Completion certificate 	During Construction	Contractor WRA	BQ Cost
		<ul style="list-style-type: none"> ▪ Install rainwater harvesting facilities to supplement the existing water supply 	<ul style="list-style-type: none"> ▪ Rainwater harvesting facilities 	During Construction	Contractor	0
		<ul style="list-style-type: none"> ▪ Install smart water management systems to monitor real-time consumption, detect leaks, and optimize water usage 	<ul style="list-style-type: none"> ▪ Smart water management system 	Before operation	Proponent Contractor	BQ Cost
		<ul style="list-style-type: none"> ▪ Use automated irrigation systems with soil moisture sensors to prevent overwatering of landscaped areas 	<ul style="list-style-type: none"> ▪ Presence of automated irrigation systems 	Before operation	Proponent Contractor	BQ Cost
		<ul style="list-style-type: none"> ▪ Incorporation of a greywater reuse system for toilet flushing 	<ul style="list-style-type: none"> ▪ Greywater reuse system 	Before operation	Proponent Contractor	BQ Cost
		<ul style="list-style-type: none"> ▪ Use of water efficiently within the site 	<ul style="list-style-type: none"> ▪ Water use records 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Provide adequate tanks for water storage purposes 	<ul style="list-style-type: none"> ▪ Presence of water tanks 	During Construction	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Use of water-efficient fixtures and fittings 	<ul style="list-style-type: none"> ▪ Type of water components 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Regular maintenance of the water components 	<ul style="list-style-type: none"> ▪ Service records 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Install notices and information signs on water conservation measures 	<ul style="list-style-type: none"> ▪ Presence of notices and signs 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Training of workers on water conservation measures 	<ul style="list-style-type: none"> ▪ Training records 	Continuous	Contractor Workers	10,000
		<ul style="list-style-type: none"> ▪ Monitoring of water consumption within the site 	<ul style="list-style-type: none"> ▪ Water use records 	Monthly	Contractor	0
Energy Use	Increased demand for local energy	<ul style="list-style-type: none"> ▪ Install an onsite transformer to supply energy to the proposed development subject to the acquisition of a connection permit 	<ul style="list-style-type: none"> ▪ Electricity connection permit 	Before construction	Proponent Contractor KPLC	BQ cost

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
	resources	▪ Install solar panels as an alternative source of energy for the development	▪ Presence of solar panels	Before Operation	Contractor EPRA	BQ cost
		▪ Install a generator as a backup source of energy	▪ Presence of a generator	Before Operation	Contractor	BQ cost
		▪ Install energy-efficient fixtures and fittings	▪ Type of energy components	Continuous	Contractor	BQ cost
		▪ Install smart energy management systems (EMS) with real-time monitoring to optimize energy use and automate controls	▪ Presence of a smart energy system	Before Operation	Contractor	BQ cost
		▪ Utilize motion sensors and daylight sensors for automated lighting control in common spaces	▪ Presence of motion sensors and daylight sensors	Before Operation	Contractor	BQ cost
		▪ Install sub-metering systems for different functional areas to improve energy accountability and management	▪ Presence of sub-metering system	Before Operation	Contractor	BQ cost
		▪ Switch off machinery/equipment and lights when not in use	▪ Monitoring records	Continuous	Contractor	0
		▪ Provide notices and information signs on energy conservation measures	▪ Presence of notices and signs	Continuous	Contractor	10,000
		▪ Routine inspection and maintenance of electrical components by registered personnel	▪ Maintenance records	Continuous	Contractor	BQ cost
		▪ Monitoring of energy consumption within the site	▪ Energy use records	Continuous	Contractor	0
Traffic Density	Increased traffic causing snarl-up along the access roads	▪ Develop and implement a Traffic Management Plan	▪ Traffic Management Plan	Before Construction	Contractor	BQ cost
		▪ Engage traffic marshals to control vehicular movement and ensure smooth entry and exit	▪ Presence of traffic marshals	Continuous	Contractor Workers	BQ cost
		▪ Ferry building materials and construction waste during the off-peak period	▪ Delivery records	Continuous	Contractor Drivers	0
		▪ Provide a loading/offloading area for construction materials within the site	▪ Presence of a designated loading/offloading zone	Continuous	Proponent Contractor	0
		▪ Install traffic control signs to inform motorists and public about the potential hazards	▪ Presence of signage	Continuous	Proponent Contractor	10,000
		▪ Provide a billboard at the site entrance notifying the public about the project	▪ Presence of a billboard	Before construction	Contractor	10,000
		▪ Provide temporary parking spaces for construction vehicles within the site	▪ Presence of parking spaces	During Construction	Contractor	BQ cost
		▪ Stagger the deliveries of building materials	▪ Delivery records	Continuous	Contractor	0

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
		to minimize queuing of vehicles on and off the site				
		<ul style="list-style-type: none"> ▪ Provide separate entry and exit points to ensure smooth traffic flow 	<ul style="list-style-type: none"> ▪ Availability of separate entry and exit points 	Continuous	Contractor	0
		<ul style="list-style-type: none"> ▪ Install automated double-lane vehicle screening to minimize delays 	<ul style="list-style-type: none"> ▪ Presence of automated double-lane 	Before operation	Contractor	0
		<ul style="list-style-type: none"> ▪ Training of drivers on traffic management within the site 	<ul style="list-style-type: none"> ▪ Training records 	Continuous	Contractor Drivers	0
Health and Safety Risks	Safety and health hazards	<ul style="list-style-type: none"> ▪ Register the site as a workplace with DOSHS 	<ul style="list-style-type: none"> ▪ Certificate of Registration 	Before construction	Proponent DOSHS	10,000
		<ul style="list-style-type: none"> ▪ Insure workers against accidents 	<ul style="list-style-type: none"> ▪ Insurance cover 	Annually	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Provide adequate and appropriate PPE to the workers 	<ul style="list-style-type: none"> ▪ Presence and usage of PPE 	Continuous	Contractor Workers	20,000
		<ul style="list-style-type: none"> ▪ Provide first aid facilities within the site 	<ul style="list-style-type: none"> ▪ Presence of a well-equipped first aid box 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Undertake first aid audit for the development 	<ul style="list-style-type: none"> ▪ First aid audit report 	Annually	Contractor	50,000
		<ul style="list-style-type: none"> ▪ Sensitize the workers on social issues such as drug and substance abuse 	<ul style="list-style-type: none"> ▪ Sensitization records 	Continuous	Contractor Workers	10,000
		<ul style="list-style-type: none"> ▪ Post hazard warning signs at strategic points within the site 	<ul style="list-style-type: none"> ▪ Warning signs displayed 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Develop an Emergency Response Plan to manage the occurrence of hazards 	<ul style="list-style-type: none"> ▪ Emergency Response Plan 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Install controlled access system around the swimming pool to prevent unauthorized access especially from children 	<ul style="list-style-type: none"> ▪ Presence of controlled access system 	Before operation	Proponent Workers	BQ cost
		<ul style="list-style-type: none"> ▪ Establish a safety and health committee within the site 	<ul style="list-style-type: none"> ▪ Presence of a safety and health committee 	Before Construction	Contractor	0
		<ul style="list-style-type: none"> ▪ Training the workers on safety and health best practices 	<ul style="list-style-type: none"> ▪ Training records 	Continuous	Contractor Workers	20,000
		<ul style="list-style-type: none"> ▪ Undertake a safety and health audit for the development 	<ul style="list-style-type: none"> ▪ Safety and health audit report 	Annually	Contractor	50,000
		<ul style="list-style-type: none"> ▪ Undertake a risk assessment of the workplace 	<ul style="list-style-type: none"> ▪ Risk assessment report 	Annually	Contractor	50,000
		<ul style="list-style-type: none"> ▪ Ensure that the workers are registered with SHIF / NSSF and remit appropriate fees 	<ul style="list-style-type: none"> ▪ SHIF/NSSF Covers 	Continuous	Contractor Workers	0
		<ul style="list-style-type: none"> ▪ Keep records of public emergency service telephone numbers 	<ul style="list-style-type: none"> ▪ Presence of the emergency telephone numbers 	Continuous	Contractor	0
<ul style="list-style-type: none"> ▪ Provide an adequate supply of wholesome 	<ul style="list-style-type: none"> ▪ Availability of drinking water 	Continuous	Contractor	BQ cost		

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
		drinking water to the workers			Workers	
	Fire risks within the site and neighbouring developments	<ul style="list-style-type: none"> ▪ Provide firefighting equipment within the site 	<ul style="list-style-type: none"> ▪ Presence of firefighting equipment 	Continuous	Contractor	30,000
		<ul style="list-style-type: none"> ▪ Establish a firefighting team within the site 	<ul style="list-style-type: none"> ▪ Availability of firefighting team 	Continuous	Contractor	0
		<ul style="list-style-type: none"> ▪ Training the workers on fire safety measures 	<ul style="list-style-type: none"> ▪ Training records 	Continuous	Contractor Workers	20,000
		<ul style="list-style-type: none"> ▪ Undertake a fire safety audit for the development 	<ul style="list-style-type: none"> ▪ Fire safety audit report 	Annually	Contractor	50,000
		<ul style="list-style-type: none"> ▪ Conduct fire drills within the site 	<ul style="list-style-type: none"> ▪ Fire drill records 	Annually	Contractor	0
		<ul style="list-style-type: none"> ▪ Post fire prevention signs and notices at strategic points within the site 	<ul style="list-style-type: none"> ▪ Presences of signs and notices 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Post fire exit routes and fire assembly point within the site 	<ul style="list-style-type: none"> ▪ Availability of fire signs and assembly point 	Continuous	Contractor	10,000
		<ul style="list-style-type: none"> ▪ Post fire emergency and evacuation procedures at strategic points within the site 	<ul style="list-style-type: none"> ▪ Emergency and Evacuation Procedure 	Continuous	Contractor	10,000
	Security risks within the site and neighboring developments	<ul style="list-style-type: none"> ▪ Engage licensed security personnel to guard the property and monitor the access points 	<ul style="list-style-type: none"> ▪ Presence of licensed security guards 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Keep records of movement of people and vehicles in and out of the site 	<ul style="list-style-type: none"> ▪ Entry/Exit records available 	Continuous	Contractor	0
		<ul style="list-style-type: none"> ▪ Install access control measures within the development 	<ul style="list-style-type: none"> ▪ Availability of access control measures 	Continuous	Proponent Contractor	0
		<ul style="list-style-type: none"> ▪ Install security lights and CCTV at strategic points within the site 	<ul style="list-style-type: none"> ▪ Presence of security lights and CCTV 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Install motion sensors and intrusion detection systems along the perimeter and critical zones. 	<ul style="list-style-type: none"> ▪ Presence of motion sensors and intrusion detection systems 	Continuous	Contractor	BQ cost
Storm water	Flooding which may cause of loss of property and life	<ul style="list-style-type: none"> ▪ Construct gently sloping drainage channels covered with gratings for stormwater management 	<ul style="list-style-type: none"> ▪ Presence of drainage channels with gratings 	During Construction	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Construct retention basins to temporarily hold water during high-intensity rainfall 	<ul style="list-style-type: none"> ▪ Presence of retention basins 	Before operation	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Harvest rainwater to reduce the amount of runoff 	<ul style="list-style-type: none"> ▪ Presence of rainwater harvesting facilities 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Use of permeable pavements to allow for stormwater infiltration 	<ul style="list-style-type: none"> ▪ Presence of permeable pavements 	Continuous	Contractor	BQ cost
		<ul style="list-style-type: none"> ▪ Undertake comprehensive landscaping by planting indigenous trees and grass 	<ul style="list-style-type: none"> ▪ Number of trees planted 	Continuous	Contractor	BQ cost

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Oil	Oil pollution which may contaminate soil and surface water resources	▪ Fit all drainage facilities with adequate functional oil-water separators and silt traps	▪ Presence of oil-water separators and silt traps	During Construction	Contractor	BQ cost
		▪ Store oil or grease in a container at the designated place before final disposal	▪ Monitoring records	Continuous	Contractor	BQ cost
		▪ Routine maintenance of machinery away from the site to avoid oil pollution	▪ Maintenance records	Continuous	Contractor	BQ cost
		▪ Engage licensed waste transporters to dispose of oily containers at designated disposal sites	▪ Contract with licensed waste transporter	Continuous	Contractor	BQ cost
Vegetation	Loss of Vegetation	▪ Develop and implement a Flora Management Plan before site clearance	▪ Flora Management Plan	Before construction	Proponent Contractor	10,000
		▪ Transplant the conservation-sensitive species such as <i>hibiscus fragilis</i> to the riparian buffer zone	▪ Number of species transplanted	Before construction	Proponent Contractor	BQ cost
		▪ Restrict vegetation clearing strictly to the project footprint to minimize ecological disturbance.	▪ Vegetation clearance records	Before construction	Proponent Contractor	0
		▪ Obtain a tree-cutting clearance certificate before cutting down the trees	▪ Tree-cutting clearance certificate	Before construction	Proponent NCC	BQ cost
		▪ Undertake comprehensive landscaping by planting indigenous trees and grass within the open spaces	▪ Number of trees planted	Before operation	Contractor	BQ cost

10.2 EMP FOR THE OPERATION PHASE

Table 14: Environmental Management Plan during Operation Phase

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Solid Waste	Health & safety hazards and environmental pollution from poor solid waste management	▪ Develop and implement a Waste Management Plan	▪ Waste Management Plan	Before operation	Proponent	10,000
		▪ Provide appropriate waste receptacles for segregation of waste	▪ Color coded waste receptacles	Before operation	Proponent	50,000
		▪ Segregation of non-hazardous waste into organic and non-organic fractions	▪ Waste management records	Continuous	Proponent	0
		▪ Engage a NEMA-licensed transporter to collect and dispose of the segregated waste at designated disposal sites	▪ Contract with licensed waste transporter	Continuous	Proponent	O&M costs
		▪ Monitor the type and volume of waste generated within the development	▪ Waste management records	Continuous	Proponent	0
		▪ Provide adequate and appropriate PPE such as gloves to the workers	▪ Presence and usage of PPE	Continuous	Proponent Workers	10,000
		▪ Sensitize the residents on solid waste management within their units	▪ Sensitization records	Continuous	Proponent Residents	0
Liquid Waste	Health & safety hazards and environmental pollution from poor liquid waste management	▪ Regular inspection and maintenance of foul water drainage system and STP to prevent clogging and forestall breakdowns	▪ Maintenance records	Continuous	Proponent	O&M costs
		▪ Fix any damage to the foul water drainage system expeditiously	▪ Maintenance records	Continuous	Proponent	O&M costs
		▪ Regular cleaning of the sanitary conveniences	▪ Cleaning records	Daily	Proponent	0
		▪ Provide adequate and appropriate PPE such as gloves to the cleaners	▪ Presence and usage of PPE	Continuous	Proponent Cleaners	10,000
Air Quality	Nuisance and adverse health due to foul smell and emissions from the generator	▪ Routine cleaning of the waste collection center, sanitary conveniences, and common areas	▪ Cleaning records	Continuous	Proponent Workers	O&M cost
		▪ Regular collection and disposal of solid waste to prevent foul smell	▪ Waste management records	Continuous	Proponent	O&M costs
		▪ Regular maintenance of the generator to minimize the generation of hazardous gases	▪ Maintenance records	Continuous	Proponent	O&M costs
		▪ Provide adequate and appropriate PPE such as masks to the workers	▪ Presence and usage of PPE	Continuous	Proponent Workers	10,000
		▪ No burning of waste within the site	▪ Record of complaints	Continuous	Proponent	0
		▪ Ambient air quality monitoring within the development	▪ Air quality measurements	Annually	Proponent	20,000

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Noise and Excessive Vibrations	Nuisance and adverse health impacts from high noise levels	▪ Sensitize the residents and workers on minimal permissible noise levels	▪ Sensitization records	Continuous	Proponent Residents	0
		▪ Regular maintenance of the generator to minimize frictional noise	▪ Maintenance records	Continuous	Proponent	O&M cost
		▪ Undertake ambient noise level measurements	▪ Noise level measurements	Annually	Proponent	20,000
Traffic Density	Increased traffic causing snarl-up along the access roads	▪ Develop a Traffic Management Plan to ensure that site vehicles do not interfere with the regular traffic	▪ Traffic Management Plan	Continuous	Proponent	O&M Costs
		▪ Ensure routine maintenance of the parking bays and related infrastructure	▪ Maintenance Records	Continuous	Proponent Management	O&M Costs
		▪ Provide designated internal areas for pick-up and drop-off activities to prevent roadside stopping and circulation conflicts	▪ Presence of designated pick-up and drop-off zones	Continuous	Proponent Management	O&M Costs
Storm Water	Flooding which may cause of loss of property and life	▪ Regular maintenance of the internal drainage channels and rainwater harvesting facilities	▪ Maintenance records	Continuous	Proponent	O&M costs
		▪ Routine inspection and maintenance of the landscaped area	▪ Maintenance records	Continuous	Proponent	O&M costs
Water Use	Increased demand on local water resources	▪ Use of water efficiently within the development	▪ Water use records	Continuous	Residents	O&M costs
		▪ Use borehole water or rainwater to supplement the existing water supply	▪ Quantities of borehole water and rainwater used	Continuous	Proponent	0
		▪ Use of water-efficient fittings within the development	▪ Type of fittings used	Continuous	Proponent	0
		▪ Use of water efficiently within the development	▪ Water use records	Continuous	Proponent	0
		▪ Regular inspection and maintenance of all water components	▪ Maintenance Records	Continuous	Proponent	O&M costs
		▪ Monitor the water consumption within the development	▪ Water use records	Monthly	Proponent	0
Energy Use	Increased use demand on local energy resources	▪ Switch off machinery/equipment and lights when not in use	▪ Monitoring records	Continuous	Proponent Residents	0
		▪ Use of energy-efficient fittings within the development	▪ Type of energy fittings used	Continuous	Proponent	O&M costs
		▪ Routine inspection and maintenance of electrical components	▪ Maintenance records	Continuous	Proponent	O&M costs
		▪ Monitor the energy consumption within the development	▪ Energy use records	Continuous	Proponent	0

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Health and Safet Risks	Safety and health hazards	▪ Formulate an Internal Environmental Policy to guide the best practices within the development	▪ Environmental Policy	Before Operation	Proponent	10,000
		▪ Adapt a suitable Emergency Response Plan to manage the occurrence of hazards	▪ Emergency Response Plan	Before operation	Proponent	30,000
		▪ Post hazard warning signs at strategic points within the development	▪ Availability of warning signs	Continuous	Proponent	5,000
		▪ Sensitize the residents on occupational Health and safety.	▪ Sensitization records	Continuous	Proponent Residents	0
		▪ Undertake a health and safety audit for the development	▪ Health and safety audit	Annually	Proponent	50,000
		▪ Monitor any accidents/incidents within the development and keep records	▪ Accident Register	Continuous	Proponent	20,000
		▪ Provide adequate and appropriate PPE to the workers within the development	▪ Presence and usage of PPE	Continuous	Proponent Workers	10,000
		▪ Develop and display a Swimming Pool Safety Plan at the pool entrance to enhance pool safety	▪ Presence of Swimming Pool Safety Plan	Continuous	Proponent	10,000
		▪ Regular disinfection, filtration, and pH control of the swimming pool water quality	▪ Disinfection records	Continuous	Proponent	O&M Costs
		▪ Keep a record of the public emergency service telephone numbers	▪ Availability of telephone numbers	Continuous	Proponent Residents	0
	Fire risks within the development and neighbouring facilities	▪ Provide firefighting equipment within the development	▪ Firefighting equipment	Before operation	Proponent	50,000
		▪ Regular inspection and maintenance of firefighting equipment	▪ Maintenance records	Bi-annually	Proponent	O&M costs
		▪ Post fire exit routes and fire assembly point within the site	▪ Availability of fire signs and assembly point	Before operation	Proponent	20,000
		▪ Conduct fire drills within the development to sensitize the residents	▪ Fire drill records	Annually	Proponent Residents	O&M Costs
	Security risks within the site and neighboring developments	▪ Engage licensed security personnel to guard the property and monitor the access points	▪ Availability of security guards	Before operation	Proponent	O&M costs
▪ Keep records of visitors accessing the development		▪ Entry/Exit records	Continuous	Proponent	0	
▪ Routine inspection and maintenance of the security lights and CCTV		▪ Maintenance records	Continuous	Proponent	O&M costs	

10.3 EMP FOR THE DECOMMISSIONING PHASE

Note: A due diligence environmental audit will be undertaken and submitted to NEMA at least three months prior to decommissioning and in line with the Environmental Management and Coordination Act Cap 387.

Table 15: Environmental Management Plan during Decommissioning Phase

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Air Quality	Nuisance and adverse health due to dust emission and vehicle fumes	▪ Prepare a decommissioning Plan before the demolition exercise	▪ Decommissioning Plan	Before Demolition	Proponent NEMA	50,000
		▪ Obtain a demolition permit before the demolition work begins	▪ Demolition permit	Before Demolition	Proponent NCC	30,000
		▪ Use of low-emission machinery to minimise the generation of hazardous gases	▪ Type of machinery	Continuous	Proponent Contractor	0
		▪ Provide adequate and appropriate PPE such as nose masks and goggles to the workers	▪ Presence and usage of PPE	Continuous	Proponent Contractor	20,000
		▪ Screen the construction site to control and arrest demolition-related dust	▪ Presence of dust screens	Before demolition	Proponent Contractor	300,000
		▪ Sprinkling of water in work areas to prevent fugitive dust violations	▪ Water use records	Continuous	Proponent Contractor	100,000
		▪ Ambient air quality monitoring within the site	▪ Air quality measurements report	Annually	Proponent Contractor	20,000
Noise and Vibration	Nuisance and adverse health impacts from high noise and vibration levels	▪ Provide adequate and appropriate PPE such as earmuffs and ear plugs to the workers	▪ Presence and usage of PPE	Continuous	Proponent Contractor	20,000
		▪ Demolition activities to be undertaken on weekday and on Saturday only	▪ Record of Complaints	Continuous	Proponent Contractor	0
		▪ No demolition work will be undertaken on Sundays	▪ Record of Complaints	Continuous	Proponent Contractor	0
		▪ Use of noise shields/suppressors on the demolition machinery	▪ Availability of Noise shields	Continuous	Proponent Contractor	20,000
		▪ Ambient noise level monitoring within the site	▪ Noise level measurements report	Continuous	Proponent Contractor	20,000
Solid waste management	Health and safety hazards and environmental pollution from poor management of solid wastes	▪ Engage a NEMA-licensed transporter to collect and dispose of the segregated waste	▪ Contract with licensed waste transporter	Continuous	Contractor	50,000
		▪ Segregate hazardous and non-hazardous waste before final disposal	▪ Segregated waste	Continuous	Contractor	0
		▪ Provide adequate and appropriate PPE to the refuse collection workers	▪ Presence and usage of PPE	Continuous	Contractor	20,000
		▪ Ensure refuse collection vehicles are covered to prevent scattering of waste	▪ Covered vehicles	Continuous	Contractor	0
		▪ Reuse of demolition debris in other construction projects	▪ Quantity of debris reused	Continuous	Contractor	0

Aspect	Potential Impact	Mitigation Measure(s)	Monitoring Indicators	Timeframe	Responsibility	Estimated Cost (KShs)
Liquid waste management	Health and safety hazards and environmental pollution from poor management of liquid wastes	▪ Proper decommissioning of the sanitary facilities	▪ Decommissioning plan	Continuous	Proponent	0
		▪ Reuse of all the mechanical fittings (WC, WHB) in other projects	▪ Number of fittings reused	Continuous	Proponent	0
		▪ Provide adequate and appropriate PPE to the refuse collection workers	▪ Presence and usage of PPE	Continuous	Contractor	0
Energy Use	Increased use of energy and indoor/outdoor air pollution	▪ Switch off machinery/equipment when not in use	▪ Energy use records	Continuous	Proponent Contractor	0
		▪ Monitor energy consumption within the site	▪ Energy use records	Continuous	Proponent Contractor	0
Health and Safety Risks	Safety and health hazards	▪ Insure demolition workers against accidents	▪ Insurance available	Continuous	Proponent Contractor	200,000
		▪ Provide adequate and appropriate PPE to the workers	▪ Presence and usage of PPE	Continuous	Proponent Contractor	50,000
		▪ Provide first aid facilities	▪ Well-stocked first aid box	Continuous	Proponent Contractor	10,000
		▪ Training the workers on safety and health best practices before demolition exercise	▪ Training records	Continuous	Proponent Contractor	30,000
		▪ Ensure that the workers are registered with SHIF / NSSF and remit appropriate fees	▪ SHIF/NSSF Covers	Continuous	Contractor	BQ Cost
		▪ Provide adequate supply of wholesome drinking water	▪ Available of Drinking water	Continuous	Proponent Contractor	100,000
	Insecurity	▪ Engage licensed security personnel to guard the property and monitor the access points	▪ Contract with licensed security guards	Continuous	Proponent Contractor	BQ costs
Vegetation	Disturbance of fauna and flora species during the demolition exercise	▪ Implement an appropriate re-vegetation program to restore the site	▪ Re-vegetation program	Continuous	Proponent Contractor	10,000
		▪ Undertake comprehensive soft landscaping by planting indigenous trees	▪ Landscaped area ▪ Vegetation Cover	After demolition	Proponent Contractor	100,000
		▪ Fence the site to minimize disturbance of the newly vegetated area	▪ Fence available	After demolition	Proponent Contractor	50,000

CHAPTER ELEVEN: CONCLUSION AND RECOMMENDATIONS

The proposed development is expected to yield several socio-economic benefits including the provision of residential housing, creation of direct and indirect employment opportunities, increased revenue for both National and County Governments through taxes and permit fees, stimulation of local commerce through demand for goods and services, and income generation for the project proponent through the sale and/or leasing of the residential units. However, the proposed project will also have negative impacts which include air and noise pollution, increased waste generation, increased energy and water demand, oil pollution, increased traffic along the access road, and increased health and safety hazards during the project cycle among others can be sufficiently mitigated.

The proponent has committed to putting in place various mitigation measures to mitigate the negative environmental, safety, health, and social impacts associated with the proposed project. It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the EMP as well as adhering to all relevant environmental, health and safety standards, policies and regulations that govern the establishment and operation of such projects. It is also recommended that the positive impacts that emanate from such activities shall be maximized as much as possible. It is expected that these measures will go a long way in ensuring the best possible environmental compliance and performance standards.

In light of the EIA findings and the mitigation measures outlined in the EMP, it is our recommendation that the project be allowed to proceed subject to the following conditions:

- i. That the proponent shall obtain all the requisite permits and licenses before the construction begins and adhere to the conditions therein.
- ii. That the proponent shall transplant the conservation-sensitive species such as *hibiscus fragilis* to the riparian buffer zone along the nearby Kirichwa Ndogo river before the construction begins.
- iii. That the proponent shall drill a borehole to supplement the county water supply subject to acquisition of an authorization permit from WRA and a separate EIA license from NEMA before drilling works begin.

- iv. That the proponent shall ensure periodic quantification and verification of GHG emissions for the proposed development as well as implementation of corrective and preventive actions to address performance gaps.
- v. That the proponent shall adhere to all relevant environmental, health, and safety standards, policies, and regulations that govern the establishment of the proposed project.
- vi. That the proponent shall ensure strict implementation of the EMP developed in this report.
- vii. That the proponent shall carry out an annual environmental audit in the first year of operation to confirm the efficacy and adequacy of the EMP developed to improve the environmental performance of the development.
- viii. That the proponent shall adhere to all other conditions as may be stipulated by the authority.

REFERENCES

Centre for Affordable Housing Finance in Africa (2024). 2024 Yearbook: Housing Finance in Africa. Johannesburg, South Africa. <http://housingfinanceafrica.org>

County Government of Nairobi (March 2023), Nairobi County Integrated Development Plan 2023-2027, Nairobi, Kenya.

The Government of Kenya (2016), Climate Change Act, Government Printer, Nairobi

The Government of Kenya (2010), Constitution of Kenya, Government Printer, Nairobi

The Government of Kenya (2012), County Governments Act, Government Printer, Nairobi

The Government of Kenya (2019), Energy Act, Government Printer, Nairobi

The Government of Kenya (1999), Environmental Management and Co-ordination Act (EMCA), Government Printer, Nairobi

The Government of Kenya (2024), Environmental Management and Co-ordination (Air Quality) Regulations, Government Printer, Nairobi

The Government of Kenya (2003), Environmental (Impact Assessment and Audit) Regulations, Government Printer, Nairobi

The Government of Kenya (2009), Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) (Control) Regulations, Government Printer, Nairobi

The Government of Kenya (2024), Environmental Management and Co-ordination (Waste Management) Regulations, Government Printer, Nairobi

The Government of Kenya (2024), Environmental Management and Co-ordination (Water Quality) Regulations, Government Printer, Nairobi

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

The Government of Kenya (2011), National Construction Authority Act, Government Printer, Nairobi

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

The Government of Kenya (2007), Occupational Safety and Health Act, Government Printer, Nairobi

The Government of Kenya (2019), Physical and Land Use Planning Act, Government Printer, Nairobi

The Government of Kenya (2012), Public Health Act, Government Printer, Nairobi

The Government of Kenya (2022), Sustainable Waste Management Act, Government Printer, Nairobi

The Government of Kenya (2016), Water Act, Government Printer, Nairobi

The Government of Kenya (2025), Water (Resources) Regulations, Government Printer, Nairobi

Kenya National Bureau of Statistics (2019) Kenya Population and Housing Census Volume I: Population by County and Sub-County, Nairobi, Kenya. Retrieved from <https://www.knbs.or.ke/?wpdmpro=2019-kenya-population-and-housing-census-volume-i-population-by-county-and-sub-county>

APPENDICES

1. Copy of ownership documents
2. Copy of KRA PIN Certificate
3. Copy of Company Registration (CR12)
4. Copy of TOR Approval letter
5. Copy of expert practicing licenses
6. Copy of the Change of Use approval
7. Copy of the Approval Letter from Nairobi City County
8. Copy of the Approved Architectural Drawings
9. Copy of Traffic Impact Assessment Report
10. Copy of Geotechnical Investigation Report
11. Copy of the Hydrogeological Survey Report
12. Copy of the Floral Biodiversity Assessment Report
13. Copy of the GHG Emissions and Climate Change Vulnerability Assessment Report
14. Copy of Ambient Air Quality Report
15. Copy of the Environmental Noise Level Measurement Report
16. Copy of Minutes, Attendance Sheets, Photographs for the Public Consultation Meetings
17. Copy of the Invitation Letters and Public Onsite Notices for the Public Meetings
18. Copy of the Bill of Quantities