

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
FOR THE PROPOSED RESIDENTIAL PROJECT IN
MOUNTAIN VIEW ALONG WAIYAKI WAY, WESTLANDS
SUB-COUNTY IN NAIROBI COUNTY. (PLOT LR. No.:
NAIROBI/BLOCK 64/711)**



Proponent:



Consultants:



DECLARATION

This Environmental and Social Impact Assessment Study Report for the **Proposed Residential Project in Mountain View along Waiyaki Way, Westlands Sub-County in Nairobi County. (Plot LR. No.: Nairobi/Block 64/711)** has been prepared by **Centric Africa Limited**, a registered and licensed EIA/EA firm of Experts, 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.

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LIST OF ACRONYMS/ABBREVIATIONS

AAC	Aerated Autoclaved Concrete
CBD	Central Business District
CCKP	Climate Change Knowledge Portal
CPP	Consultation and Public Participation
OSHS	Directorate of Occupational Safety and Health Services
E&S	Environmental and Social
EDGE	Excellence in Design for Greater Efficiencies
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EMCA	Environmental Management Coordination Act
EPRA	Energy and Petroleum Regulatory Authority
EPS	Expanded Polystyrene
ESIA	Environmental & Social Impact Assessment
ESMP	Environmental & Social Management Plan
GBV	Gender-Based Violence
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
IHS	International Housing Solutions - Kenya
ICF	Insulated Concrete Forms
IUCN	International Union for Conservation of Nature
KPLC	Kenya Power and Lighting Company
LED	Light-emitting Diode
LPG	Liquefied Petroleum Gas
NCA	National Construction Authority
NCWSC	Nairobi City Water and Sewerage Company
NEMA	National Environment Management Authority
OSH	Occupational Safety & Health
OSHA	Occupational Safety & Health Act
PPE	Personal Protective Equipment
PV	Photovoltaic
PWD	Person with Disability
RCP	Representative Concentration Pathway
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
ToR	Terms of Reference
UV	Ultraviolet
WASREB	Water Services Regulatory Board
WRA	Water Resources Authority
WHO	World Health Organisation

EXECUTIVE SUMMARY

Project Description

International Housing Solutions (IHS Kenya) proposes the construction of 375 green, affordable housing units. The housing units will feature a strategic mix of 2-bedrooms, 1-bedroom, and Studio apartments. The proposed housing units will be located on approximately one (1) acre piece of land in Mountain View area along Waiyaki Way in Westlands Sub-county, Nairobi County. The development is backed by a Kenyan based developer with development experience. The scheme is intended to provide efficient, well-planned residential accommodation supported by adequate site infrastructure and essential building services.

ESIA Methodology

The ESIA was undertaken in fulfilment of the Environmental Management Coordination Act (EMCA), 1999 (Cap 387) Schedule II that identifies projects that require an Environmental Impact Assessment (EIA) to be conducted prior to the commissioning/operation in order to identify the potential adverse impacts of a project and thereby devise appropriate mitigation measures. Various data collection methods were used, including literature review, site visits, and stakeholders' engagements. Impact assessment and mitigation were then used to identify and evaluate the significance of potential impacts on identified receptors and resources according to defined assessment criteria and to develop and describe measures that will be taken to avoid or minimize any potential adverse effects and to enhance potential benefits.

Project Area Baseline

The proposed project site is located on an undeveloped parcel of land along Waiyaki Way in the Mountain View–Loresho area of Westlands Sub-County, Nairobi City County, approximately 200 metres south-west of Kangemi Dam. The site is situated within a predominantly residential urban setting characterized by a mix of existing and emerging high-density residential developments, complemented by commercial, institutional, and religious establishments. The area is well served by existing infrastructure, including Waiyaki Way, local access roads, electricity supply, water distribution networks, public transportation services, and other urban amenities.

The site is currently covered mainly by grass vegetation with a small number of mature eucalyptus trees and exhibits evidence of previous disturbance, including historical tree harvesting activities. The surrounding environment has relatively low ecological sensitivity, with no significant fauna species or critical habitats recorded within the project footprint. Hydrologically, the site lies within the local catchment draining towards Kangemi Dam, an important urban wetland and stormwater retention feature that receives runoff and groundwater contributions from the surrounding Loresho, Mountain View, and Kangemi areas. Baseline environmental conditions, including air quality, noise levels, flora, and fauna, are typical of an urban environment influenced by residential development and traffic activities along Waiyaki Way. Overall, the site is considered suitable for the proposed residential development, subject to the implementation of appropriate environmental management measures, including stormwater management, erosion control, waste management, and protection of nearby environmental receptors such as Kangemi Dam.

Legal Framework

Relevant Kenyan policies and statutes have been analysed and the Institutional framework within which the proposed housing project will be developed has also been described. Among the relevant National legislations that have been reviewed, include:

- The Environment Management and Co-ordination Act (Cap 387)
- County Governments Act (Cap 265)
- Land Act, 2012
- Water Act (Cap 372)
- Physical and Land Use Planning Act (Cap 303)
- Public Health Act (Cap 242)
- Work Injury Benefits Act (Cap 236)
- Employment Act (Cap 226)
- Occupiers' Liability Act (Cap 34)
- Occupational Safety and Health Act (Cap 236A)
- Energy Act (Cap 314)
- National Construction Authority Act (Cap 118)
- Sustainable Waste Management Act, 2022
- Climate Change Act (Cap 387A)
- National Museums and Heritage Act (Cap 216)
- Sexual Offences Act (Cap 63A)
- HIV/ AIDS Prevention and Control Act (Cap 246A)
- Persons with Disabilities Act (Cap 133)
- Affordable Housing Act, 2024
- National Building Code, 2024

Stakeholder Engagement

Stakeholder engagement for the proposed project was undertaken through a combination of one-on-one consultations and three public baraza meetings held with neighbouring communities. The meetings were conducted on 15th - 16th June 2026 at the proposed project site. Participants included community leaders, men, women, youth, and a residential association from the surrounding area. This inclusive engagement approach ensured that diverse community views were captured, contributing to a representative baseline of social conditions and stakeholder perceptions within the project area.

Potential impacts and mitigation measures

The bio-physical and socio-economic impacts during the construction phase that have been identified and assessed in the ESIA include the following:

Anticipated positive impacts

Description
<i>Construction phase:</i> • Developer invests in efficient and sustainable building practices, reducing environmental impact and promoting resource efficiency • Employment and income generation • Creation of market for goods & services • Improved security • Increased government revenue from the payment of permits, licenses and taxes <i>Occupation phase:</i> • Optimal utilisation of the land in urban areas reducing urban sprawl. • Addressing the housing shortage in Nairobi City County

- Positive impact on property values in the area, potentially benefiting existing property owners.
- Provision of a variety of housing options, catering to diverse needs and preferences, from single professionals to families and retirees.
- Proximity to public transportation encourages residents to use these services.
- Employment and income generation
- Creation of market for goods & services
- Improved security

Opportunities and measures to enhance environmental and social and augment positive impacts

The proposed green affordable housing project will have immense opportunities to enhance environmental and social impacts. First, the proposed design prioritizes energy efficiency, water conservation, and sustainable materials. Renewable energy integration is incorporated, and green spaces will actualise the “greening plans” expected, especially during the occupation phase. Several waste management and water conservation measures shall be implemented during construction and operation phases. Community engagement will foster inclusivity, social services, and employment opportunities while transportation planning will integrate public transit. Monitoring and evaluation measures will improve the proposed housing project’s sustainability performance.

Anticipated negative impacts and mitigation measures

The major mitigation/enhancement measures to address the more significant impacts for the construction and operation phases of the proposed housing project include the following (for a comprehensive list of mitigation measures please refer to the mitigation measures section in the ESIA report and Environmental and Social Management Plan, ESMP):

Possible Impacts	Proposed Mitigation measures
Loss of trees	• Minimize clearing by restricting vegetation removal to the exact building footprint and utility corridors. • Implement a Tree Replacement Plan at a minimum ratio of 1:2, with priority given to indigenous, drought-resistant species.. • Utilize native plant species in landscaping to replace lost trees and promote biodiversity.
Air pollution	• Enclose the site with dust-proof net during construction • Undertake dust control measures such as using dust suppressants. • Using efficient machines with low emission technologies
Noise and excessive vibrations	• Erect suitable and adequate noise barriers during construction. • Use construction equipment/machinery that meet noise emission & vibration standards.
Solid waste generation	• Use of an integrated solid waste management system. • Contract a NEMA licensed waste management firm for disposal.
Increased demand for water and energy	• Harvest rainwater to supplement water from Nairobi City Water and Sewerage Company mains. • Install water efficient appliances • Implement a greywater recycling system. • The project design has integrated a renewable energy source i.e., roof mounted solar system for lighting.
Occupational health and safety	• Ensure proper training and supervision for workers on occupational health & safety. • Require all construction workers to wear appropriate PPE • Establish fire safety procedures (fire extinguishers, emergency exits, etc.) • Provide first aid kits at strategic places on the site

Possible Impacts	Proposed Mitigation measures
Pollution of water resources	- Wastewater management will be conducted through connection to the existing municipal sewerage system, ensuring the elimination of any direct effluent discharge into Kangemi Dam. - Implement strict control on chemical handling and storage to avoid spills. - Install sediment and oil separators to remove pollutants from site runoff. - Ensure wastewater does not mix with storm water. - Develop and implement a spill prevention and response plan.
Traffic management	- Establish designated construction site entrance and exit for construction traffic. - Install proper signage (warnings, detours, speed limits within and around the site. - Ferry building materials during off-peak hours
Gender-Based Violence; Sexual Exploitation & Abuse and Sexual Harassment	- Mandatory awareness creation for workers on required lawful conduct in Mountain View and Loresho area community and - Mandatory signing and implementation of code of conduct for the workers - Legal consequences for failure to comply with laws
Emergency preparedness and evacuation procedures	- Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency. - Post the emergency action plan at common areas.

Conclusion and recommendations

Centric Africa is confident that every effort will be made by IHS to accommodate the mitigation measures recommended during the ESIA process to the extent that is practically possible, without compromising the economic viability of the proposed housing project. The implementation of the mitigation measures as detailed in Chapters 8, and 9 will provide a basis for ensuring that the potential positive and negative impacts associated with the establishment of the development are enhanced and mitigated to a level which is deemed adequate for the development to proceed. In summary, based on the findings of this assessment, Centric Africa Limited recommends that the proposed green affordable housing units by IHS should be authorized, contingent on the mitigations for potential environmental and socio-economic impacts as outlined in the ESMP.

1 CHAPTER 1: INTRODUCTION

1.1 Overview

The Government of Kenya, through the Bottom-Up Economic Transformation Agenda for Inclusive Growth under the Fourth Medium Term Plan (2023-2027), has prioritized housing and settlement as one of its five core pillars for national development. The plan aims to increase affordable housing and improve settlement conditions across the country, focusing on low- and middle-income households. By promoting public-private partnerships, the government seeks to deliver at least 200,000 affordable housing units annually, enhance urban infrastructure, and regularize informal settlements. This initiative aligns with the goal of fostering inclusive economic growth by addressing housing shortages, creating jobs, and improving living conditions for all Kenyans.

It is at the backdrop of this that International Housing Solutions-Kenya (IHS) – *herein referred to as the proponent/developer*, proposes to develop three hundred and seventy five (375) green affordable housing units for sale. The proposed housing units will be located in Mountain View along Waiyaki Way in Westlands Sub-county, Nairobi City County. The main goal of the proposed investment is to provide green affordable housing units for rent and eventually for sale to potential buyers in the open market in Kenya. IHS has contracted Centric Africa Limited (*herein referred to as the consultant*) to undertake an environmental and social impact assessment (ESIA) for the proposed project. The ESIA covered all phases of the project: pre-construction, construction, and operational phases. In each of the phases, the impacts of the project were examined, analysed, and documented. The Legal Notice No. No. 32 of 2019, one of the environmental regulations in Kenya, requires the proponent (IHS) to prepare an ESIA Report for approval by National Environment Management Authority (NEMA) prior to the commencement of such new development.

1.2 Purpose of the Report

The information contained in this report, along with comments and inputs received from stakeholders, will assist the competent authority (NEMA) in deciding whether or not to grant environmental authorization for the proposed project and to inform the conditions associated with such authorizations. The ESIA process involved the identification, prediction, and evaluation of the actual and potential environmental and social impacts of the proposed housing project. This report outlines the proposed mitigation measures for negative impacts and enhancement measures for positive impacts that the proposed project will implement.

1.3 Project Objectives

The overall objective of the proposed project is to develop 375 housing units for the local and national markets. Directly linked to the overall objective is a specific objective to support the development of accessible, robust, and green affordable housing for rent and for sale to potential tenants and buyers in Kenya.

1.4 Scope of the ESIA

The proposed project requires a full ESIA study in compliance with the applicable laws and regulations of Kenya concerning environmental, health and safety standards. This ESIA took into consideration all environmental and social impacts of the proposed project and identified the main environmental and social aspects in order to optimize the project from an environmental and social point of view by avoiding, minimizing, reducing, or offsetting negative impacts and enhancing positive impacts. The ESIA further aimed at developing a cost-effective Environmental and Social Management Plan (ESMP) for the lifetime of the project. The ESIA team on behalf of the proponent, conducted the ESIA by incorporating, but not limited to, the following terms of reference:

- The description of the proposed location, including baseline information
- A concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- The technology, procedures, and processes to be used in the implementation of the project
- The materials to be used in the construction and implementation of the project
- Project description and layout plan. The location, project site, and architectural designs for the overall project;
- A description of the potentially affected environment, including hydrology, micro-climate, biological environment; and socioeconomics associated with the proposed project;
- The environmental effects of the project, including any direct, indirect, cumulative, irreversible, short-term, and long-term effects anticipated,
- Analysis of alternatives, including project site, design, and technologies.
- An environmental management plan proposing measures for eliminating, minimizing, or mitigating adverse impacts on the environment, including the cost, timeframe, and responsibility to implement the measures.
- Propose measures to prevent health hazards and to ensure security in the working environment for the employees, residents, and management in case of emergencies.
- Such other matters as the relevant authority requires.

1.5 Project Proponent

Established in 2005, the IHS Group is a pioneer in the green affordable housing sector and has built a strong reputation by successfully financing the construction and delivery of new homes while building sustainable communities. The group has established long-term partnerships with key stakeholders, which allows them to bring together the necessary elements for creating successful investments in the affordable housing market. Their relationships have enabled them to create a strong pipeline of prospective investments in the regions they operate.

1.6 ESIA Consultant

Centric Africa Limited was contracted by IHS to undertake the ESIA for the proposed project. The consultant (and specialists appointed by Centric Africa Limited during the course of this ESIA) have no financial ties to, nor are they a subsidiary, legally or financially, of IHS. Centric Africa Limited is a regional environmental consulting organization with a wide range of experience in delivering ESIA in Kenya and Africa. Centric Africa Limited is registered and licensed with NEMA as a Firm of Environmental Impact Assessment/Audit Experts, Reg. No. 7112 (*Annex i*).

1.7 Report Structure

The structure of this ESIA Report is outlined as follows:

Chapter 1	:	Introduction
Chapter 2	:	Methodology and approach
Chapter 3	:	Project description
Chapter 4	:	Biophysical and socioeconomic baselines
Chapter 5	:	Legal and institutional framework
Chapter 6	:	Stakeholder engagement
Chapter 7	:	Analysis of alternatives
Chapter 8	:	Anticipated impacts and mitigation measures overview
Chapter 9	:	Climate change risk and vulnerability assessment
Chapter 10	:	Environmental and social management plan (ESMP)
Chapter 11	:	Conclusion and recommendations
References	:	Contains a list of references used in compiling the report.
Annexure	:	Contains relevant documents associated with the project

2 CHAPTER 2: METHODOLOGY AND APPROACH

2.1 Overview

The ESIA was carried out in accordance with EMCA section 58 and Schedule II which identifies projects that require submission of an Environmental Impact Assessment report to NEMA in order to identify potential negative effects of a project and subsequently develop appropriate mitigation measures. Additionally, the ESIA was carried out in accordance with the Good International Industry Practice.

2.2 ESIA Objectives

The objectives of this ESIA were to:

- Identify all potential significant adverse environmental and social impacts of the proposed green affordable housing project and recommend measures for mitigation.
- Generate baseline data that will be used to monitor and evaluate the mitigation measures implemented during the project cycle.
- Recommend cost-effective measures to be used to avoid or reduce the anticipated negative impacts and enhance the positive impacts; and
- Prepare an ESIA report compliant with EMCA and the Environmental (Impact Assessment and Audit) Regulations (2003), detailing findings and recommendations.

2.3 Screening

The proposed project was screened to determine the need to undertake an ESIA based on project characteristics; the Second Schedule of EMCA, which lists the mandatory projects that must undergo an EIA. Based on this criteria, it was concluded that ESIA at a full study level would be necessary and appropriate for the proposed green affordable housing project due to the following aspects:

- (i) the Second Schedule of EMCA lists major change in land use and multiple dwelling infrastructure projects must undergo a full study; and
- (ii) the characteristics, location, nature and the potential effects of the proposed housing project.

2.4 Scoping

As a first step of the ESIA process, a scoping study was undertaken. The objectives of the Scoping were to identify the potentially significant environmental and social issues relating to the proposed green affordable housing project that will need to be addressed as part of the ESIA. As part of the scoping the following activities were undertaken:

- Identification of sources of data on baseline conditions of the proposed project area;
- Determination of the likely area of influence to be considered in the ESIA;

- Consideration of alternatives related to the proposed housing project;
- Identification and consultation with stakeholders who would be interested and/or affected by the proposed project;
- Identification of cross-sectoral issues and impacts, prioritizing them on a shortlist which would need to be considered as part of the ESIA;
- Defining the environmental and legislative setting of the proposed housing project.

2.5 Baseline Data Collection

In order to understand the existing baseline environmental and social conditions in the area, a variety of data collection methods were undertaken as follows:

2.5.1 Document Review

A literature review was undertaken based on the findings of the scoping process, which involved reviewing legislation, policies, development plans, and past studies carried out in the area for the purpose of informing the ESIA regarding baseline conditions and establishing the legal, institutional, and environmental setting of the proposed project. The desk study also included the development of fieldwork tools, fieldwork schedules, and the Public Consultation and Disclosure Plan (PCDP).

2.5.2 Site Visits

The consultant carried out an initial site reconnaissance visit on 14th May 2026. Centric Africa Limited ESIA team was accompanied by a representative from IHS so that any environmental, social, or technical constraints could be discussed. The purpose of the initial site visit was to familiarize the ESIA Team with the affected project area and to collect primary environmental and social baseline data. A scoping visit was thereafter undertaken on 25th May 2026, during which time a site walkover was undertaken that included the consideration of the proposed housing project and deliberations on meetings with key stakeholders within Mountain View and community-level meetings at the area chief's office to announce the project, identify data sources, and commence the process of determining potential impacts. Detailed site investigations and stakeholder engagements were undertaken, and primary environmental and social data was collected through field work, key informant interviews, and further desktop studies.

2.6 Stakeholder Engagement

Stakeholder engagement ensures that the views and concerns of stakeholders and the community are incorporated as early as possible into the project development, i.e., at the planning, implementation, and operations phases, to minimize any potential unexpected opposition to the proposed development and potential adverse effects on the environment. Incorporating the views of the stakeholders into the design process is also very beneficial for adopting the best workable models and systems. The main objective of stakeholder engagement was to inform stakeholders and the public about the proposed project and its likely effects and, in turn, incorporate their inputs, views, and concerns into project planning.

The open and inclusive consultation process was conducted on 15th and 16th June 2026 at the proposed site. During the stakeholder engagement process, over sixty individuals were consulted within and around the project area, and their comments and concerns were recorded and incorporated into the ESIA Study Report. Their continued involvement in the ESIA process and project implementation was always encouraged. The meetings and interviews took place in the stakeholder's choice of language (English and Kiswahili) and were translated where necessary.

2.7 Impact Assessment Methodology

The purpose of impact assessment was to identify and evaluate the significance of potential impacts on identified receptors and resources according to defined assessment criteria and to develop and describe mitigation measures that will be taken to avoid or minimize any potential adverse effects and to enhance potential benefits. The impacts of the proposed project were identified based on the findings of public consultation, the existing baseline conditions, and professional knowledge. Impacts were first distinguished as either positive or negative. The cross-sectoral issues and aspects were: vegetation loss, air quality; health; safety; social aspects; climate; infrastructure; and utilities.

2.7.1 Definition of Key Terminology

Environmental and Social Impact Assessment (ESIA):	Means a systematic study conducted to determine whether or not a project will have any adverse impacts on the environment as stipulated in section 58 of EMCA, 1999 and Regulations 11 to 17 of the Environmental (Impact Assessment and Audit) Regulations, 2003.
Project:	The components and actions that are essential to the Proponent's Project development, including any related facilities that are required for the Project to move forward. The group of elements and actions for which permission is requested collectively constitutes the Project.
Project Site:	The (future) primary operational area for the Project activities.
Project Footprint:	The area that may reasonably be expected to be directly affected by Project activities, across all phases. The Project Footprint includes land used on a temporary basis such as construction lay down areas or construction haul roads, as well as disturbed areas in transport corridors, both public and private.
Area of Influence:	The area where impacts could reasonably be expected

2.7.2 Impact Types and Definitions

An impact is any change to a resource or receptor brought about by the presence of a project component or by the execution of a project-related activity. The evaluation of baseline data provides crucial information for the process of evaluating and describing how the project could affect the bio-physical and socio-economic environment. The impacts were described according to their nature or type, as summarized in Table 1.

Table 1: Impact nature and type

Nature or Type	Definition
Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor.
Direct impact	Impacts that result from a direct interaction between a planned project activity and the receiving environment/receptors (e.g. between occupation of a site and the pre-existing habitats or between an effluent discharge and receiving water quality).
Indirect impact	Impacts that result from other activities that are encouraged to happen as a consequence of the Project (e.g. in-migration for employment placing a demand on resources).
Cumulative impact	Impacts that act together with other impacts (including those from concurrent or planned future third-party activities) to affect the same resources and/or receptors as the Project.

2.7.3 Assessing Significance

Impacts were described in terms of 'significance'. Significance is a function of the magnitude of the impact and the likelihood of the impact occurring. Impact magnitude (sometimes termed severity) is a function of the extent, duration, and intensity of the impact. The criteria used to determine significance and likelihood are summarized in Table 2 and 3. Once an assessment is made of the magnitude and likelihood, the impact significance is rated through a matrix process as shown in Table 4. The significance of an impact is qualified by a statement of the degree of confidence. Confidence in the prediction is a function of uncertainties, for example, where information is insufficient to assess the impact. The degree of confidence is expressed as low, medium, or high.

Table 2: Significance criteria

Impact	Magnitude
Extent	On-site – impacts that are limited to the boundaries of the development site. Local – impacts that affect an area in a radius of 20km around the development site. Regional – impacts that affect regionally important environmental resources or are experienced at a regional scale as determined by administrative boundaries. National – impacts that affect nationally important environmental resources or affect an area that is nationally important/ or have macro-economic consequences.
Duration	Short-term – impacts that are predicted to last only for the duration of the construction period. Long-term – impacts that will continue for the life of the Project but ceases when the project stops operating. Permanent – impacts that cause a permanent change in the affected receptor or resource (e.g. removal or destruction of ecological habitat) that endures substantially beyond the project lifetime.
Intensity	BIOPHYSICAL ENVIRONMENT: <i>Intensity can be considered in terms of the sensitivity of the biodiversity receptor (i.e. habitats, species or communities).</i> Negligible – the impact on the environment is not detectable. Low – the impact affects the environment but does not affect natural functions and processes are not affected. Medium – where the affected environment is altered but natural functions and processes continue, albeit in a modified way. High – where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Where appropriate, national and/or international standards are to be used as a measure of the impact. Specialist studies should attempt to quantify the magnitude of impacts and outline the rationale used. SOCIO-ECONOMIC ENVIRONMENT: <i>Intensity (Vulnerability) can be considered in terms of the ability of people/communities affected by the Project to adapt to changes brought about by the Project.</i> Negligible – there is no perceptible change to people's livelihood. Low - people/communities are able to adapt with relative ease and maintain pre-impact livelihoods. Medium – people/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support. High - affected people/communities will not be able to adapt to changes or continue to maintain-pre-impact livelihoods.

Table 3: Likelihood criteria

Impact	Likelihood
Unlikely	The impact is unlikely to occur.
Likely	The impact is likely to occur under most conditions.
Definite	The impact will occur.

Once a rating is determined for magnitude and likelihood, the following matrix can be used to determine the impact significance.

Table 4: Significance colour scale

Impact	Colour code
Negligible	
Minor	
Moderate	
Major	

It is important to note that the positive impacts are not rated, merely stated.

Table 5: Significance definitions

Significance	Definitions
Negligible significance	An impact of negligible significance (or an insignificant impact) is where a resource or receptor (including people) will not be affected in any way by a particular activity, or the predicted effect is deemed to be 'negligible' or 'imperceptible' or is indistinguishable from natural background variations.
Minor significance	An impact of minor significance is one where an effect will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value.
Moderate significance	An impact of moderate significance is one within accepted limits and standards. The emphasis for moderate impacts is on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that 'moderate' impacts have to be reduced to 'minor' impacts, but that moderate impacts are being managed effectively and efficiently.
Major significance	An impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. A goal of the EIA process is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted (i.e. ALARP has been applied). An example might be the visual impact of a development. It is then the function of regulators and stakeholders to weigh such negative factors against the positive impacts in coming to a decision on the Project.

Once the significance of the impact has been determined, it is important to qualify the degree of confidence in the assessment. Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact. Degree of confidence can be expressed as low, medium or high.

2.7.4 Mitigation Measures and Residual Impacts

For activities with significant impacts, the ESIA process is required to identify, in collaboration with the developer, suitable and practical mitigation measures that can be implemented. Mitigations that can be incorporated into the project design in order to avoid or reduce the negative impacts or enhance the positive impacts have been defined and requires final agreement with the client, as these are likely to form the basis for any conditions of approval by NEMA. The implementation of the mitigations is ensured through compliance with the Environmental and Social Management Plan (ESMP). After first

assigning significance in the absence of mitigation, each impact is re-evaluated, assuming the appropriate mitigation measure(s) are effectively applied, and this results in a significance rating for the residual impact.

2.8 Reporting

As a result of the ESIA process, a full study report (this document) was developed for submission to NEMA for review.

2.9 Assumptions and Limitations

ESIA is a process that aims to identify and anticipate possible impacts based on past and present baseline information and details of the proposed project. As the ESIA deals with the future, there is, inevitably, always some uncertainty about what will actually happen in reality. Impact predictions have been made based on field surveys and with the best data, methods, and scientific knowledge available at this time. However, some uncertainties could not be entirely resolved. Where significant uncertainty remains in the impact assessment, this is acknowledged, and the level of uncertainty is provided.

In line with best practices, this ESIA has adopted a precautionary approach to the identification and assessment of impacts. Where it has not been possible to make direct predictions of the likely level of impact, limits on the maximum likely impact have been reported, and the design and implementation of the project (including the use of appropriate mitigation measures) will ensure that these are not exceeded. Where the magnitude of impacts cannot be predicted with certainty, the team has used professional experience and available scientific research from similar projects elsewhere to judge whether a significant impact is likely to occur or not. Throughout the assessment, this conservative approach has been adopted to the allocation of significance.

3 CHAPTER 3: PROJECT DESCRIPTION

3.1 Overview

This Chapter provides an overview of the proposed green affordable housing project by IHS. Project activities and requirements for the construction and operation of the facility are discussed in this section.

3.2 Proposed Housing Units and Layout

The proposal is for the development of three hundred and seventy five (375) green affordable housing units. The housing units will be accommodated within two (2) residential blocks, each rising to sixteen (16) floors and incorporating a basement level. The units will comprise two hundred and forty (240) premium studio units, one hundred and twenty (120) one-bedroom units, and fifteen (15) two-bedroom units as shown in Table 6.

Table 6: Proposed housing component matrix

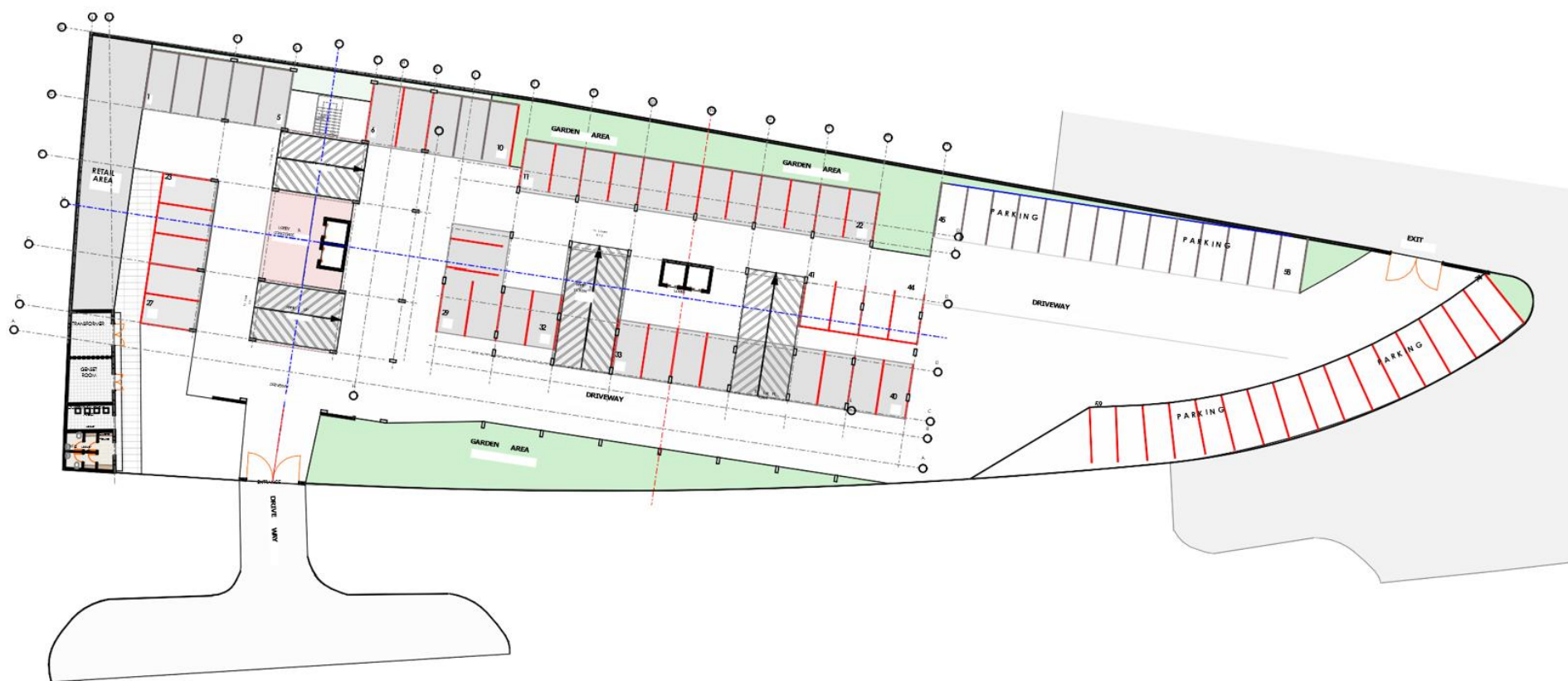
Type of Units	Area Proportions on total GLA	Unit sizes (m ²)	No. of Units
Premium Studio	50.00%	25	240
1-bedroom	40.00%	40	120
2-bedroom	10.00%	60	15
Total			375

The site benefits from Mountain View area's established infrastructure comprising of:

- tarmacked roads;
- power supply;
- water supply: trunk water pipeline;
- ICT infrastructure: fibre cables from various service providers;

To ensure operational efficiency and enhance the quality of life for residents, the design incorporates comprehensive infrastructure and shared amenities:

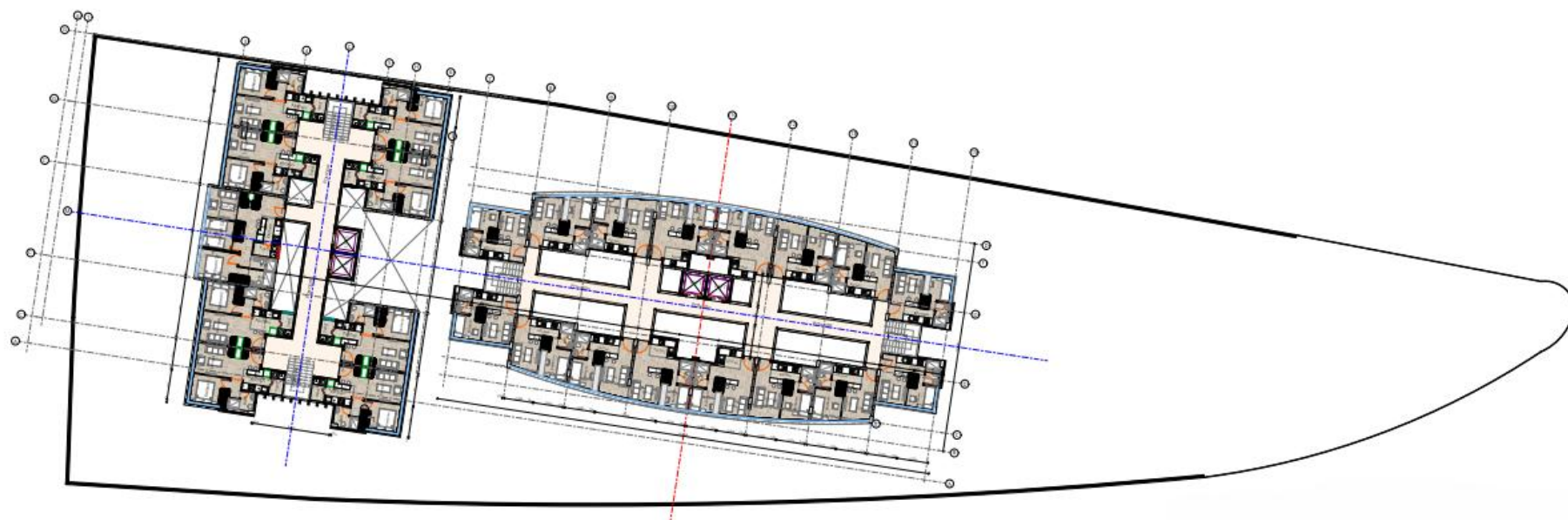
- **Electrical Utility Rooms:** Specialized housing for a transformer, switchgear, and a standby generator (genset) to ensure power reliability.
- **Water Storage Facilities:** The development will include an underground water storage tank with a total capacity of 340 m³, as well as three rooftop water tanks, to ensure an adequate and reliable water supply for domestic use, firefighting, and other building operations.
- **ICT Room:** A dedicated ICT room will be provided to support telecommunications, network infrastructure, and building management systems.
- **Lifts:** Passenger lifts will be installed to enhance accessibility, convenience, and mobility within the development.
- **Motorcycle/Bicycle Parking:** Designated parking areas for motorcycles and bicycles will be provided to support sustainable and organized transportation.
- **Fire Escape Stairways:** Fire escape stairways will be incorporated into the building design to ensure safe emergency evacuation and compliance with fire safety requirements.
- **Parking Lots:** Parking provision will include a total of one hundred and fifty (150) spaces, distributed across the lower ground, ground, and first floors.
- **Security Infrastructure:** A formal gatehouse equipped with a dedicated guard room to manage site access and perimeter security and an additional security office at ground level of one of the blocks.
- **Landscaped Open Spaces:** Purpose-built green areas surrounding the blocks to provide aesthetic value and environmental buffers.
- **Sewer Treatment Plant:** A sewer treatment plant will be installed to facilitate the treatment and management of wastewater generated by the development.
- **Rooftop Gym:** A rooftop gym will be provided as a recreational and wellness facility for residents.
- **Roof-Mounted Solar PV System:** A roof-mounted solar photovoltaic (PV) system will be installed to promote the use of renewable energy and improve energy efficiency.
- **Waste Cubicle Area:** A dedicated waste cubicle area will be provided to support the proper segregation, storage, and collection of solid waste.



LOWER, GROUND & FIRST FLOOR PARKING PLAN

Figure 1: Proposed Site Layout and Parking plan

Source: IHS Housing Solutions



TYPICAL FLOOR PLAN (2nd-16th Floor)
Total Parking **150No. Cars**

Figure 2: Typical Floor Plan

Source: IHS Housing Solutions

3.3 Proposed Site Location

The proposed site, measuring approximately one (1) acre, is located in Mountain View area along Waiyaki Way on plot L.R. No. NAIROBI/BLOCK 64/711 in Westlands Sub-county, Nairobi City County (*fig 3*) (*Annex ii*). The proposed site is defined by GPS coordinates -1.264023, 36.735403; -1.263965, 36.734196 and -1.263622, 36.734263. The proposed site is about 12km from Nairobi CBD (*fig. 4*). The proposed site is accessed from Waiyaki Way.

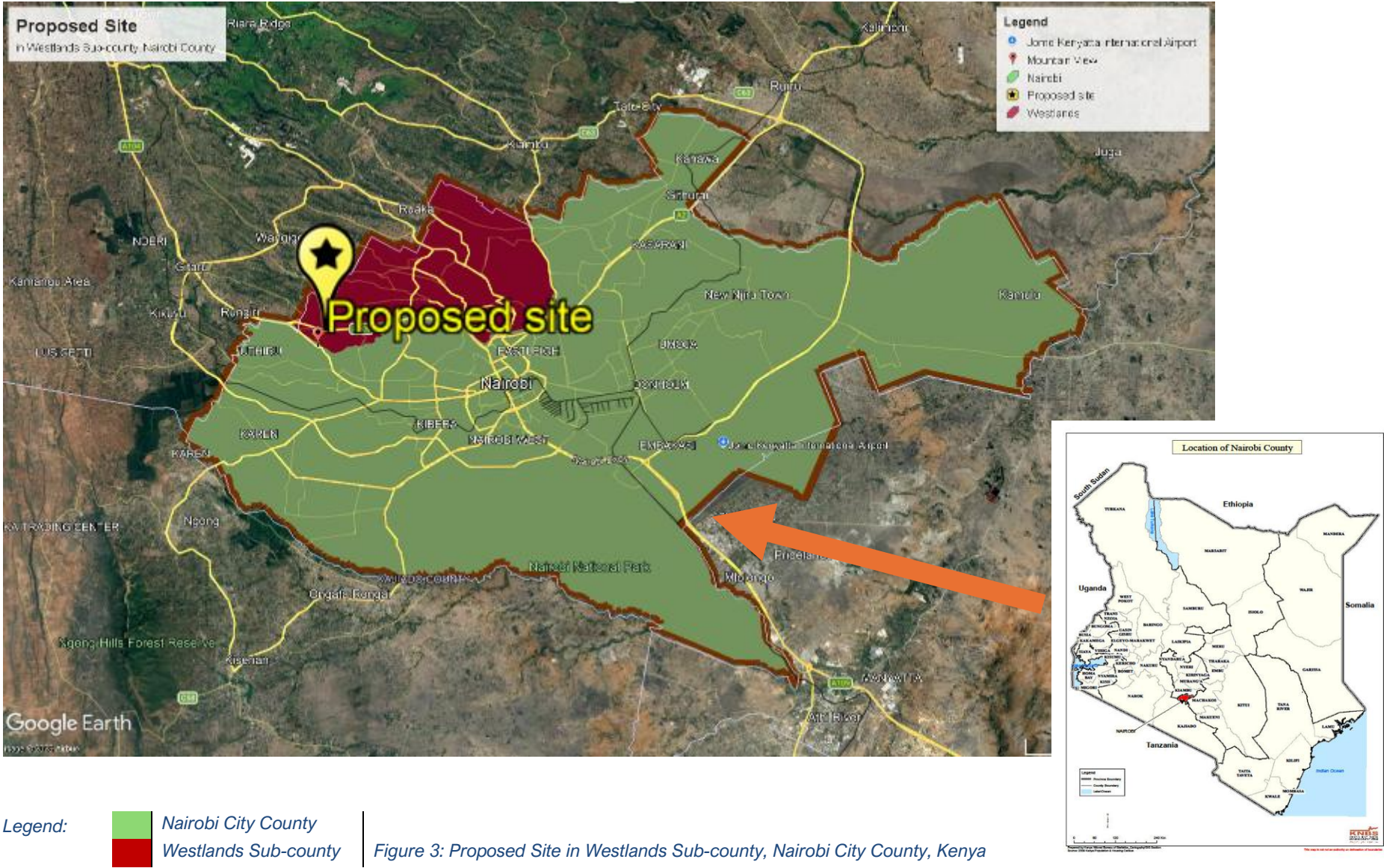




Figure 4: Proposed Site Location along Waiyaki Way

3.4 Zoning and Surrounding Establishments

The proposed project site falls within Zone 15(E) under the Nairobi City County zoning framework. This zone encompasses the area bounded by Waiyaki Way, Kibagare, Loresho, Kianda, the International Livestock Research Institute (ILRI), Mountain View, and Uthiru. Zone 15(E) is designated as a preferred area for mixed-use development, accommodating high-density residential, commercial, institutional, and light industrial land uses. The zoning provisions permit developments of up to sixteen (16) storeys/levels, with a maximum ground coverage of 50% and an allowable plot ratio of 800%.

Under the newly established Nairobi City County Development Control Policy, 2026, the project potentially falls within two sub-zones of the Westlands Zone:

- Kibagare Sub-Zone: Characterized by high-density residential development, with a maximum allowable building height of 16 floors on a minimum plot size of 0.2 hectares.
- Waiyaki Way Sub-Zone (first row of properties on either side of Waiyaki Way): Characterized by mixed office and residential land use, with a maximum allowable building height of 30 floors on a minimum plot size of 0.2 hectares, subject to the provision of adequate parking, compliance with ground coverage requirements, and other applicable development control standards.

The zoning classification reflects the ongoing urbanization of the area and supports intensive land use and vertical development in locations with adequate infrastructure and accessibility. Consequently, the proposed residential housing development is consistent with the applicable zoning requirements and the prevailing development character of the wider Loresho–Mountain View corridor.

The proposed project site is located on an undeveloped parcel of land in Mountain View area. The site lies within a rapidly urbanizing section of Nairobi characterized predominantly by residential developments, supported by commercial, religious, institutional, and transportation-related land uses. The surrounding environment is generally compatible with residential development and has experienced significant growth in medium- and high-rise housing projects due to its strategic location along the Waiyaki Way corridor.

Residential

The dominant land use within the project area is residential. The proposed site is bordered by existing residential developments to the north and west, comprising a mix of low-, medium-, and high-density housing. Additional residential apartments are situated to the east along Waiyaki Way, including the Waterfront Apartments development, which is currently under construction. Across Waiyaki Way to the south are several multi-storey residential developments, including Waiyaki Real Gardens and other apartment complexes serving the growing urban population within the Mountain View and Loresho neighbourhoods. Further to the east-north-east of the site are informal residential settlements that extend towards Kangemi Dam, located approximately 200 metres from the proposed project site. The prevalence of residential developments within the area demonstrates the suitability of the locality for the proposed residential housing project.

Religious and Community Facilities

Religious institutions constitute an important component of the surrounding land use. The proposed site is located adjacent to the Salvation Army Vetlab Corps, which serves as a place of worship and community engagement. Other religious establishments located within the north-eastern vicinity of the site include the Pentecostal Evangelism Team – Kangemi Assembly, Deliverance Church International

– Mountain View, and St. William Legio Maria – Kangemi. These institutions provide religious and social services to the local community and contribute to the area's mixed urban character.

Commercial and Automotive Land Use

Commercial activities within the project area are primarily concentrated along the Waiyaki Way corridor. Notable commercial developments include Mountain View Mall, situated approximately 500 metres east of the site across Waiyaki Way, together with various retail outlets, service businesses, eateries, and other commercial enterprises that serve the surrounding residential neighbourhoods. The area also hosts several automobile-related establishments. To the immediate west of the site is Frentek Auto Garage Limited, while additional vehicle repair and maintenance garages are located to the West along Waiyaki Way and on the southern side of the highway. These commercial activities are typical of developments located along major urban transport corridors.

Institutional

The project area is served by several institutional developments that contribute to the provision of public services and administrative functions within the wider Loresho–Mountain View locality. Across Waiyaki Way to the south of the site is a hospital development currently under construction, reflecting ongoing investment in healthcare infrastructure within the area. Additionally, approximately 300 metres to the north of the proposed site are prominent government and administrative institutions located along Sukari Road. These include NACOSTI Plaza, which serves as the headquarters of the National Commission for Science, Technology and Innovation (NACOSTI) and also accommodates key affiliated agencies such as the National Research Fund (NRF) and the Kenya National Innovation Agency (KeNIA). The complex further hosts supporting commercial amenities, including the KIPVU Restaurant. Also located within the same institutional precinct is Sukari Plaza, a commercial and administrative building that houses the headquarters of the Kenya Sugar Board (KSB) under the Ministry of Agriculture and Livestock Development. The presence of these institutional establishments, together with the emerging healthcare facilities in the area, enhances access to public services and contributes to the mixed-use urban character envisaged under the applicable zoning framework.

Environmental Features

The wider project area contains notable environmental features, including Kangemi Dam, which is located approximately 200 metres to the north-east of the proposed site. The dam is bordered by informal residential developments and constitutes an important environmental receptor within the project's area of influence. As such, appropriate environmental management measures should be incorporated during both the construction and operational phases of the project to safeguard nearby water resources from potential impacts associated with stormwater runoff, erosion, and wastewater discharges.

Overall, the proposed site is situated within a predominantly residential zone that is complemented by religious institutions, commercial establishments, automotive service businesses, and emerging institutional developments. The existing land-use pattern and surrounding developments are generally compatible with the proposed residential housing project and support its integration within the broader urban context of the Loresho–Mountain View area.



Plate 1: NACOSTI & Sukari Plaza in the neighbourhood



Plate 2: One of the religious institution near the project site



Plate 3: A residential under construction near Waterfront apartments



Plate 4: One of the car garages in the project area



Plate 5: Apartments to the East of the proposed site



Plate 6: Waiyaki Real Garden opposite the site



Plate 7: Apartments in the site's neighbourhood



Plate 8: Mountain View Mall in the project area

3.5 Design and technology

All the national and relevant international guidelines for design will be adhered to in this project to ensure that the established green affordable housing units conform to accreditation standards, apply and enforce uniform national standards for hygiene and inspection, and reduce operating costs. Copies of the site layout and drawings showing the respective features of the proposed project have been appended to this report (*Annex iii*).

The primary technologies used for the design, construction, and operation of the housing units shall conform to the national and international standards, county governments' acts, and regulations, with the housing units designed and constructed in alignment with all the required standards. The housing units shall embrace good waste management standards and prudent use of utilities (water and energy). Provisions as per the National Building Code 2024 shall be applied, including the installation of elevators



Figure 5; An artistic impression of the proposed project
Source: IHS

3.6 Construction Requirements

IHS is keen on ensuring the use of materials that have been sourced responsibly. The construction method that will be used will be as per the design. The contractor will implement the construction process following the design through the work method statements to be developed by the contractor and approved by supervision engineers before commencement of any construction process. The project is expected to launch in the last quarter of the year 2026. It is estimated that temporary workers will be hired for the construction phase. This workforce will comprise mainly of the locals, and will be hired on a demand basis via contractors according to the different phases of construction, as will be presented on the construction schedule. All relevant Kenyan labour regulation laws will be observed throughout the construction phases. Compliance of the contractor with Kenyan labour law will be assessed by the proponent throughout the construction phase.

The proposed housing project will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or availability factors. For the proposed green affordable housing project, the following construction materials have been specified by the project engineer to ensure cost-effectiveness, structural efficiency, and sustainability:

Structural Materials

- **Solid Masonry Blocks:** Used for wall construction, providing durability and strength.
- **Reinforced Concrete System:** The structural framework will utilize reinforced concrete columns, beams, and shear walls, which offer excellent load-bearing capacity and cost efficiency compared to other materials in the local market.
- **High-Yield Steel Rebar:** Chosen for its high tensile strength and reinforcement properties in concrete structures.
- **Steel Fabric Mesh:** Utilized to strengthen slabs and provide additional structural stability.
- **Structural Steel:** Used in key areas for load-bearing and structural support.

Interior Materials

- **Wood Furniture:** Locally sourced wood for furniture, contributing to a sustainable and aesthetically pleasing interior.
- **Structural Timber:** Used in non-load-bearing areas, particularly for door frames and other wood finishes.

Electrical and Water Supply Systems

- **Electricity Cables:** **Copper LSZH (Low Smoke Zero Halogen)** cables will be used for electrical wiring, prioritizing fire safety and reducing toxic emissions in case of a fire.
- **Water Supply:**
 - **HDPE Pipes:** High-Density Polyethylene pipes for internal water supply systems, known for their durability and resistance to corrosion.
 - **Epoxy Coated Steel Pipes:** Used for road crossings to ensure longevity and high-pressure ratings, ensuring a robust water supply network.

Wastewater and Drainage Systems

- **Wastewater Management:**
 - **µPVC Pipework:** Used for both rainwater and foul water drainage from the residential blocks, providing long-lasting performance and resistance to corrosion.
 - **Double Wall Corrugated (DWC) Pipes:** 150mm diameter pipes will be installed for effective drainage, chosen for their strength and flexibility.

- **Manholes:**
 - **Reinforced Concrete Rings:** Used to construct manholes, ensuring stability and durability at all depths.
 - **Manhole Covers:** Medium-duty covers will be used in pedestrian areas, while heavy-duty covers will be installed in areas with vehicular traffic.
- **Pipe Cover:** Minimum cover to the pipes (crown) will be 0.6m in non-trafficked areas and 0.9m in trafficked areas. Where the minimum cover is not achievable, a protective concrete slab will be provided to ensure the longevity of the pipes.

The choice of materials for this green affordable housing project aligns with cost-efficiency, structural integrity, and sustainability. The selection of high-quality construction and service materials such as reinforced concrete, high-yield steel, HDPE, and µPVC pipes ensures durability and long-term performance, while also addressing the environmental and safety requirements of the development.

3.7 Roads and Access

The proposed project site benefits from strategic accessibility through Waiyaki Way, which provides connectivity to Nairobi CBD, Kangemi, Uthiru, Kabete, Loresho, and surrounding suburbs.

The site has two proposed access points strategically positioned to facilitate efficient circulation. The primary access is proposed directly off Waiyaki Way through an existing slip road, while a secondary access connects to an existing earth road at the rear of the site. The secondary access route links back to the Waiyaki Way corridor and may in future benefit from road upgrading subject to Nairobi City County infrastructure planning.

The proposed primary access will require approval from the Kenya National Highways Authority (KENHA). The dual-access arrangement is expected to improve site connectivity, traffic circulation, and emergency access.

The surrounding road network is paved and supports both public and private transportation. Public transport services are readily available along Waiyaki Way, enhancing accessibility for future residents and workers. Telecommunication services are also well established within the area through major service providers.

The proposed project site is located along Waiyaki Way (A8 Road) in the Loresho–Mountain View area of Nairobi, on an undeveloped parcel of land situated between the Salvation Army Vetlab Corps and Frentek Auto Garage Limited. Waiyaki Way is a major dual-carriageway arterial road that forms part of the principal transport corridor linking Nairobi's Central Business District with Westlands, Kangemi, Uthiru, Kikuyu, and the western regions of the country. The road carries substantial volumes of commuter, commercial, and public transport traffic and provides excellent regional and local connectivity to the project area.

Vehicular access to the site is currently available directly from Waiyaki Way through existing access routes serving adjacent developments and properties along the corridor. The frontage onto Waiyaki Way provides convenient accessibility for both private and public transport users. The road reserve is supported by service lanes and local access roads that connect the surrounding residential, commercial, and institutional developments within the Mountain View, Loresho, and Kangemi neighbourhoods.

3.8 Energy Supply System

The project area is served by existing 11kV double-circuit overhead power lines located within the Kenya National Highways Authority (KENHA) corridor along Waiyaki Way. This infrastructure provides adequate capacity for electricity connection to the proposed development.

The area is also served by overhead and fibre optic ICT infrastructure, ensuring reliable communication and internet connectivity. Electricity supply to the development will be provided through the national grid, with infrastructure designed to meet the anticipated energy demand for residential units and common areas.

The proposed development will incorporate energy-efficient systems and sustainable technologies including solar photovoltaic systems for common area lighting, pumping systems, and operational efficiency. Smart metering and energy-efficient lighting systems may also be incorporated to enhance energy conservation and reduce operational costs.

3.9 Water Supply & Wastewater Management

The proposed project site falls within the service area of the Nairobi City Water and Sewerage Company (NCWSC). Existing water supply infrastructure includes a DN500 mm steel water distribution main running along Waiyaki Way from Uthiru Tanks towards Kabete Tanks, as well as an existing DN150 mm uPVC pipeline adjacent to the property. The final water connection option will be subject to approvals from NCWSC.

Information obtained from the proposed residential project's pre-feasibility study carried out in November 2025, indicates that water rationing occurs within the area, with supply commonly available between Tuesday and Thursday. Municipal water supply may also experience interruptions during maintenance works, system failures, or periods of high demand. To supplement municipal supply, boreholes may be considered subject to hydrogeological investigations to determine groundwater potential, borehole locations, and feasible abstraction depths.

Rainwater harvesting systems will be incorporated into the development design in accordance with industry best practice to supplement water supply and support sustainable water management. To cater for peak demand and intermittent municipal supply, the development proposes provision of adequate water storage capacity equivalent to approximately 2–3 days demand.

There is currently no municipal sewerage infrastructure serving the proposed project area. Existing developments within the neighbourhood rely on onsite wastewater management systems including septic tanks and packaged treatment systems.

Due to the absence of a municipal sewer network, the proposed development will consider appropriate onsite wastewater treatment solutions based on anticipated wastewater generation, site topography, and applicable regulatory requirements. Potential treatment systems may include septic tanks, biodigesters, or packaged wastewater treatment plants. The sizing, location, and suitability of the proposed wastewater treatment systems will be determined during the detailed design stage. Opportunities for treated effluent reuse for landscape irrigation may also be explored subject to compliance with relevant NEMA standards for effluent discharge and reuse.

3.10 Stormwater Management

The proposed site lies within a gently draining catchment that naturally discharges towards Kangemi Dam located on the northeastern side of the site. Surface runoff from the Nairobi–Nakuru Highway drains around the site towards the dam, with the lowest point of the site collecting a significant proportion of runoff.

The development will include stormwater drainage infrastructure designed to manage runoff from roofs, paved surfaces, and basement areas while minimizing downstream flooding risks and preventing adverse impacts on neighbouring properties and the riparian environment. Stormwater management measures may include stormwater attenuation systems, drainage channels, storage facilities, and controlled discharge systems.

Prior to implementation of the proposed stormwater outfall system, cadastral maps and wayleave information will be reviewed to confirm land ownership and identify suitable drainage routes. Sustainable drainage approaches and erosion control measures will be incorporated into the detailed design to enhance stormwater management and environmental protection.

3.11 Sustainability

In line with ongoing global efforts to minimize global warming and O-Zone layer depletion, it is understood that the proposed housing project shall aim to adopt innovative green building design and energy saving approaches for the development in line with EDGE requirements. The project is designed to comply with Excellence in Design for Greater Efficiencies (EDGE) 3.1 targeting a minimum of 35% energy savings, 20% water savings, and 20% embodied energy.

As part of IHS commitment to sustainability and in alignment with EDGE standards, the electrical engineering services will be designed to significantly enhance energy efficiency. The project will incorporate integrated solar photovoltaic (PV) power system, substantially reducing reliance on non-renewable energy sources. Additionally, energy-efficient LED indoor and outdoor lighting and automated lighting controls will be utilized to decrease electricity consumption. These interventions are expected to not only lower the carbon footprint of the project but also provide long-term cost savings, thereby fulfilling both environmental and economic sustainability goals.

The overall objective is that the proposed residential units shall be designed to reduce the overall impact of the built environment on human health and the natural environment by:

- Efficiently using energy, water, and other resources.
- Protecting occupant health and improving employee productivity.
- Reducing waste, pollution and environmental degradation.

3.12 Carbon footprint & Climate Change Considerations

The proposed housing development is expected to generate a moderate carbon footprint primarily associated with construction activities and operational energy use. However, the project design integrates several measures aimed at reducing greenhouse gas (GHG) emissions and promoting climate-responsive development, in line with Kenya's commitments under the Climate Change Act, 2016 and the National Climate Change Action Plan.

(a) Sources of Carbon Emissions

The anticipated carbon footprint of the project can be categorized into two main phases:

- **Construction Phase:** Emissions will arise from the use of construction machinery and equipment, transportation of construction materials, and embodied carbon in building materials such as cement, steel, and aggregates. Additional emissions may result from on-site fuel consumption and waste generation.
- **Operational Phase:** During occupancy, the primary sources of emissions will include electricity consumption for lighting, water pumping, and household appliances, as well as fuel use for the standby generator during grid outages. Waste generation and wastewater handling also contribute indirectly to emissions.

(b) Integration of Renewable Energy

A key mitigation measure incorporated into the project design is the installation of solar photovoltaic (PV) panels. This system will:

- Supply renewable energy for common area lighting and underground water pumping systems.
- Reduce reliance on grid electricity, which is partly generated from fossil fuel sources.
- Offset a portion of tenant electricity consumption, thereby lowering overall carbon emissions associated with the development.

The solar PV system significantly contributes to reducing the project's operational carbon footprint and aligns with Kenya's transition towards clean and sustainable energy sources.

(c) Energy Efficiency Measures

The project incorporates several energy-efficient design features intended to minimize electricity consumption and associated emissions:

- Installation of LED lighting throughout common areas.
- Use of motion-sensor lighting in basement and low-occupancy areas to avoid unnecessary energy use.
- Adoption of smart metering systems to enable real-time monitoring and promote responsible energy consumption among residents.
- Proper building orientation and design to enhance natural lighting and ventilation, reducing dependence on artificial lighting and mechanical cooling.

These measures collectively contribute to lowering the energy demand of the development and its associated carbon footprint.

(d) Backup Power Emissions Control

The project includes an 80 kVA standby diesel generator to supply electricity to essential common services during power outages. While this generator will contribute to carbon emissions, its impact will be minimized through:

- Restricted use only during grid power interruptions.
- Limiting operation to common services and amenities, rather than residential units.
- Proper maintenance to ensure efficient fuel combustion and reduced emissions.

(e) Climate Change Mitigation and Adaptation

By integrating renewable energy, improving energy efficiency, and utilizing existing infrastructure, the proposed development demonstrates a commitment to low-carbon and climate-resilient urban growth. The reduction in grid dependency and improved resource efficiency contribute to long-term environmental sustainability.

While the proposed housing project will inevitably generate some level of carbon emissions, particularly during construction, the integration of a solar PV system, energy-efficient technologies, and sustainable infrastructure significantly mitigates its overall carbon footprint. The project is therefore aligned with national and global objectives to reduce greenhouse gas emissions and promote environmentally responsible development.

3.13 Cost estimates

The proposed project is expected to cost KES 1,008,679,427.82 (One billion, eight million, six hundred and seventy nine thousand, four hundred and twenty seven and eighty two cents) (*Annex iv*). The estimated project cost encompasses the primary building construction works, which include Mechanical, Electrical, Plumbing, and Fire Protection installations. Additionally, the total budget accounts for project preliminaries, contingencies, and VAT.

4 CHAPTER 4: BIOPHYSICAL AND SOCIO-ECONOMIC BASELINES

This chapter describes the current environmental and socio-cultural setting at the proposed project area. The information presented here has been obtained from primary and secondary sources. The Consultant has assembled, evaluated and presented baseline data on the relevant environmental and socio-economic characteristics of the project site and surrounding areas of influence.

4.1 Physical baseline

4.1.1 Geographic Context

The proposed housing project will be situated in Loresho-Mountain View area in Westlands Sub-county, Nairobi City County (*fig. 6*). The county is one of the 47 Counties in the Republic of Kenya. It borders Kiambu County to the North and West, Kajiado to the South and Machakos to the East. Among the three neighbouring counties, Kiambu County shares the longest boundary with Nairobi County. The County has a total area of 696.1 Km² and is located between longitudes 36°45' East and latitudes 1°18' South. It lies at an altitude of 1,798 metres above sea level. Westlands Sub-county is located in the Northwestern part of Nairobi.

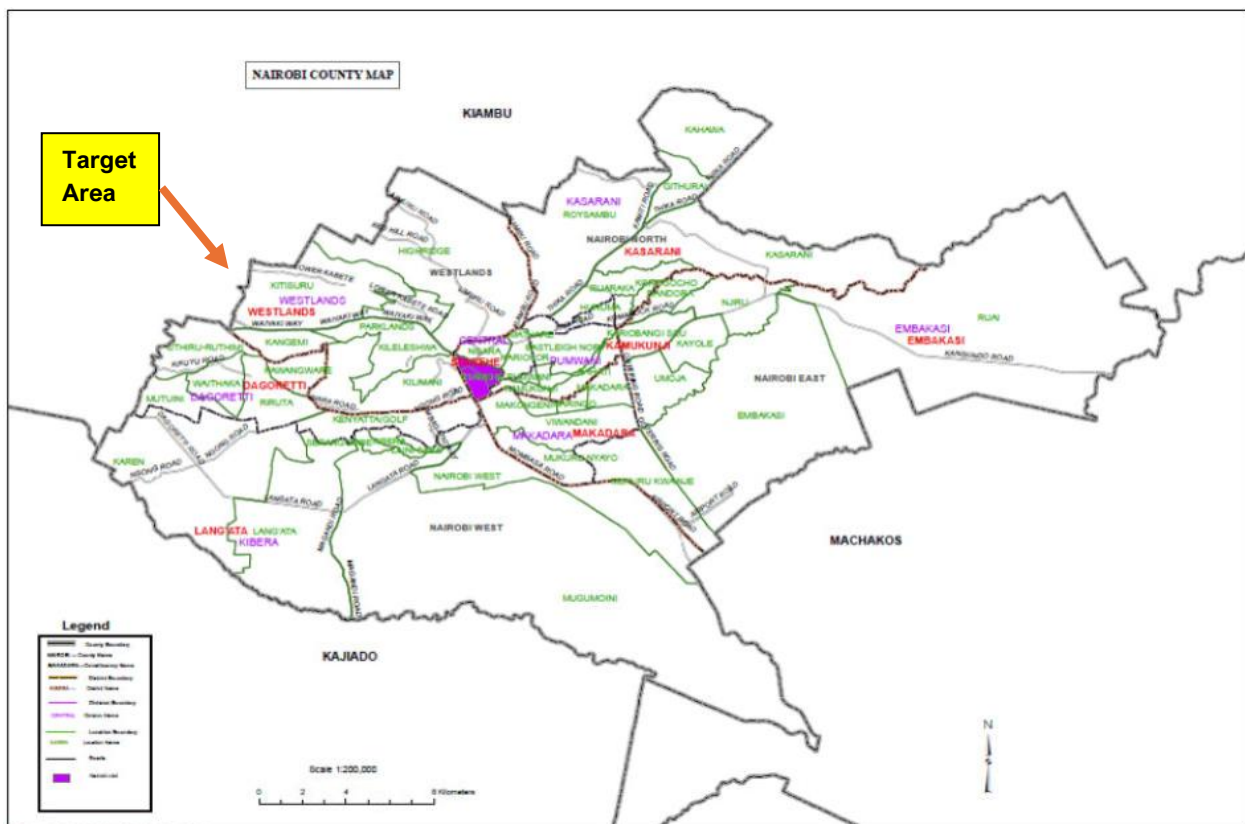


Figure 6: Nairobi City County Administrative Units

Source: Nairobi City CIDP 2023-2027

4.1.2 Geology and Soils

Geologically, Nairobi City County is close to the Eastern border of the East African Rift Valley and is on a large depression filled with volcanic rocks and sediments Cainozoic times, which lie on basement complex rocks. The volcanic rocks (phonolites) have gentle slopes flowing eastwards from the rift Valley (*Nairobi City CIDP 2023-2027*). The area forms the Eastern border zone of the Rift Valley with lavas resting directly on the basement. These lavas have a gentle slope and a common dip component to the East. The periods of deposition of this Canozoic formation is related to phases of volcanic activity and crustal movements (*Kiptanui, 2019*)

The soils in Nairobi are products of mainly weathering and erosion of underlying volcanic rocks under relatively high temperatures, rainfall and poor drainage. As a result of impeded drainage of the plains, the soils are black to dark grey clays (Grumosolic) comprising black cotton soils with calcareous and non-calcareous variants. Nairobi has black cotton soils in the east and southern parts and red volcanic soils in the West and North (*Onyancha et al. 2011*). The crystalline rocks are rarely exposed but occasionally fragments and found as agglomerates derived from the former Ngong volcano. Weathering has produced red soils that reach more than 15m in thickness. The red loams are highly fertile, while black cotton soils present challenges for construction due to their water retention properties. The proposed site is characterized by red well drained soil.

4.1.3 Climatic Conditions

Nairobi is situated close to the equator hence the differences between the seasons are minimal and the timing of sunrise and sunset varies a little throughout the year. The city is situated along the central Kenyan highlands, offering a generally moderate climate throughout the year. Under the Köppen climate classification, Nairobi has a subtropical highland climate. At 1,795 metres (5,889 ft) above sea level, evenings may be cool, especially in the June/July season, when the temperature can drop to 9 °C (48°F). The sunniest and warmest part of the year is from December to March, when temperatures average in the mid-twenties Celsius during the day. The mean maximum temperature for this period is 24 °C (75°F). Actual temperature ranges from a low of 10°C to a high of 29°C.

Due to the ITCZ (Inter- Tropical Convergence Zone) that forms throughout the area around the equinoxes, where the prevalent winds of the Northeast and Southeast converge, Nairobi has a bi-modal rainfall pattern with the long rains season falling between March to June while the short rains season falls between October and December. The mean annual rainfall is 900mm ranging from 500mm to 1,500mm. During the long rains, the storm water percolates through the red soil, disappears as run off due to the poorly drained cotton soil and the paved land resulting in flooding in some areas (*Nairobi City CIDP 2023-2027*).

The climate of Kenya is highly variable both in time and space. Just like the rest of East African and other parts of the tropics, Kenya is prone to climate extremes such as floods, landslides, and droughts. In the last decade alone, the frequency and severity of climate extremes is increasingly evident as the climate continues to warm (*Holden et al., 2022; IPCC, 2021; Lott et al., 2013*).

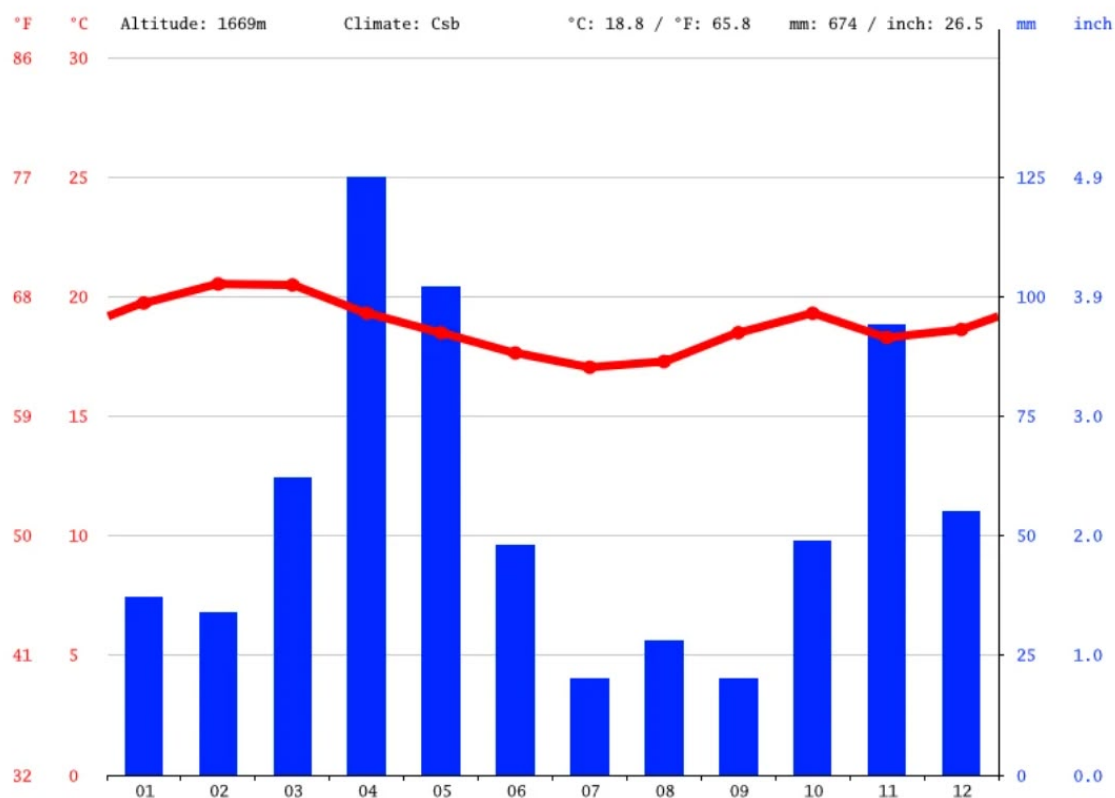


Figure 7: Nairobi rainfall & temperature graph by Month

Source : <https://en.climate-data.org/africa/kenya/nairobi>

4.1.4 Hydrogeology and Hydrology

The proposed project site is located within the western Nairobi urban catchment along Waiyaki Way in the Loresho–Mountain View area. The site occupies gently sloping ground on the southern flank of the Loresho ridge system, with surface drainage generally directed towards low-lying areas to the north-east. Nairobi City County is characterized by a network of rivers, streams, wetlands, dams, and groundwater-bearing formations that play an important role in urban drainage, groundwater recharge, and flood attenuation. The County Integrated Development Plan (CIDP) recognizes the need to protect and sustainably manage wetlands, riparian areas, and urban water resources due to increasing development pressure and urbanization.

The most significant hydrological feature within the project's area of influence is Kangemi Dam, located approximately 200 metres to the east-north-east of the proposed site. Kangemi Dam functions as a localized urban reservoir and palustrine wetland system that receives stormwater runoff from the surrounding Mountain View, Kangemi, and Loresho areas. In addition to capturing surface runoff, the dam area is understood to receive groundwater seepage, spring discharge, and subsurface baseflow from the surrounding upland areas, thereby serving as an important hydrological sink within the local drainage network. The dam contributes to temporary stormwater storage, attenuation of peak runoff flows, groundwater recharge, sediment retention, and the maintenance of localized wetland habitats. Its presence enhances the ecological and hydrological value of the area and makes it a sensitive environmental receptor requiring consideration during project planning and implementation.

From a hydrogeological perspective, groundwater occurrence within the area is influenced by Nairobi's volcanic geology, which comprises weathered and fractured volcanic formations that

commonly host shallow and intermediate aquifers. Groundwater movement generally follows the natural topographic gradient from the elevated ridges towards the lower-lying drainage areas and wetlands. Given the site's position upslope of Kangemi Dam, uncontrolled stormwater runoff, erosion, sediment transport, or accidental pollutant releases during construction and operation could potentially affect the quality of surface water reaching the dam.

During the ESIA field survey conducted in May 2026, ongoing environmental restoration activities were observed within the Kangemi Dam riparian corridor. These activities involved tree planting and rehabilitation works being undertaken by personnel from the Nairobi City County Green Nairobi Department (Green Army). The initiative is aimed at enhancing vegetation cover, improving riparian ecosystem health, stabilizing soils, and supporting the conservation and restoration of the Kangemi Dam wetland environment. The observed efforts demonstrate the County Government's commitment to increasing urban green spaces, protecting water catchments, and enhancing the ecological integrity of environmentally sensitive areas within Nairobi. Consequently, the proposed development should be implemented in a manner that complements and does not compromise these ongoing environmental conservation and greening initiatives. Overall, the hydrological setting presents opportunities for integrating sustainable drainage solutions, including controlled stormwater conveyance, infiltration measures, and landscape-based water management approaches, while ensuring that development activities do not adversely affect nearby water resources, wetland functions, or downstream drainage patterns.



Plate 9: Kangemi Dam



Plate 10: Tree planting at Kangemi Dam riparian zone by Nairobi City County Government

4.1.4.1 Nairobi City County Water Sources

The existing water sources for the Nairobi City are Sasumua Dam, Thika Dam, Ruiru Dam and Mwagu Intake on the Chania River, Kikuyu Springs and groundwater. The City receives treated water from four reservoirs, namely: Kabete, Kyuna, Kiambu and Gigiri reservoirs. With the current population, it is estimated that there is a water demand of 579,000m³ per day and a supply of 482,940m³ per day living a big deficit that has to be met through other sources such as boreholes. It is worth noting that only 40% of those with water connection receive continuous water supply from the water supply company (*Nairobi City County, 2022*).

4.1.4.2 Water Quality

Several factors compromise the city's water quality, ranging from natural phenomena such as the high fluoride content in groundwater, to anthropogenic factors such as poor wastewater treatment and environmental degradation both within the city and in the surrounding countryside. The city's wastewater management has not kept up with increasing demands from the growing population and is inadequate to treat the amount of industrial and municipal effluent entering the Nairobi River and other surface waters. In December 2022, the President of the Republic of Kenya formed the Nairobi Rivers

Commission, to reclaim the rivers of Nairobi as a spine to the city's blue and green infrastructure for a better urban environment and quality of life.

Water sample was collected from Kangemi Dam during the environmental baseline data collection to provide data that will be used as reference for monitoring the dam water (*Annex v*). A sterilized non-reactive one litre glass bottle with a watertight, airtight cover and container that was appropriately labelled was used to collect the water sample by a personnel from a NEMA designated laboratory (Polucon Services-K Limited) and submitted for analysis on the same day as collection, with the original conditions maintained as nearly as possible. During the water sample collection exercise, the water level of Kangemi Dam was regular, with no recent heavy rainfall nor flooding observed on the day of sampling or in the preceding days and weeks.

The analysis results tested as part of the hydrological assessment of the ESIA study are shown in Table 7. The concentration levels of the analyzed parameters were compared with the standards provided in the Environmental Management and Co-ordination (Water Quality) Regulations, 2024. Water quality parameters were determined and analyzed from the point shown in the figure below.



Figure 8: Water sample collection point

The water quality parameters analyzed, showed that the dam water were not polluted and conformed to the Water Quality Regulations' standards. Several parameters such as pH range, Total Suspended Solids, Ammonia, E. Coli and heavy metals were within the acceptable levels in the samples collected (*Table 7*).

Table 7: Water quality analysis results

Parameters	Analytical Method	Unit	Results for Kangemi Dam	Standards for Effluent Discharge into the Environment (EMCA)
pH Value	APHA 4500-H+B	@25.80°C	6.92	6.5 – 8.5
Total Suspended Solids	APHA 2540D	Mg/L	27.60	30
Total Dissolved Solids	APHA 2540C	Mg/L	436	1200
Biochemical Oxygen Demand	AOAC 973.44	Mg/L	18.20	30
Chemical Oxygen Demand	APHA 5220D	Mg/L	44.00	50
Oil & Grease	APHA 5520B	Mg/L	Nil	Nil
Apparent Colour	APHA 2120B	PCU@pH6.52	113	15
Organic Nitrogen	APHA 4500-NORG	Mg/L	<0.10	2.0
Total Phosphorous	APHA 4500 P	Mg/L	0.20	2.0
Lead (Pb)	APHA 3111B	Mg/L	<0.01	0.01
Copper (Cu)	APHA 3111B	Mg/L	<0.01	1.0
Cadmium (Cd)	APHA 3111B	Mg/L	<0.003	0.01
Selenium (Se)	APHA 3114B	Mg/L	<0.01	0.01
Arsenic (As)	APHA 3114B	Mg/L	<0.01	0.02
Zinc (Zn)	APHA 3111B	Mg/L	<0.01	0.5
Nitrates (NO ₃)	APHA 4500-NO ₃	Mg/L	5.71	100
Ammonia (NH ₃)	APHA 4500 NH ₃	Mg/L	<0.10	100
Phenols	APHA 5530C	Mg/L	<0.001	0.001
<i>Escherichia Coli</i>	APHA 9221G	Per/100mls	Absent	Nil

4.1.5 Air Quality

The main source of air pollution in Nairobi is from vehicles, industries, municipal sources such as open burning of waste. Motor vehicle traffic is one of the main sources of particulate pollution in Nairobi, coupled with lack of effective transport and land use planning is resulting in increasing vehicle ownership and traffic congestion in the city (Kinney, *et al.*, 2011). The proportion of the Kenyan vehicles registered in Nairobi is high and is still increasing as more citizens continue to own vehicles. It is estimated that 90% of urban air pollution in developing countries is attributed to motor vehicles: coupled with increasing road congestion, high prevalence of old poorly maintained vehicles and low-quality fuel. This has implications on the Air quality especially during the traffic peak hours where large volumes of carbon dioxide are emitted from the exhaust pipe to the environment. This is evident as observed in the vegetation along the major highways within Nairobi, for it has turned dark as a result of the smoke and fumes released (United Nations Environmental Program (UNEP). Motor vehicle emissions include a range of pollutants, including particulate matter (PM), carbon monoxide, Sulphur oxides, nitrogen oxides and a wide range of volatile organic compounds, which react with sunlight to form ozone.

The increasing number of cars in the city intensifies traffic and pollution problems. Vehicles emit significant levels of air pollutants, including greenhouse gases and the precursors of smog. Charcoal burning, a very prevalent energy source in the city, emits methane (CH₄) and carbon monoxide (CO) and sends tiny particulates into the air. The main sources of atmospheric pollution in the proposed project area are vehicles, emissions from the use of charcoal and firewood at the informal settlements, and other municipal sources such as the open burning of waste.

4.1.5.1 Ambient Air Quality Survey

Measurement of ambient air quality was conducted at the proposed project area (Annex vi) on 23rd June 2026. Measurement of particulate matter and gaseous parameters at two (2) points i.e., - - 1.264017, 36.735212 and -1.263979, 36.734457 (fig 9). The table 8 overleaf presents the survey results. Baseline air quality in such urbanizing areas is typically within acceptable limits but may experience temporary deterioration during dry seasons due to increased dust and traffic-related emissions. Kenya's air quality is regulated under the Environmental Management and Coordination (Air Quality) Regulations, 2024, which set limits for pollutants such as particulate matter (PM₁₀ and PM_{2.5}), nitrogen oxides, and carbon monoxide. At the national level, ambient air quality standards are aligned with guidance provided by the World Health Organization (WHO) Air Quality Guidelines, which serve as a benchmark for assessing potential health impacts.



Figure 9: Baseline air quality measurement points

Table 8: Ambient air quality measurement results

Measurement Location Parameters	Point 1	Point 2	EMCA (Air Quality) Regulations, 2024 Residential tolerance limits	WHO air guidelines, 2021
Temp °C	26.0	25.9	-	-
Hum %	47.5	47.7	-	-
PM _{2.5} (µg/m ³)	17.0	19.0	-	15
PM ₁₀ (µg/m ³)	25.0	25.0	100	45
CO (mg/m ³)	BDL	BDL	2	4
SO ₂ (ug/m ³)	BDL	BDL	80	40
NO ₂ (ug/m ³)	0	0	0.1 ppm	25
NO (ug/m ³)	BDL	0	80	-
O ₃ (ug/m ³)	0	0	1.25 ppm	-

During the construction phase of the proposed project, short-term impacts on air quality may arise from dust generation, operation of construction machinery, and vehicle movements. These impacts are expected to be localized and temporary and can be effectively managed through standard mitigation measures such as water spraying, proper maintenance of equipment, and controlled transportation of materials.

In the operational phase, air quality impacts are anticipated to be minimal, particularly due to the integration of solar energy and energy-efficient systems, which reduce reliance on fossil-fuel-based power sources and associated emissions.

Overall, with the implementation of appropriate mitigation measures and adherence to national regulations, the proposed project is not expected to result in significant adverse impacts on ambient air quality in the area.

4.1.6 Noise and Excessive Vibrations

The baseline noise environment of the proposed project site is typical of an urban setting, with primary sources including road traffic, commercial activities, and occasional construction works. The main source of noise pollution is traffic along the busy Waiyaki Way, which runs along the southern boundary of the proposed site.

4.1.6.1 Noise Levels Measurement

Noise level measurement was conducted at two (2) locations similar to those for the air quality measurements as shown in figure 9 on 23rd June 2026 (*Annex vi*). Measurements were conducted for 40mins at each location. Average results of LAeq were compared against the Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009. The correlation revealed that the two locations had average noise levels that were below the regulation's diurnal limits for a construction site in a mixed use zone as presented in table 9.

The two locations had noise levels slightly exceed the EMC Regulations daytime limit at a mixed residential-with some commercial & places of entertainment zone of 55.0 dB, suggesting a marginal increase in ambient noise levels. The maximum noise levels recorded were 74.1 dB and 78.3 dB, while the minimum levels were 50.1dB and 48.9 dB, indicating fluctuations likely associated with intermittent traffic movement and other surrounding human activities. Overall, the results show that although noise levels were only slightly above the permissible limit for mixed residential-with some commercial & places of entertainment, the elevated noise events occurred occasionally at specific locations. However, the measurements recorded were within the EMCA regulations permissible limit for construction sites. The measured noise levels within the two points were contributed by traffic movements on Waiyaki Way and commercial establishments neighbouring the proposed site.

Table 9: Comparison of noise survey results against EMCA guidelines

Location	LAeq (dB)	LA (max)	LA (min)	EMC Limits dB(A) (Mixed residential-with some commercial & places of entertainment)	EMCA Limits dB(A) (at construction sites-in mixed use zones)
Point 1	57.7	78.3	48.9	55.0	75
Point 2	56.0	74.1	50.1		

During the construction phase of the proposed project, temporary increases in noise and vibration levels are expected from activities such as excavation, movement of heavy machinery, and material transportation. However, these impacts will be short-term and localized and can be effectively mitigated through measures such as restricting construction to daytime hours, proper maintenance of equipment, and the use of appropriate construction techniques.

In the operational phase, noise and vibration levels are expected to be minimal, limited to typical residential activities and occasional operation of the standby generator. The generator will be installed within an acoustically treated enclosure to minimize noise emissions. Overall, with adherence to

regulatory requirements and implementation of mitigation measures, the project is not anticipated to cause significant noise or vibration disturbances to the surrounding environment.

4.1.6.2 Vibrations Level Measurements

Vibration measurements were conducted at the two selected locations of the proposed residential site on 23rd June 2026 (fig 9) (Annex vi). Vibration levels were assessed using a Vibration Meter connected to a sensor, which was carefully spiked into the ground to measure acceleration, velocity, and displacement ranges. Additionally, the surveyor evaluated and documented the characteristics of the surrounding area that could have influenced the measurement results hence accounting for all fluctuations recorded during the exercise. Upon correlation, the vibration levels were found to comply with the EMCA (Noise and Excessive Vibrations), Regulations, 2009 at the time of measurements. Table 10 details a summary of results at the time of measurement.

Table 10: Vibration measurement results

Location	Acceleration (mm/s ²)	Velocity (mm/s)	Displacement (mm)
Point 1	0.01	0.01	0.00
Point 2	0.01	0.02	0.00
EMCA limits		5	

4.2 Biodiversity

This section provides a description of the biodiversity baseline of the proposed project site in Loresho-Mountain View area.

4.2.1 Flora

The proposed project site is currently undeveloped and is generally covered by grass vegetation, characteristic of disturbed urban open land that has remained largely vacant for some time. The site supports limited woody vegetation, with the existing tree cover being dominated by mature *Eucalyptus* spp. trees. A site inventory conducted during the ESIA study identified one mature eucalyptus tree located at the eastern corner of the plot. Additionally, three mature eucalyptus trees were observed near the western boundary adjoining Frentek Auto Garage Limited, while a further two mature eucalyptus trees were recorded along the site boundary with the neighbouring residential property to the west.

Evidence of previous tree harvesting activities was also observed within the site, as indicated by the presence of two eucalyptus tree stumps, suggesting that some trees had been cut prior to the commencement of the current project planning process. Apart from the mature eucalyptus trees, the site vegetation predominantly consists of grasses and a few scattered herbaceous species typical of disturbed and previously cleared urban environments.

The existing eucalyptus trees provide localized ecological, aesthetic, and environmental benefits, including shade provision, carbon sequestration, dust attenuation and microclimate regulation. Given the relatively low floral diversity and the predominance of planted or naturalized eucalyptus trees, the proposed development is not expected to result in significant impacts on indigenous vegetation

resources. Nevertheless, consideration should be given to retaining suitable trees where feasible and implementing compensatory landscaping and tree-planting measures as part of the project design to enhance the site's ecological value, visual appeal, and overall green infrastructure. Importantly, none of the plant species observed on the site are listed under the IUCN Red List of Threatened Species, indicating that the proposed development is unlikely to directly impact rare, endangered, or protected plant species.



Plate 11: A Eucalyptus tree at the Eastern end of the plot

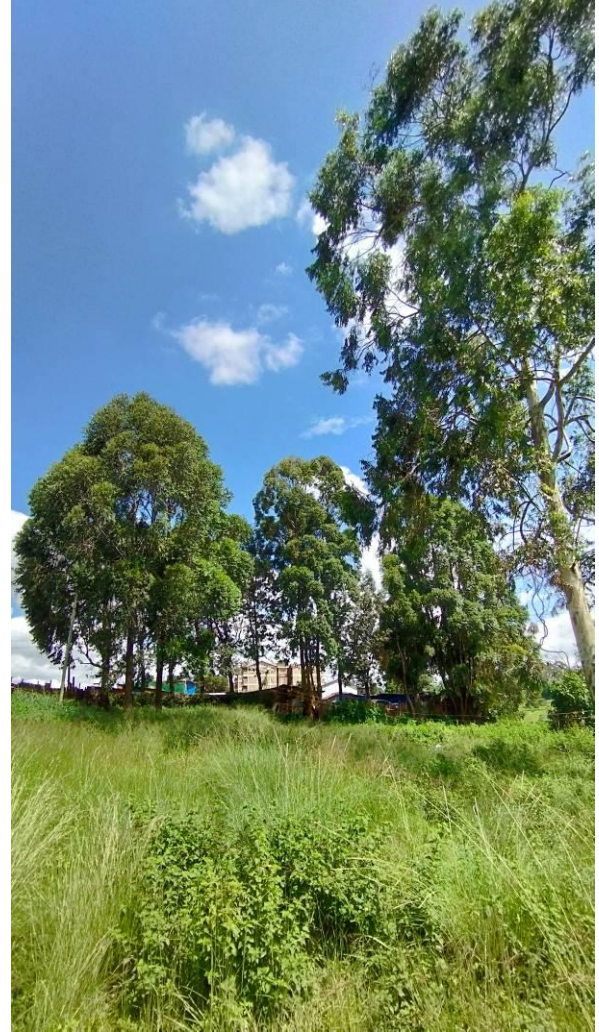


Plate 12: eucalyptus trees to the Western section of the plot



Plate 13: Tree stumps at the site



Plate 14: The proposed site as viewed from the Eastern corner

4.2.2 Fauna

A field survey undertaken during the ESIA study did not record the presence of any notable terrestrial or aquatic fauna species within the proposed project site. The site is largely characterized by grass cover, scattered eucalyptus trees, and a generally disturbed urban environment surrounded by residential, commercial, and institutional developments. The absence of natural habitats, dense vegetation, wetlands, or other ecologically sensitive features within the project footprint limits its suitability for supporting significant wildlife populations.

No mammals, reptiles, amphibians, or species of conservation concern were observed during the site assessment. Similarly, no nests, burrows, breeding grounds, migratory routes, or other indicators of important faunal activity were identified within the project area. The highly urbanized nature of the surrounding environment further reduces the ecological value of the site for wildlife.

Based on the field observations, the proposed development is expected to have minimal to negligible impacts on fauna and biodiversity. Any fauna occasionally utilizing the site is likely to comprise common and adaptable urban species capable of relocating to adjacent habitats during construction activities. Consequently, the project is not anticipated to result in significant biodiversity loss, habitat fragmentation, or adverse impacts on wildlife populations. Nevertheless, good environmental management practices should be implemented during construction to avoid unnecessary disturbance to any transient fauna that may occur within the area.

4.3 Socio-economic baseline

This section provides an overview of the socio-economic setting surrounding the project area. Establishing baseline conditions is essential in identifying and assessing the potential socio-economic impacts associated with the proposed development. The socio-economic profile presented is based on Nairobi City County context, with specific reference to the Dam area along Waiyaki Way (A8), where the project is located. Information used in this section was obtained from field observations and stakeholder consultations conducted within the project area. Supplementary data was sourced from secondary references, including the Nairobi City County Integrated Development Plan (CIDP 2023–2027) and relevant ESIA studies undertaken within similar urban settings in Nairobi.

4.3.1 Administrative Structure

Nairobi City County borders Kiambu County to the North and West, Machakos County to the East, and Kajado County to the South. The County lies between latitudes 1° 09' and 1° 28' South of the Equator, and longitudes 36° 4' and 37° 10' East. From the National Government perspective, the County is divided into Sub-Regions, Sub-Counties, Divisions, Locations, and Sub-Locations. The County's overarching national administration is headed by the Nairobi Regional Commissioner, supported by County Commissioners overseeing Service Delivery Coordination Units (Sub-Regions). Its Sub-Counties, Divisions, Locations, and Sub-Locations are headed by Deputy County Commissioners (DCCs), Assistant County Commissioners (ACCs), Chiefs, and Assistant Chiefs, respectively.

From a devolved governance perspective, Nairobi City County is structured into seventeen (17) decentralized Sub-Counties which correspond directly with its 17 electoral constituencies, further subdivided into eighty-five (85) electoral wards. The specific administrative Sub-Counties are: Westlands, Dagoretti North, Dagoretti South, Lang'ata, Kibra, Roysambu, Kasarani, Ruaraka, Embakasi South, Embakasi North, Embakasi Central, Embakasi East, Embakasi West, Makadara, Kamukunji, Starehe, and Mathare.

Wards range from 4 to 6 per Sub-County. Administratively, every Sub-County is headed by a Sub-County Administrator, while every ward is headed by a Ward Administrator (Nairobi City County CIDP, 2023–2027). Specifically, the Project Site is located within Kangemi Dam area, which falls under the Kitisuru Ward administrative boundary on the northern flank of Waiyaki Way. The project area is within Kitisuru Location, Westlands Sub-County (Constituency), Nairobi City County, Kenya.

4.3.2 Profile

According to the 2019 Kenya Population and Housing Census, Nairobi City County had a total population of 4,397,073 persons, comprising 2,192,452 males, 2,204,376 females, and 245 intersex persons. The total number of households in the County was 1,506,888, implying an average population density of 6,247 persons per square kilometer, making it the most densely populated county in Kenya. Particularly, Westlands Sub-County had a total population of 308,854 persons covering an area of 97.50 square kilometers, with a population density of 3,168 persons per square kilometer in 2019.

This population comprised 153,818 males, 155,021 females, and 15 intersex persons. At the more localized level, Kitisuru Ward (where the project site is situated) covers an area of 21.3 square kilometers and hosts a population of approximately 31,302 residents, yielding a local population density of 1,465 persons per square kilometer. The project area within Kitisuru Ward is characterized by a stark dual economy, featuring upscale residential zones alongside dense, informal urban settlements like Dam area settlement.

Unlike traditional agrarian or heavily industrialized zones, the local economy revolves heavily around commercial services, real estate, construction, and informal retail enterprises. While the larger

Westlands Sub-County is an elite commercial hub hosting corporate headquarters, diplomatic missions, and large retail malls, the immediate project area around Dam area serves as a crucial reservoir for low-income and semi-skilled labor. Local residents primarily engage in informal trade, small-scale transport (such as boda-boda services), domestic service, casual construction labor, and small-to-medium enterprise (SME) retail shops along the Waiyaki Way transit corridor.

4.3.3 Land Use and Land Tenure

The project area features a complex mix of localized informal settlements, institutional holdings, and premium urban real estate guided by the Nairobi City County Spatial Planning Frameworks and the Nairobi Integrated Urban Development Master Plan (NIUPLAN). Currently, the proposed project site itself is entirely vacant with no existing development on site. The formal land use plan by Nairobi City County designates the specific area for high-density mixed-use development, marking a definitive legal consolidation into the urban fabric.

While the site itself sits ready for development, the immediate surrounding environment experiences a highly dynamic blend of land uses categorized as follows:

- **Informal Settlements:** This organic, high-density residential footprint is concentrated mainly along the riparian reserve of the Kangemi Dam. Because this is an environmentally sensitive zone, the settlement is characterized by ad hoc plot subdivisions that do not conform to set zoning regulations. This rapid informal growth is structurally facilitated by the area's strategic proximity to the major Waiyaki Way transport corridor.
- **Mixed-Use Development:** The immediate vicinity demonstrates an active and steadily evolving model of mixed-use development. Most of the older, low-density developments situated along the primary access roads have been progressively converted into commercial frontages. These frontages offer a diverse range of services, including salons, M-pesa shops, eateries, and various informal retail outlets that serve the local community.
- **Emerging High-Rise Apartments:** Vacant parcels previously holding an agricultural or low-density status are progressively transforming into high-density residential housing. Modern apartment blocks are actively coming up around the project site, with the majority strictly conforming to the existing Nairobi City County zoning regulations.
- **Institutional and Ecological Zones:** The broader neighborhood footprint directly interfaces with massive state holdings such as the Kabete Veterinary Research Laboratories alongside the critical riparian ecosystem of the Kangemi Dam basin.

The proposed project site is explicitly designated as a mixed-use high-density area under the current Nairobi Zonal Regulations. Historically, the area was designated for agricultural and low-density use. This historical zoning significantly defined its early character, resulting in a neighborhood morphology composed of low-to-mid-rise residential areas, flanked by informal housing and roadside commercial strips that formed a distinct development ribbon around major transit roads.

Currently, the local geography is undergoing a rapid spatial transformation. The older informal settlements, remaining agricultural land pockets, and legacy low-rise housing units are gradually giving way to high-density mixed-use developments. This structural transition aligns directly with the modern zoning requirements and spatial optimization policies enforced by Nairobi City County. Field observations made during site investigations confirm this evolving residential and commercial corridor, indicating that the vacant project site is surrounded by dense developments, with several high-density housing units already completed or under active construction.

4.3.4 Housing

The project area is characterized by rapid and largely market-driven development, fuelled by its strategic location along the Waiyaki Way corridor and immediate proximity to the Westlands commercial node. This has resulted in a starkly dual housing landscape, ranging from modern, private-developer-driven high-rise apartments targeting middle-income tenants to the high-density informal structures of Dam settlement that have emerged along the Kangemi Dam riparian reserve to meet the high demand for low-cost housing. While the private sector is actively redeveloping legacy low-density plots into multi-story residential blocks in line with the area's high-density zoning, this rapid urban densification heavily strains localized infrastructure. This manifests in distinct structural variations across housing standards, inadequate access to centralized sewer networks in informal pockets, and intense spatial pressure on the adjacent environmentally sensitive wetland ecosystem.

4.3.5 Economic Activities

Nairobi City County's economy is predominantly driven by a diverse and highly service-oriented range of activities, with commerce, finance, real estate, and informal trade forming the bedrock of the local economy. Beyond services, Nairobi County houses a significant manufacturing sector, primarily concentrated within designated industrial zones like the Nairobi Industrial Area along Mombasa Road and Baba Dogo, which specialize in fast-moving consumer goods, chemical processing, plastics, textiles, and building materials. The county's status as a regional economic hub has fueled a thriving real estate and construction sector, with massive public and private investments catering to a rapidly growing population seeking commercial hubs and modern housing solutions.

Furthermore, formal trade flourishes alongside a massive informal sector that provides employment to a substantial portion of the population, while advanced service sectors, including hospitality, international diplomacy, information technology, and financial services, contribute overwhelmingly to the local and national GDP. The project area exhibits a dynamic economic landscape largely driven by its strategic location along the Waiyaki Way transit corridor and its proximity to the Westlands commercial node. Large-scale industrial and manufacturing activity is absent from the immediate neighborhood, as local real estate demands have progressively prioritized high-density mixed-use commercial and residential developments over factory floor spaces. The local economy is experiencing a significant real estate and densification boom, as legacy low-density plots and vacant land pockets are rapidly transformed into multi-story high-rise apartments and modern office developments.

A vibrant formal trade and commercial sector thrives along Waiyaki Way, anchored by banking institutions, corporate offices, and formal retail complexes like the nearby Mountain View Mall. In sharp contrast, the adjacent Dam settlement operates on a highly active micro-enterprise economy that functions as a crucial source of livelihoods. Small-scale economic activities in the immediate vicinity of the project site are predominantly informal and service-oriented, consisting of small retail kiosks, M-pesa shops, fresh produce vendors, water reselling points, local eateries, manual car wash, and a highly active boda-boda transport sector serving local commuters.



Plate 15: Garages to the West of the site

Plate 16: Commercial center to the East of the site

4.3.6 Social Infrastructure, Security Systems, and Emergency Response

The project area is supported by a highly comprehensive and accessible framework of public, private, and institutional social amenities that anchor its suitability for high-density mixed-use development. In terms of academic infrastructure, the immediate neighborhood and its surrounding catchment areas boast an extensive network of primary, secondary, and tertiary training institutions. Higher education and specialized vocational training are served by prominent installations, including the University of Nairobi (Kabete Campus), the Kabete National Polytechnic, and the Kenya Agricultural and Livestock Research Organization (KALRO) research centers.

Early childhood, primary, and secondary education are easily accessible through a diverse range of local institutions distributed along the Waiyaki Way corridor and nearby residential zones; these include Muthiga Academy, Damacrest Primary School, The Green Garden School, Kangemi Primary School, Kangemi Secondary School, and Uthiru Secondary School. Local healthcare provision relies on a multi-tiered public-private model that ensures excellent proximity to health services, anchored by facilities such as Urbanis Clinics and the Kangemi Health Centre, supplemented by several hospitals distributed directly along the Nairobi–Nakuru Highway (Waiyaki Way).

Spiritual and community services are anchored by multiple religious facilities embedded within the local fabric, including the Kangemi Mosque, Deliverance Church International, Salvation Army and the Pentecostal Evangelism Church. Security, public safety, and administrative support within the project area are coordinated through a highly integrated, multi-layered institutional structure. National government administrative coordination, incident management, and local dispute resolution are directed at the grassroots level by the Provincial Administration, utilizing the Chief's Camps for both Kangemi and Kitisuru Locations.

Regular law enforcement, emergency patrols, and rapid response operations are anchored by the National Police Service through the Kabete Police Station (strategically located near the sub-county boundary along Waiyaki Way), working alongside the Westlands Sub-County Security Committee under the oversight of the Deputy County Commissioner. Emergency response and fire suppression services are managed centrally by the Nairobi City County Fire and Rescue Service, drawing primary operational assets from decentralized stations (including the Gigiri Fire Station and the central fire headquarters). These stations maintain heavy water tenders, rapid intervention rescue vehicles, and certified disaster response personnel. To comply with formal health and safety obligations, construction and operational management teams for the proposed project are required to maintain trained safety officers, establish dedicated onsite first-aid facilities, and implement clearly demarcated emergency evacuation procedures to safely manage risks within this rapidly evolving high-density commercial and residential corridor.

4.3.7 Infrastructure and Access

Nairobi City County has an extensive classified road network spanning approximately 3,602 kilometers, consisting of 1,735 kilometers of paved bitumen roads, 667 kilometers of gravel roads, and 1,200 kilometers of earth surface roads. The county is the primary hub for national transport logistics, traversed by the Nairobi Expressway and the primary international transit trunk road A8 (Waiyaki Way), alongside a network of bypasses (Southern, Northern, Western and Eastern) that divert transit freight away from the central business district. It is also served by Kenya's Standard Gauge Railway (SGR) freight lines and an extensive Meter Gauge Railway (MGR) commuter network spanning multiple suburban lines. Decentralized, formal public transport hubs and bus parks are located across its sub-counties to manage the high volume of privately-owned public service vehicles (minibuses/matatus) and formal bus fleets operating under the regulatory oversight of the National Transport and Safety Authority (NTSA).

The project area within Westlands Sub-County possesses excellent coverage of high-capacity bitumen roads managed under the Kenya National Highways Authority (KeNHA) and the Kenya Urban Roads Authority (KURA). The primary arterial spine serving the project site is Waiyaki Way (A8), which connects the Nairobi urban core to the western transport corridor. Traffic flow and pedestrian safety along this high-speed corridor are enhanced by modern underpasses, overpasses, and localized interchanges (such as the Gitaru interchange linking to the Western and Southern Bypasses). To ease cross-suburban transit, the area is well integrated into the Westlands–Redhill Link Road network. Public transport dominates commute patterns within the local catchment area, anchored by heavily trafficked matatu routes and thousands of registered public vehicles routing through formal commuter stages at Kangemi, Uthiru, and the Westlands terminal. Last-mile connectivity from the main highway stages to the interior of the ward is robustly supported by localized, active boda-boda networks.

The proposed project site is currently vacant and features a strategic dual-access configuration designed to optimize internal vehicular circulation, distribute traffic loads efficiently, and minimize localized bottlenecks along the transit corridor. The specific access mechanics are structured as follows:

- **Access Point 1 (Primary Entry):** This access point is located directly off the main Waiyaki Way (Nairobi–Nakuru Highway) for traffic heading toward the Nairobi Central Business District. Vehicles gain entry via an existing slip road, providing a direct, high-capacity connection from the main highway. Because this access point intersects directly with a national trunk road, its design, integration, and operational modification will strictly require formal approval and structural permitting from the Kenya National Highways Authority (KeNHA).
- **Access Point 2 (Alternative Route):** This access point connects to an existing unpaved road situated at the rear of the site. It functions as an alternative exit route that loops traffic through the local neighbourhood fabric and links back onto the main highway. The long-term structural upgrade of this abutting road asset from its current state to a paved standard will remain contingent upon future infrastructure development plans and budgetary allocations by the Nairobi City County Government.



Plate 17: Proposed Project Site Access Routes



Plate 18: Waiyaki with a service lane and storm water drainage system

4.3.8 Water, Sanitation, and Waste Water Management

The proposed project site is located in the area served by Nairobi City Water and Sewerage Company (NCWSC) water supply network. There is an existing DN500mm steel water distribution main running along Waiyaki Way from Uthiru tanks towards Kabete tanks. There is also an existing DN 150mm uPVC pipe running adjacent to the property. The connection option selected will be subject to abstraction approvals by NCWSC.

Anecdotal information obtained from discussions with the NCWSC reveal that water rationing in the area is done, with supply being available Tuesday to Thursday. The municipal water supply may also be vulnerable to additional supply disruptions in cases of system failures and maintenance or during periods of peak demand, boreholes should be considered to supplement municipal water supply. Hydrogeological investigations will need to be carried out to determine the groundwater potential, number, location and depth of the boreholes. Industry best practice recommends that rainwater harvesting systems are incorporated in the development plans to suit their unique function and aesthetic needs. To cater for the high-water demand during peak periods, and intermittent municipal water supply, it is proposed to provide 2-3day water storage to ensure consistent supply is available

There is an absence of municipal sewerage infrastructure in the project area. Surrounding developments rely on onsite wastewater treatment solutions such as septic tanks for wastewater disposal. This decentralization of wastewater treatment mitigates the need for extensive and costly sewerage installations. Therefore, due to the absence of municipal sewerage infrastructure, onsite wastewater treatment systems such as septic tanks and other packaged solutions are recommended. Once the waste generation for the proposed development is determined, the potential of these systems will be analysed factoring in the topography of the site, with proposals for the most suitable location, number and sizing of the systems, as well as discharge and re-use of the effluent. For the treated effluent to be suitable for lawn irrigation and re-use, it is paramount that it complies with relevant NEMA standard.

4.3.9 Energy Access

The primary sources of energy within Nairobi City County comprise grid electricity, Liquefied Petroleum Gas (LPG), solar energy, charcoal, and kerosene. As the nation's capital and primary urban hub, Nairobi enjoys nearly universal grid electricity access within its formal commercial and residential sectors, though power reliability and connection quality vary within rapidly expanding high-density and informal settlements. To mitigate rising utility costs and frequent national grid outages, there is an accelerating shift toward renewable energy integration across the county. This includes the widespread adoption of solar water heating systems mandated by National building regulations for high-capacity residential developments, the installation of solar-powered street lighting along major transit corridors, and the deployment of hybrid solar-battery systems by private commercial and residential entities to safeguard operational continuity.

The project area is fully integrated into the national electricity grid, under the transmission and distribution infrastructure managed by the Kenya Power and Lighting Company (KPLC). Specifically, there is an existing 11kV double-circuit overhead power line that runs along the Nairobi–Nakuru Highway (Waiyaki Way) toward Nakuru within the Kenya National Highways Authority (KeNHA) road corridor. In addition to this high-capacity power infrastructure, both overhead and underground fiber-optic ICT cables are present along the same transport corridor. The close proximity of these extensive power and ICT networks ensures rapid, reliable service connectivity to the proposed project site. To guarantee uninterrupted service delivery for the high-density mixed-use development, the proponent will supplement power from the KPLC national electricity grid by installing a dedicated step-down transformer and a robust power backup generator system. This setup will ensure localized grid stability during construction and subsequent occupation phases.

4.3.10 Vulnerable Groups

Vulnerable or marginalized persons and groups are those that: (a) are usually exposed to several risks and adverse impacts at once; (b) are more sensitive to those risks and impacts, often having been subject to pre-existing discrimination; and (c) have a weaker adaptive capacity for coping with those risks and recovering from those impacts due to limited access or rights to required assets. Additionally, certain individuals or groups are vulnerable, marginalized, or excluded based on their socioeconomic status, including sex, sexual orientation, gender, gender identity, caste, racial, ethnic, Indigenous or

social origin, genetic features, age, birth, disability, religion or belief, political or any other opinion, activism, membership of a national minority, affiliation to a union or any other form of workers' organization, property, nationality, language, marital or family status, health status, or migrant or economic status.

Going by the above-stated definition of vulnerable groups, the following groups of people were identified as vulnerable within the proposed project area:

- **Women and women-headed households:** This group faces structural barriers in decision-making and is more at risk of economic exclusion and gender-based violence (GBV), particularly during the construction labor influx.
- **Children and youth:** These individuals are susceptible to localized safety risks near the high-density construction zone, disruptions to local movements around Kangemi schools, or increased social vulnerabilities such as child labor risks.
- **Persons with disabilities (PWDs) and the elderly:** These groups face severe mobility, physical access, and communication challenges within the dense local topography, which can limit their participation in public consultations and grievance processes unless specific accommodations are made.
- **Informal workers and low-income laborers:** Casual construction workers, boda-boda riders, and Jua Kali artisans within the local ward experience extreme income instability and have limited access to formal social protections.
- **Informal traders:** Roadside vendors selling fast-moving consumer goods, cooked food, and micro-retail items are highly vulnerable to physical and economic displacement. This includes the highly concentrated cluster of informal traders operating along the Waiyaki Way transport corridor, the adjacent slip road, and the internal access tracks bordering the Dam area settlement, whose livelihoods depend entirely on constant roadside foot traffic and unobstructed customer access.

To ensure the inclusion and protection of these groups, the ESIA adopts a differentiated approach that integrates culturally appropriate consultation methods, gender-sensitive engagement, accessible grievance channels, and targeted livelihood or support interventions.

5 CHAPTER 5: LEGAL, POLICY AND INSTITUTIONAL FRAMEWORK

5.1 General Overview

This chapter sets out the standards to which the legal, policy and administrative framework within which the proposed green affordable housing project will be developed. It identifies the applicable national standards and lender requirements. For convenience and to demonstrate a systematic approach to identifying legal constraints, it has been structured around the broad topic areas set out in the Kenyan laws and policies as these comprehensively address the environmental and social risks that may be faced by the proposed housing project. The legal framework presented in this section is not exhaustive and aims to outline key legal requirements and frameworks that are most relevant for the proposed project during the construction and operation phases. The ESIA will conform to the Kenyan legislative and regulatory framework and in line with the EIB Environmental and Social Standards (2022). For the majority of disciplines, where there is a difference between the national Kenyan standards and EIB Environmental and Social Standards, whichever is more stringent shall apply.

5.2 National Legal Framework

Item	Description	Relevance
The Constitution of Kenya 2010	(a) According to Article 42 of the 2010 Kenyan Constitution, every person has the right to a clean and healthy environment. This right includes the right to have the environment protected for the benefit of current and future generations through legal and other measures, especially those envisioned in Article 69, as well as the right to have environmental obligations under Article 70 met. (b) Every worker has a right to fair remuneration; to reasonable working conditions; to form, join or participate in the activities and programmes of a trade union; and to go on strike as per article 41. (c) Article 43. (1)(b) states that every person has the right to accessible and adequate housing, and to reasonable standards of sanitation; (d) According to Article 69(2), everyone has a responsibility to work with government agencies and other individuals to safeguard and maintain the environment and ensure the sustainable exploitation of natural resources.	The Proponent is obliged to execute the project within legal boundaries, ensuring it is environmentally, economically, and socially sustainable. They also have the right to a fair administrative decision-making process from NEMA and other state organs, and must fully comply with the Constitution's stated articles.
The Environment Management and Co-ordination Act (Cap 387)	(a) With the enactment of the Environmental Management and Co-ordination Act (EMCA) in December 1999 (Rev. 2015), the institutional framework for environmental management was strengthened. EMCA provides for the establishment of NEMA, which became operational in July 2002. NEMA has statutory mandate to co-ordinate all environmental activities. (b) Part II of EMCA states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. In order to partly ensure this is achieved, Part VI of the Act directs that any new programme, activity or	As per the act's second schedule, establishment of multi-dwelling housing developments is listed as one of the activities that must undergo environmental impact assessment. The Proponent has commissioned the environmental and social impact assessment of the proposed housing project in compliance with the Act. This full study also complies with the requirements of the Act. The Proponent shall be required to commit to implementing the environmental management and monitoring plan laid out in this report, and other conditions for approval by NEMA prior to issuing of the EIA licence.

Item	Description	Relevance
	operation should undergo environmental impact assessment, and a report prepared for submission to NEMA who in turn may issue a license as appropriate. (c) Part VIII section 72 of the Act prohibits discharging or applying poisonous, toxic, noxious or obstructing matter, radioactive or any other pollutants into the aquatic environment. Section 87 Sub-section 1 states that no person shall discharge or dispose of any wastes, whether generated within or outside Kenya, in such a manner as to cause pollution to the environment or ill health to any person. Sections 90 through 100 outlines more regulations on management of hazardous and toxic substances including oils, chemicals and pesticides.	
County Governments Act (Cap 265)	(a) The Act empowers Nairobi City County Government to plan development projects within her jurisdiction, focusing on projects of national or local importance. (b) Section 102 outlines principles for planning and development facilitation, including integrating national values, protecting self-fulfillment rights, promoting equity resource allocation, and protecting minority rights and marginalized groups. This ensures responsibility for future generations and the protection of marginalized communities. (c) Section 111 states that for each city and municipality there shall be the following plans— • city or municipal land use plans; • city or municipal building and zoning plans; • city or urban area building and zoning plans; • location of recreational areas and public facilities. The city or municipal plans shall be the instrument for development	The project Proponent should initiate the process of county government engagement in the initial project planning through the application of essential development approvals from Nairobi City County Government. The proponent shall obtain an approval letter from Nairobi City County Government.

Item	Description	Relevance
	facilitation and development control within the respective city or municipality. The city or municipal plan shall, within a particular city or municipality, provide for— • functions and principles of land use and building plans; • location of various types of infrastructure within the city or municipality; • development control in the city or municipality within the national housing and building code framework.	
Land Act, 2012	(a) Provides for the sustainable administration & management of land & land-based resources & connected purposes. (b) Part VI section 66 states that there shall be implied in every lease, covenants by the lessee with the lessor binding the lessee to use any land in a sustainable manner and in accordance with any conditions imposed on the use of that land by the lease, or any written law or any provisions in a grant of a public land out of which that lease has been created and, in particular, not to cut down, injure or destroy any living tree on the land unless the purpose for which the land has been leased cannot be carried out without so doing;	This Act applies to all land declared as public, private and community land under Article 62, 64 and 63 of the Constitution of Kenya. The proposed project site is under a leasehold The proponent will be required to comply fully with the relevant land legislations.
Water Act (Cap 372)	(a) Part III Section 36 states that a permit is required for any of the following purposes— • any use of water from a water resource, except as provided by section 37; • the drainage of any swamp or other land; • the discharge of a pollutant into any water resource; and • any other purpose, to be carried out in or in relation to a water resource, which is prescribed by Regulations made under this Act to be a purpose for which a permit is required. (b) Section 40 outlines the procedures for obtaining a permit which includes subjection to public consultation and, where applicable, of	The Act mandates the protection of water catchment areas. The project must demonstrate that its construction and operational activities will not lead to the degradation of the local watershed or contamination of the groundwater aquifer. This includes protection of water resources, for instance Kangemi Dam from pollution.

Item	Description	Relevance
	environmental impact assessment in accordance with the requirements of the Environmental Management and Co-ordination Act (Cap. 387). (c) Part IV Section 63 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.	
Physical and Land Use Planning Act (Cap 303)	(a) This Law provides for the principles, procedures and standards for the preparation and implementation of physical and land use development plans at the national, county, urban, rural and cities level; and the administration and management of physical and land use planning in Kenya (b) Section 24 of the Act provides the objectives of the National Physical and Land Use Development Plan being the basis for environmental conservation, protection and improvement; and optimal use of land and natural resources among others. (c) Section 37 of the Act provides the objectives of a county physical and land use development plan which includes guiding the use and management of natural resources; enhancing environmental protection and conservation; and to identify the proper zones for industrial, commercial, residential and social developments among others. (d) Part IV Section 57 states that a person shall not carry out development within a county without a development permission granted by the respective county executive committee member. Application for the development permission shall include notifying the public of the development project being proposed to be undertaken in a certain area in such a manner as the Cabinet Secretary shall prescribe.	The proponent should obtain development permission from the Nairobi City County executive committee member by applying for development permission in the prescribed form and after paying the prescribed fees. The proposed green affordable housing project should conform to the approved local county physical and land use development plan.

Item	Description	Relevance
Public Health Act (Cap 242)	(a) Part IX focuses on sanitation and housing, with a particular emphasis on preventing nuisances. Section 115 of the Act states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health. Section 118 defines what constitutes a nuisance. (b) Section 126 states that the Cabinet Secretary, on the advice of the board, may make rules and may confer powers and impose duties in connection with the carrying out and enforcement thereof on local authorities, magistrates, owners and others as to periodical cleansing and whitewashing or other treatment of dwellings, and the cleansing of land attached thereto, and the removal of rubbish or refuse therefrom; the drainage of land, streets or premises, the disposal of offensive liquids and the removal and disposal of rubbish, refuse, manure and waste matters; the standard or standards or purity of any liquid which, after treatment in any purification works, may be discharged therefrom as effluent; the subdivision and general lay-out of land intended to be used as building sites, the level construction, number, direction and the width of streets and thoroughfares, the limitation of the number of dwellings or other buildings to be erected on such land, the proportion of any building site which may be built upon and the establishment of zones within which different limitations shall apply and of zones within which may be prohibited the establishment or conduct of occupations or trades likely to cause nuisance or annoyance to persons residing in the neighbourhood; among others.	The proponent should ensure the construction and operation phases of the proposed housing project do not cause any form of nuisance. Measures to mitigate nuisance should be put in place throughout the proposed project phases.
Work Injury Benefits Act (Cap 236)	(a) The Act provides for compensation to employees for work related injuries and diseases contracted in the course of employment. It covers employer obligations, right to compensation, accident reporting, compensation, occupational diseases, medical aid,	The project proponent will need to observe the provisions of this Act during the proposed green affordable housing project's life cycle. The construction contractor should also meet this requirement during the proposed project construction phase.

Item	Description	Relevance
	appeals, and miscellaneous provisions. It also provides schedules for disablement, occupational diseases, and dependent's compensation. (b) The Act guides the course of action in case of accidents or incidents during the project cycle.	
Employment Act (Cap 226)	(a) The Act outlines fundamental employee rights, basic employment conditions, and child employment regulation. It covers employment relationships, wages, rights and duties, termination and dismissal, and protection of children.	The contractor is advised not to engage underage individuals in construction work, and the proponent must ensure the contractor is knowledgeable and compliant with the Employment Act's provisions. The provisions of this Act will guide both the proponent and the contractor on matters touching on Prohibition against forced labour, Discrimination in employment, Sexual harassment, terms of service, and Prohibition of worst forms of child labour at the workplace.
Standards Act (Cap 496)	(a) This Act promotes the standardization of the specification of commodities and provides for the standardization of commodities and codes of practice to ensure public health and safety.	The Proponent is required to ensure that all materials and equipment used during construction and operation of the residential development meet the highest standards and do not pose any human health and safety risks.
Occupiers' Liability Act (Cap 34)	(a) An act of parliament to amend the law as to liability of occupiers and others for injury or damage resulting to persons or goods lawfully on land or property from dangers due to the state of the property or to things done or omitted to be done there.	The contractor should ensure the safety of workers during construction the construction phase. The occupier(s) of the proposed green affordable housing shall be responsible to his visitors in respect of dangers due to the state of the premises or to things done or omitted to be done on them.
Occupational Safety and Health Act (Cap 236A)	(a) This act provides for the safety, health and welfare of workers and all persons lawfully present at workplaces. It provides for the registration of workplaces and outlines safety requirements in use of machinery to prevent accidents and injuries. (b) Occupiers must secure and maintain adequate cleanliness, prevention of overcrowding, ventilation, lighting, drainage of floors, and sanitary conveniences for employees. They must also make arrangements for ensuring safety and absence of risks to health in	The proposed project construction phase may pose hazards like falls, exposure to energized circuits, heavy equipment, and confined spaces. The project contractor should ensure safety and health standards, ensuring everyone's responsibility. Emergency response plans, warning signs, machinery safety provisions, and construction safety provisions will be implemented. The Proponent and contractors must obtain necessary approval, and permits, including a Workplace Registration Certificate. Additionally, this assessment has outlined clear modalities to be followed by

Item	Description	Relevance
	connection with the use, handling, storage and transport of articles and substances; the provision and maintenance of a working environment for every person employed that is, safe, without risks to health, and adequate as regards facilities and arrangements for the employees welfare at work. (c) Part 2 Section 21 states that an employer or self-employed person shall notify the area occupational safety and health officer of any accident, dangerous occurrence, or occupational poisoning which has occurred at the workplace. (d) The Act also requires that all plant, machinery, and equipment used in the workplace must be used for work designed and operated by a competent person. (e) Occupiers are also required to ensure safety provisions in case of fire.	contractors towards mitigating/minimizing/avoiding hazards to occupational health and safety.
Energy Act (Cap 314)	(a) The Act consolidates the laws relating to energy and provides for national and county government functions in relation to energy. Provides for promotion of renewable energy; exploration, recovery, and commercial utilization of geothermal energy; regulation of midstream and downstream petroleum and coal activities; regulation, production, supply, and use of electricity and other energy forms; and enforcement and compliance with environmental, health and safety laws; and quality standards. (b) Part IV Section 75 states that the Cabinet Secretary shall promote the development and use of renewable energy technologies, including but not limited to biomass, biodiesel, bioethanol, charcoal, fuelwood, solar, wind, tidal waves, hydropower, biogas and municipal waste. (c) Part VI Section 148(1) stipulates that any electrical installation work	The installation and use of electricity in the proposed green affordable housing units will prioritize environmental protection and worker health and safety. This includes incorporation of renewable energy technologies. Only licensed electricians, in accordance with EPRA, should be engaged for the electrical works. Liaison with relevant organizations, like KPLC is encouraged. The Proponent is further encouraged to follow the Act rules throughout the project.

Item	Description	Relevance
	should be conducted by a person licensed by the EPRA as an electrician or an electrical contractor.	
National Construction Authority Act (Cap 118)	(a) This is an Act of Parliament that provides for the registration of contractors operating or willing to undertake construction operations in Kenya as by law through the National Construction Authority (NCA), which is constituted under this Act. (b) Section 15 of this Act demands the registration of contractors with the NCA, while sections 17 and 18 outline the procedure for the registration of contractors.	The Proponent should comply with the Act by ensuring that the site and project contractors are registered and certified by NCA.
Sustainable Waste Management Act, 2022	(a) The Sustainable Waste Management Act, 2022 establishes the legal and institutional framework for the sustainable management of waste. The Act ensures the realisation of the constitutional provision on the right to a clean and healthy environment and for connected purposes. (b) Section 12 of the Act stipulates that all private and public sector entities shall segregate non-hazardous waste into organic and non-organic fractions, The segregated waste shall be placed in properly labelled and colour coded receptacles, bins, containers and bags. (c) Section 13 of the Act states that every producer shall bare extended producer responsibility obligations to reduce pollution and environmental impacts of the products they introduce into the Kenyan market and waste arising therefrom. (d) Each county government is required to prepare an integrated county waste management plan once every five years and submit to the county assembly for approval under section 18 of the Act. (e) In section 19, a private sector entity is required to prepare a three-year Waste management plan and submit an annual monitoring	The proponent and the contractor will be required to bare extended producer responsibilities obligations of any products they introduce. They should also practice waste segregation. The proponent should also develop a waste management plan during the operation phase of the proposed green affordable housing project as required under the Act.

Item	Description	Relevance
	report to the authority.	
Climate Change Act (Cap 387A)	(a) The Climate Change Act is pivotal for housing infrastructure projects in Kenya, emphasizing minimization of greenhouse gas emissions. It mandates integrating robust adaptation measures into project design, ensuring resilience and enhancing adaptive capacity to the impacts of climate change; mainstream and reinforce climate change disaster risk reduction into strategies and actions of public and private entities; provide incentives and obligations for private sector contribution in achieving low carbon climate resilient development; promote low carbon technologies, improve efficiency and reduce emissions intensity by facilitating approaches and uptake of technologies that support low carbon, and climate resilient development; and mainstream the principle of sustainable development (b) By aligning with these regulations, projects can enhance climate resilience, minimize environmental impact, and contribute to sustainable development goals through proactive adaptation strategies and responsible resource management practices. (c) Part IV Section 16 states that the Climate Change Council may, in consultation with the Cabinet Secretary and relevant State Departments, impose climate change obligations on private entities. That he Cabinet Secretary shall make regulations governing the nature and procedure for reporting on performance by private entities, including the authority to monitor and evaluate compliance. (d) NEMA is tasked to monitor, investigate and report on whether public and private entities are in compliance with the assigned climate change duties imposed by this Act including monitoring compliance on levels of greenhouse gas emissions as set by the Council under this Act.	The proposed housing project should integrate adaptive measures to enhance resilience against extreme weather events, and promote sustainable development to mitigate environmental impacts and support long-term climate goals in Kenya.

Item	Description	Relevance
National Museums and Heritage Act (Cap 216)	(a) The Act provides for the establishment, control, management and development of national museums and the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya; (b) Part V Section 30 states that where a person discovers a monument or object of archaeological or palaeontological interest, the person shall, within seven days, give notice thereof, indicating the precise site and circumstances of the discovery, to the National Museums, and in the case of an object, shall deliver the object to the National Museums or to the District Commissioner to keep it for any particular purpose or for any particular period. (c) The Act also states that all antiquities which are lying in or under the ground, or on the surface of any land already protected under any law as a monument or being objects of archaeological, palaeontological or cultural interest are discovered in a part of Kenya after the commencement of this Act, shall be the property of the Government.	Where any physical cultural resources are identified at the proposed site during the excavation works, the Act should be complied with.
Sexual Offences Act (Cap 63A)	(d) This Act of parliament makes provision about sexual offences and aims at the prevention and the protection of all persons from harm from unlawful sexual acts and for connected purposes. (e) Section 23 prohibits sexual harassment by any person in a position of authority.	The proponent and the proposed project contractor are obligated to put in place mechanisms which are expedient in order to achieve or promote the objectives of this Act, including for instance, a policy to prevent sexual harassment.
HIV/ AIDS Prevention and Control Act (Cap 246A)	(a) The object and purpose of this Act is to - Promote public awareness about the causes, modes of transmission, consequences, means of prevention and control of HIV and AIDS; - Extend to every person suspected or known to be infected with HIV and AIDS full protection of his human rights and civil	All employees, suppliers and contractors in this project shall be treated fairly and in accordance with the provisions of this Act; without any form of discrimination. The proposed project contractor will be required to create awareness among the workers and community at large.

Item	Description	Relevance
	liberties. (b) This legislation prevents discrimination in all forms and subtleties against persons with or persons perceived or suspected of having HIV and AIDS. Without prejudice, no person shall compel another to undergo an HIV test as a precondition to, or for continued enjoyment of employment. (c) Part VIII of the Act requires no person to be denied access to any employment for which he is qualified; or (b) transferred, denied promotion or have his employment terminated, on the grounds only of his actual, perceived or suspected HIV status. Only except where an employer can prove, on application to the Tribunal that the requirements of the employment in question are that a person be in a particular state of health or medical or clinical condition	
Persons with Disabilities Act (Cap 133)	(a) This Act provides for the rights and rehabilitation of persons with disabilities; to achieve equalisation of opportunities for persons with disabilities; to establish the National Council for Persons with Disabilities; and for connected purposes. (b) The act prohibits employers from discriminating against a person with disability. This includes provision of such facilities and effect such modifications, whether physical, administrative or otherwise, in the workplace as may reasonably be required to accommodate persons with disabilities by the employer. Part III section 12 states that no person shall deny a person with a disability access to opportunities for suitable employment. That a qualified employee with a disability shall be subject to the same terms and conditions of employment and the same compensation, privileges, benefits, fringe benefits, incentives or allowances as qualified able-bodied employees. In addition, a person living with disability shall be exempted from tax on all income accruing from his employment.	The proposed affordable housing project proponent and the contractor should not discriminate against a person with disability during employment of workers not unless the particular requirements of the type of employment are a relevant consideration.

Item	Description	Relevance
	(c) Section 21 of the Act states that persons with disabilities are entitled to a barrier-free and disability-friendly environment to enable them to have access to buildings, roads and other social amenities, and assistive devices and other equipment to promote their mobility.	
Affordable Housing Act, 2024	(a) This Act gives effect to Article 43(1)(b) of the Constitution; to provide a framework for development and access to affordable housing and institutional housing; and for connected purposes. (b) Part V section 44 of the act states that the Affordable Housing Board may enter into an agreement with a private institution to develop and construct affordable housing units and associated social and physical infrastructure; and for the supply of goods and materials in connection with the construction of affordable housing units.	IHS as a private sector agency should comply with the act.
National Building Code, 2024	(a) The Code promotes order and safety in construction works, and the health and safety of persons in or about construction works. (b) Part I Section 5(1) states that a person who engages in construction works, or a person who owns or occupies a building shall comply with this Code. (c) Part III Section 38 states that an owner of a commercial building or multi-dwelling unit shall designate at least 5% of the parking spaces for charging electric vehicles. (d) Part IV Section 47 of the code requires an owner to install a boundary to prevent the public from entering the construction site and to protect the public from the activities on the construction site before the erection of a building. (e) Part IX Section 103 states that a wall shall be constructed in accordance with the requirements for fire safety and fire installations specified in Part XXI.	The Act addresses issues of sustainability, green building, and climate change. It also emphasises sustainability, hazard-resilient designs, safety, and environmental well-being. The proponent and contractor should ensure health, safety and environmental conservation during all the project phases in accordance with this Code. They should address issues of sustainability, green building, and climate change. This includes emphasising sustainability, hazard-resilient designs, safety, and environmental well-being.

Item	Description	Relevance
	(f) In part X section 133 a room is required to have a means of lighting and ventilation which shall enable the room to be used for the purpose for which the room is designed without detriment to the health or safety, or causing nuisance. (g) 198- A building shall have a means of escape in case of an emergency as may be required by the intended use of the building. (h) 199(1)- A building that exceeds one storey in height shall have a staircase that is so designed and constructed as to allow a fireman safe and unobstructed access to all floors of the building in the event of a fire. (i) Part XIV section 244 states that Construction works shall provide for rainwater harvesting. (j) In section 247 no person is allowed to cause or permit sewage discharged from a sanitary fixture to enter a stormwater drain, storm-water sewer, an excavated or constructed watercourse; a river, stream or natural watercourse, whether ordinarily dry or otherwise; or a road or another construction site. storm-water shall not be drained into a sewer installation. (k) Part XVI 329 states that an owner shall provide for a soft landscape at the construction site when engaging in construction works. (l) Construction of a pit latrine in an urban area is prohibited unless approved by the approving authority; Part XVIII section 339. (m) Part XIX section 344 states that every building shall have an approved means of refuse storage and disposal. Section 346 makes provisions for a waste container in a building; In a multi-storey residential building, each dwelling up to the fourth storey may have its own waste container, or share a waste container. (3) In a multi-storey residential building, a dwelling that is situated above the	

Item	Description	Relevance
	fourth storey shall share a container that is fed by a chute. (4) Where the siting or operation of the chute referred to in subparagraph (3) is impracticable, a management arrangement for conveying refuse to the waste container shall be provided. (n) In part XX 352, a building shall be designed in a manner that facilitates access to the building, and to the use of its facilities, by a person living with a disability in accordance with KS ISO 21542 (Building construction -Accessibility and usability of the built environment). (o) Part XXI makes provisions for fire safety and fire installations in buildings to ensure safety of its occupants from fire; this includes appropriate means of escape in case of fire, firefighting equipment etc.. (p) A person undertaking a design, planning, preparation, or construction phase, in the use or demolition of a project is required to take account of general principles of disaster prevention in the performance of those duties during all the stages of the project; Part XXIII section 462.	

5.3 National Regulatory Framework

Item	Description	Relevance
Environmental (Impact Assessment and Audit) Regulations, 2003.	a) These Regulations contain rules relative to the content and procedures of an EIA, to environmental audit and to Monitoring and strategic environmental assessment. These rules regulate other	The EIA to be carried out on the proposed green affordable housing should be carried out in accordance to these regulations. An initial environmental audit should also be carried out in the first

Item	Description	Relevance
	matters such as the appeal for, and registration of, information regarding EIA. The rules also provide the applicable environmental licensing fees for the different project categories. b) The Guidelines require the EIAs be conducted in accordance with the issues and general guidelines spelt out in the second and third schedules of the Environmental Regulations (2003). These include coverage of the issues on Schedule 2 (ecological, social, landscape, land use and water considerations) and general guidelines on Schedule 3 (impacts and their sources, project details, national legislation, mitigation measures, a management plan and environmental auditing schedules and procedures).	year of operation of the project.
Environmental Management and Co-ordination (Water Quality) Regulations, 2024	(a) The regulation provides for the protection of ground and surface water resources.”. (b) Of immediate relevance to the proposed facility for the purposes of the proposed green affordable housing project is Part II Section 4 which requires every person to refrain from any act which directly or indirectly causes, or may cause immediate or subsequent water pollution, and it shall be immaterial whether or not the water resource was polluted before the enactment of the Act. (c) Part II Section 6(c) states that no person shall cultivate or undertake any development activity within a minimum of six metres and a maximum of thirty metres from the highest ever recorded flood level, on either side of a river or stream, and as may be determined by the Authority. (d) Part V Section 26 prohibits the discharge or application of any poison, toxic, noxious or obstructing matter, radioactive wastes, or other pollutants or permit any person to dump or discharge any such matter into water meant for fisheries, wildlife, recreational	The proposed project proponent and the contractor are expected to adhere to the water quality regulations during the project construction and operation phase by safeguarding Kangemi Dam ground water resources in the project area.

Item	Description	Relevance
	purposes or any other uses unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards set out in the Third Schedule.	
Environmental Management and Co-ordination (Waste Management) Regulations, 2024	In addition to encouraging waste minimization, cleaner production, waste segregation, recycling, and composting, the regulation sets requirements for managing, transporting, and disposing of various waste types, including hazardous waste. It also covers the licensing of vehicle hauling and garbage disposal facilities.	During the construction and operation phases of the proposed housing project, different solid and liquid wastes will be generated. The Proponent and the contractor should ensure proper waste management during the proposed project lifecycle. This includes Segregating waste by type (hazardous and non- hazardous), segregating non-hazardous waste into organic and non-organic fractions and then disposing them in an environmentally acceptable manner.
Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009	(a) This regulation forbids the creation of unreasonable, pointless, or unusual noise (as defined in the regulations and except as otherwise provided) that irritates, disturbs, harms, or endangers the environment, other people's peace of mind, health, or safety. It outlines the highest noise levels that are permitted in a variety of environments, including mixed-use residential areas, business areas, and places of worship. (b) Part II section 4 states that, except as otherwise provided in these Regulations, no person shall make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; or cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source. (c) A license is necessary if a sound source produces or is likely to produce noise, excessive vibrations, or otherwise violates the terms of these laws.	During the construction and operation phases, the permissible noise levels in the 1st and 2nd schedule must be adhered to. Where necessary, a license to release noise or vibrations in excess of allowable limits must be obtained. The contractor shall be required to implement these measures to ensure that all machinery is in good working condition to reduce noise. Also, construction activities shall be restricted between 0800Hrs-1700Hrs to ensure that the neighbours are not disturbed.

Item	Description	Relevance
Environmental Management and Co-ordination (Air Quality) Regulations, 2024.,	These regulations provide for ambient air quality tolerance limits; Prohibits air pollution in a manner that exceed specified levels; Provides for installation of air pollution control systems where pollutants emitted exceed specified limits; Provides for the control of fugitive emissions within property boundary; Provides for the control of emissions from stationary and mobile sources; Provides for prevention of dispersion of visible particulate matter or dust from any material being transported; and also provides for acquisition of an emission license.	The contractor should ensure compliance to these regulations during the construction phase. The following should be closely monitored: • Exhaust emissions from construction machinery. • Dust from Site clearance and excavation of foundations. • Dust and exhaust emissions from transportation and disposal of spoil The Proponent should ensure that operations at the proposed housing project do not generate dust, particulates and other emissions beyond allowable limits during the operation phase.
Environmental Management and Co-ordination (Management of Toxic and Hazardous Chemicals and Materials) Regulations, 2024.	These regulations are meant to ensure protection of human health and environment from adverse effects of toxic and hazardous industrial chemicals and materials; reduce risks posed by chemicals and provide for the sound management of chemicals.	These regulations ensure that any chemicals used during construction or incorporated in building materials are managed to prevent environmental contamination and protect human health. By adhering to these standards, the project will minimize risks associated with chemical exposures, promote a safe living environment for future residents, and comply with national environmental protection mandates.
Environmental Management and Co-ordination (Controlled Substances) Regulations, 2007	These regulations are meant to control the use and import of compounds that deplete the ozone layer. The classification of controlled substances is provided in section 3.	The Proponent and the contractor should completely adhere to these regulations by abstaining from ozone depleting substances.
Water Harvesting and Storage Regulations, 2021.	a) These Regulations shall apply to— • the policies, plans, programmes and activities of the national government, county governments and entities of the national and county governments; and • public and private waterworks for water harvesting and storage, reservoirs for impounding surface run-off and for regulating stream flows to synchronize them with water demand patterns and structures and devices for flood control	The proponent is encouraged to make provisions for water harvesting and storage at the proposed green affordable housing.

Item	Description	Relevance
	and management. b) Part VIII section 46 states that a person may directly capture and store precipitation on a parcel of land owned or leased by that person in accordance with sub regulation (2); and place the water captured and stored as provided in sub regulation (1)(a) to beneficial use on the parcel on which the water is captured and stored.	
Water Resources Regulations, 2021	a) These Regulations apply to the regulation, management, use and development of water resources. They also apply to all water resources whether perennial or seasonal and including water resources of the territorial sea. b) Part III section 7 states that a person who intends to undertake an activity involving the use of water from a water resource shall apply to the Authority for a permit before commencing the activity. Section 9 states that an application for a water use permit shall be made by the owner of the land on which the water use is to take place and, where the applicant is not the landowner, the consent of the owner of the land shall be endorsed on the application. c) The regulations prohibits any person from causing water pollution by discharge or spillage. A person intending to discharge waste, effluent or other pollutant into a water resource shall apply to the Authority for waste disposal permit. d) Part V Section 51 states that a person intending to abstract ground water shall apply for approval of the activity by the Authority in Form WRA 001 set out in the Thirteenth Schedule. Where any borehole or well is to be equipped with a motorised pump, the application shall be accompanied by a Hydrogeological Survey Report prepared in the form set out in the Fourth	The project proponent and the appointed contractor should implement stringent control measures to prevent the contamination of water resources within the project area and Kangemi Dam. This mandate necessitates the mitigation of any potential pollutant discharge, accidental seepage, or chemical spillage resulting from both construction-related operations and the long-term residential functioning of the development.

Item	Description	Relevance
	Schedule. e) Where any borehole or well is being constructed within five hundred metres of an existing borehole or well, the Authority may by notice require the person constructing the borehole or well to undertake tests, specified in the notice, on the existing well and to supply to the Authority the particulars of the results of such tests including the rate of pumping and rest levels of water.	
The Physical and Land Use Planning (Building) Regulations, 2021	a) These regulations provide for the procedures, standards and forms for carrying out development control applications and processes, and the regulation of physical planning and land use in respect of buildings. b) Part II Section 4(1) requires that any person who intends to erect a new building or make alterations or additions to an existing building whether permanent or temporary, shall be required to submit Building Plans before obtaining development permission. c) An application for a housing estate shall provide for a tree cover of at least five per cent of the total land area of the housing estate intended to be developed. d) A person shall only put up a building in accordance with approved plan of the area, zoning regulations and registered user on the land parcel. e) Section 6 of these regulations state that any person intending to construct or modify a building must comply with the relevant building codes, local planning authority by-laws, and physical planning requirements. The approving authority may impose conditions regarding the location, size, height, shape, and appearance of the building to preserve the dignity and aesthetic of the surrounding area, such as streets, squares, or public	The proposed green affordable housing is not in the exclusion list of these regulations. The proponent shall be required to submit the building plans to the planning authority. The proposed project plan and/or site should have at least 0.094 acres preserved for tree cover. The proponent should comply with the relevant building codes, local planning authority by-laws, and physical planning requirements. The proposed housing development including sanitary facilities should be positioned to ensure optimal hygiene and sanitation, while minimizing nuisance or disruption. During the construction stage, an on-site construction board should be displayed in accordance with these regulations. Safety, security and light considerations should be included in the project's design.

Item	Description	Relevance
	spaces. f) Additionally, new buildings or extensions, including latrines and sanitary facilities, must be positioned to ensure optimal hygiene and sanitation, while minimizing nuisance or disruption. g) Developers are also required to display an on-site construction board, clearly identifying the roles of the professionals involved. h) The regulations also make provisions for safety, security and light. That every storey of every building shall be provided with effectual means of lighting and ventilation; adequate access to persons living with disabilities; erected in such a manner so as to allow for adequate natural cross-ventilation. In permitted cases, buildings may be permitted to use ventilating aperture; Security features and access to buildings should be installed so as not to inconvenience the patrons of the building and to afford their safety in case of emergencies (No emergency exits should be blocked or closed on account of security).	
The Physical and Land Use Planning (General Development Permission and Control) Regulations, 2021	a) The objective of these Regulations is to provide for the procedures and standards for development control and the regulation of physical planning and land use. b) Part II Section 4 states that a person who seeks to put land into use other than that which it is registered under shall apply to the planning authority for a change of user; or an extension of user.	Before any construction begins, the developer must submit detailed architectural and engineering plans. This is done to ensure all buildings meet the high standards for safety, health, and aesthetics. The regulations mandate that the development adheres to specific "zoning ordinances," including building lines, plot ratios, and density limits. This prevents haphazard growth and ensures that the residential project does not overwhelm the existing infrastructure (water, power, and roads). The regulations ensure that "wayleaves" for cables and Water pipelines are protected from encroachment, maintaining the integrity of the utility networks.

5.4 National Policies, Plans and Institutional Frameworks

Item	Description	Relevance
Kenya's Vision 2030	(a) Kenya Vision 2030 is the country's long-term development strategy, which aspires to make Kenya a middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. Under the Social Pillar which involves the building of a just and cohesive society that enjoys equitable social development in a clean and secure environment, the pillar aims to improve the quality of life for all Kenyans by targeting a cross-section of human and social welfare projects and programmes. This quest is the basis of transformation in eight key social sectors, namely; Education & Training, Health, Water & Sanitation, Environment, Housing & Urbanization and Gender, Youth, Sports & Culture. This pillar also makes special provisions for Kenyans with various disabilities and previously marginalized communities.	The Kenya Vision 2030 aims to improve affordable housing production in the country. In doing so, there is the need for all housing projects to comply with the national environment vision and respect everyone's right to a clean and healthy environment. The program includes development activities that use sensitive environmental components. The Proponent should ensure that sustainable development principles are respected throughout the project's implementation.
National Environment Policy, 2013	(a) This policy puts up a wide range of suggestions for solutions to pressing environmental problems. Through responsible management and use of the environment and natural resources, this policy seeks to enhance both the quality of life for current and future generations. (b) The policy's main goal is to establish a structure for an integrated strategy for the planning and sustainable management of Kenya's environment and natural resources. (c) The policy also makes sure that the environment is considered in all decisions made by the government in order to promote and realize sustainable development on all fronts. In addition to promoting a green economy, this would also improve social inclusion, human wellbeing, employment possibilities, and ecological health.	This assessment has developed a management and monitoring plan for the project's environmental and social aspects, aiming to better coordinate environmental management and minimize negative environmental impacts. This tool is aimed at promoting coordination of environmental management of the proposed project such that sensitive ecosystems are not destabilized by the subsequent project activities. The Proponent should adhere to this policy's guidelines to ensure environmental protection during the project's construction and operation stages.
National Environmental Action Plan (NEAP)	The National Environmental Action Plan (NEAP) was created with the intention of encouraging and facilitating the integration of plans and programs for Kenya's social and economic development with strategies and measures to conserve and manage the environment. It was created by EMCA to address	To avoid, reduce, or control environmental impacts, the Proponent should abide with NEAP policies and laws because the physical, social, and economic environments may be negatively impacted by project operations. Through project-level EIAs, stakeholders'

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	environmental management and protection at the district, province, and national levels.	comments and inputs should be given high considerations to ensure that environmental integrity is maintained.
National Climate Change Response Strategy, 2010	The National Climate Change Response Strategy (NCCRS) is a strategic document with a multi-sectoral approach whose vision is for a prosperous and climate change resilient Kenya. The objective is to strengthen and focus nationwide actions towards climate change adaptation and Global Greenhouse Gas emission mitigation. In summary, the objective of the NCCRS is to respond to climate change by, among other aspects: ▪ recommending robust adaptation and mitigation measures needed to minimise risks associated with climate change while maximising opportunities, ▪ recommending vulnerability assessment, impact monitoring and capacity building framework needs, Adaptation measures have been proposed for key sectors including Social Amenities comprising human settlements. The measures include strengthening disaster preparedness; proper planning of urban settlements which takes into consideration the expected high growth rate of urban population due to climate induced migration from rural areas to urban centres; and establishing insurance schemes to support preparedness in regions susceptible to climatic disasters.	This strategy provides guidelines on climate resilience, sustainable resource management, and adaptation measures that have to be complied with to ensure the proposed green affordable housing project is environmentally sustainable and aligns with the national climate goals.
Kenya National Adaptation Plan 2015 - 2030	This is a strategic framework designed to enhance the resilience and adaptive capacity of the country to the impacts of climate change. It outlines priority interventions across various sectors aiming to integrate climate resilience into national development policies. The plan emphasizes sustainable practices, vulnerability reduction, and social inclusion, ensuring that adaptation measures address the needs of all communities, particularly the most vulnerable. Through collaboration with local and international partners, the Kenya National Adaptation Plan provides a roadmap for mainstreaming climate change adaptation into long-term development planning.	This plan offers guidance on incorporating climate-responsive design, sustainable urban planning, and improved building standards that safeguard infrastructure and communities from climate impacts. Undertaking a climate vulnerability and risk assessment is essential to identify potential hazards, adapt construction methods, and implement mitigation strategies. This not only aligns the project with national adaptation priorities but also enhances its long-term durability and safety, ensuring that housing developments contribute to resilient urban growth and sustainable development in a rapidly

Item	Description	Relevance
		changing climate.
National Climate Change Action Plan 2023 - 2027	This Action Plan aims at aligning climate change actions in the country with the Government's development agenda, and at strengthening the participation in climate change actions by the private sector, civil society, women, youth, children, vulnerable groups and indigenous people. The goal of the Action Plan is to promote Kenya's sustainable development by providing mechanisms and measures to achieve low carbon climate resilient development.	The Action Plan identifies eight priority areas, where actions and targeted measures need to be implemented; the most relevant to this green affordable housing project being health, sanitation and human settlements. The proposed housing project should focus on reducing risks to communities and infrastructure resulting from climate-related disasters; and improving the ability of people to cope with disasters caused by climate hazards.
National Policy on Gender and Development, 2019	The National Policy on Gender and Development (2019) aims to promote gender equality and empower all genders in Kenya. It replaces the Gender Policy of 2011, emphasizing the integration of gender perspectives in all sectors of development. The policy focuses on eliminating gender disparities, promoting women's rights, enhancing women's participation in decision-making processes, and addressing gender-based violence. It underscores the government's commitment to achieving gender equality as a fundamental human right and a driver of sustainable development.	This policy emphasises gender equity in resource access, benefits, and decision-making. This policy guides the ESIA to consider gendered impacts of the project, ensuring that both men and women, especially vulnerable groups, have equitable access to housing benefits, employment, and participation in project planning. Integrating gender considerations helps prevent inequality, promotes inclusive development, and aligns the project with Kenya's sustainable development and social inclusion goals.
Kenya Youth Development Policy 2019	This policy provides the framework for addressing issues affecting the youth, notably employment creation, health, education, sports and recreation, environment, art and culture, partnership and empowerment. It promotes youth participation in economic development and decision-making.	By integrating the policy's objectives, the proposed Green Affordable Housing Project can engage the youth in Loresho-Mountain View area in employment and skill-building opportunities during the construction, operations, and maintenance phases. Engaging the youth in the project through community outreach and stakeholder consultations ensures their inclusion in decision-making processes, fostering a sense of ownership and empowerment. Incorporating these aspects supports the policy's broader aims of reducing youth unemployment and involving young people in the country's development, while contributing to the long-term sustainability of the proposed housing project.

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National Environment Management Authority (NEMA)	(a) The goal and intent behind the establishment of NEMA is to provide broad oversight and coordination over all environmental issues and to serve as the main tool for the government in carrying out all environmental regulations. (b) The main tool used by the government to carry out all environmental policies is NEMA, which is in charge of general supervision and coordination of all environmental concerns. Additionally, the authority is in charge of ensuring that all NEMA regulations are being followed.	The Proponent is required to contract the services of a licensed EIA expert, submit an EIA report to NEMA, and acquire an EIA license from the authority before commencing any construction activities.
County Environment Committee	(a) The County Environment Committee manages the county's environment and creates a strategic environmental action plan every five years for review by the County Assembly. (b) They assist in decentralizing NEMA's operations, enabling nearby communities to access environmental management data. The committees also conduct site visits, review project reports, and attend site meetings.	The project will be monitored by Nairobi City County Environmental Committee, who will review environmental reports and occasionally attend site meetings.
National Environment Complaints Committee (NECC)	The committee, established under EMCA is an environmental ombudsman responsible for investigating environmental complaints in Kenya, playing a crucial role in assessing the country's environmental condition.	The NECC will be crucial in facilitating alternative dispute resolution methods for environmental challenges if any develop in connection with this project.
National Environmental Tribunal (NET)	The tribunal, established under Section 125 of the EMCA, Cap 387, handles all environmental offense cases in Kenya, primarily handling appeals from NEMA's decisions on the issuance, denial, or revocation of environmental impact assessment (EIA) licenses, among other decisions.	The NET would operate very much like a court of law where conflicts regarding the proposed housing project are reported.
National Housing Corporation	(a) The National Housing Corporation (NHC) (established through Housing Act Cap 117 section 3) is responsible for research, experimentation, information dissemination, exhibition participation, training, and other housing-related duties as directed by the Minister. (b) The corporation also establishes and promotes companies' syndicates or partnerships for the carrying out of its functions, and also assist in	NHC aims to make Kenya a "decently housed nation" by providing affordable housing and related services. The proposed green affordable housing by IHS aligns with this vision by offering various housing units.

Item	Description	Relevance
	establishing and promoting partnerships for housing development and related matters.	
Sessional Paper, No. 1 of 2017 on National Land Use Policy	(a) The National Land Use Policy aims to provide a legal, administrative, institutional, and technological framework for sustainable land use and productivity at various levels. It includes recommendations for land use planning, resource allocation, environmental management, coordination of institutional linkages, equitable land resource utilization, anchored land development initiatives, a comprehensive GIS-based national land use information management system, an independent, accountable, and democratic institution for land use conflict resolution, and addressing problems associated with poor land use. (b) The policy aims to promote public good, environmental management, collaboration among land users, and address governance, social, economic, and cultural obligations. It also aims to anchor land development initiatives that respond positively to market demands.	The objective of this policy is to assist the protection and best use of the values of economic production, environmental sustainability, and cultural preservation. The Proponent will be expected to adhere to the principles of this policy.
Kenya Affordable Housing Programme Development Framework Guidelines	The Development Framework Guidelines provide qualitative guidance on the key components of the Affordable Housing Programme. These guidelines provide instruction on how the vision and policies of the GoK, through the SDHUD, will be implemented and how progress will be monitored and reviewed. The aim of the guidelines is to set out: (a) the rationale, priority needs, and trade-offs to achieve consistency between the assessment, policy formulation, and delivery of affordable housing; (b) the affordable housing delivery mechanisms and the means to ensure their financial viability, including the different sources of subsidy. Consistent information for key stakeholders on the process of the development and delivery of affordable housing.	This agreement governs the relationship between the GoK and the developer, private investor, or contractor, and sets out in detail the terms and conditions for the development and delivery of each Project. The developer is required to adhere to these guidelines.

5.5 Nairobi City County Legal Framework

Item	Description	Relevance
Nairobi City County Air Quality Act, 2022	a) The Act provides a legislative framework on air quality in order to protect the right to a clean and healthy environment by providing reasonable measures for the prevention of air pollution and for connected purposes. b) Part II section 8 states that the owner or occupier of a premises involved in any activity or industry that is likely to cause air pollution shall incorporate measures to reduce the emission of air pollutants to the atmosphere in accordance with the best available techniques economically achievable approved by the Chief Officer responsible for environmental issues within Nairobi City County. Section 9 further requires that no person shall discharge a pollutant into the air from any source without a license. c) In case of accidental, emergency or unauthorized release or discharge of a pollutant into the air occurs the person in charge of the undertaking which caused the release or discharge shall immediately inform the Chief Officer or nearest police station within twenty-four (24) hours of the occurrence and submit a written report to the Chief Officer within seven (7) days. d) The Act also prohibits the burning of specific materials at any place without authorisation and in accordance with a valid and subsisting license. e) Any person transporting or storing construction materials or materials from construction works is required to avoid air pollution or dispersion of visible particulate materials by complying with relevant quality standards.	The proponent and contractor shall be required to provide reasonable measures for the prevention of air pollution during both the construction and operation phase.

Nairobi City County Solid Waste Management Act, 2015	(a) The Act makes provisions for the management of solid waste in the county. (b) The Act stipulates that solid waste management is a shared responsibility amongst all actors including the county government, generators, owners and occupiers of premises and contracted service providers. (c) Every occupier, owner or agent of a house or other premise has a duty to clean or cause to be cleaned ten meters radius around his or her house or other premises or any area otherwise in his/her control but which shall include a main road or street. (d) The Act also requires any person who generates solid waste to segregate the waste into various categories.	Proper waste management practices in accordance with this act should be implemented during both the construction and operation phases of the green affordable housing project.
Nairobi City County Public Nuisance Act, 2021	The Act prohibits any person from discharging any dangerous material, substance or oil into land, water or air	The proponent and contractor should ensure that no dangerous material, substance or oil is discharged into land, air or Kangemi Dam during the construction and operation phase of the housing project.
Nairobi City County Persons with Disabilities Act, 2015	(a) Employers should not discriminate against persons living with disability in a way that is contrary to this act. (b) Employers are also required to provide facilities and effect such modifications in the workplace that ensure a barrier-free and disability-friendly environment; this includes access to buildings.	Fair and equal employment opportunities shall be given to persons with disabilities during the recruitment of workers for various phases of the housing project by the proponent and contractor. The proposed housing project should be developed to provide a disability-friendly environment.
Nairobi City County Climate Action Plan 2020-2050	(a) The climate action plan outlines how the City will work towards achieving its emissions reduction targets and reduce the vulnerability of its citizens to climate change impacts. It aims, through defined theme areas, to cover adaptation and mitigation in an integrate way thus, creating a cohesive climate action plan. Working together with the national government, city stakeholders, and all citizens, the city aims to transition to a lower emissions and resilient future through the following goals and ready to implement and supporting actions. (b) Nairobi's extended conditional target aims to achieve a 24% reduction below BAU emissions by 2025, 51% reduction by 2035, and will strive to achieve carbon neutrality by 2050 .	By aligning the proposed housing development with the plan's objectives, IHS can contribute to Nairobi's climate action goals, reduce the development's environmental footprint, and create more sustainable and comfortable living spaces for residents.

5.6 EIB Environmental and Social standards

Promoting sustainable and inclusive development is at the heart of the EIB's objectives and its lending strategy. The EIB Group Environmental and Social Policy provides the overarching framework for the Group's commitments and a vision for the critical decade up to 2030, placing sustainable finance at the centre of everything the EIB does. To honour its sustainability commitments, the EIB has adopted a set of 11 environmental and social standards (E&S) that establish the requirements the promoter and the project must meet throughout the EIB project life cycle. Here is a summary of these standards. A summary of the EIB-E&S Standards is as provided in table 11.

Table 11: Overview of the Applicable EIB E&S Standards

Item	Description	Relevance
Standard 1 – Environmental and Social Impacts and Risks	This Standard promotes an integrated approach to impact assessment and risk management by ensuring that environmental, climate, social and human rights considerations are addressed and taken into account in the decision-making processes. It also recognises the importance of the promoters' commitment to effective and sustained environmental and social performance through the establishment of an environmental and social management system commensurate with the identified impacts and risks. This Standard applies to all projects likely to have significant environmental, climate and/or social impacts and risks. These impacts and risks need to be taken into account at the earliest possible stage of planning and decision-making processes, including to ensure consistency with “Do Not Significant Harm” (DNSH) and “Minimum Safeguards” (MS) principles and requirements. Standard 1 also requires such projects to comply with the applicable national legislation and includes the steps for carrying out the EIA process.	This ESIA has been conducted as part of compliance with Kenya's environmental legislation and as per EIB Standard 1.
Standard 2 – Stakeholder Engagement	This Standard emphasizes the significance of stakeholder engagement in project management, ensuring access to information, public participation in decision-making, and access to justice. The promoter shall engage with stakeholders early on in the decision-making process, when all options are still open, to allow for their meaningful contribution and ensure that their opinions, interests and concerns are considered to reach an optimal result. The engagement process shall be respectful of human rights, including the rights to privacy and data protection guidelines, and adapted to the country context by acknowledging and respecting the values and the historical, cultural and local knowledge of affected communities and other stakeholders. The promoter shall engage with stakeholders in a manner that is free from intimidation, coercion or violence against any individuals, in particular those who voice their opinion in relation to the project. This shall include the establishment and/or maintenance of a Grievance Mechanism.	Detailed stakeholders' engagements have been undertaken as part of this ESIA. Different stakeholders were consulted to get their views and comments about the proposed green affordable housing project. Among the key stakeholders consulted were members of the local communities residing and working near the proposed project site. Their views and comments have been captured in the stakeholder chapter of this ESIA.
Standard 3 – Resource efficiency and pollution prevention	This Standard acknowledges resource efficiency's role in reducing environmental pressures and curb climate change, while boosting competitiveness through cost savings from improved efficiency, commercialisation of innovation and better management of resources over their whole life cycle. It promotes the transition to a circular economy by utilizing technologies, processes, and services to	The design technologies used by the proponent have taken into consideration the need for enhanced resource use efficiency, especially during the construction and

Item	Description	Relevance
	achieve environmental quality objectives. The promoter shall be prepared to respond to any incident, accident and emergency; ensure management of waste; and sound management of hazardous substances and materials.	occupation phases of the project. For instance, the installation of water-efficient devices and the use of renewable energy (solar systems) have been incorporated into the proposed green affordable housing design.
Standard 4 – Biodiversity and Ecosystems	The EIB emphasizes the importance of protecting biodiversity and ecosystems for environmental and social sustainability. It supports projects that maintain biodiversity integrity and resilience, aiming to halt biodiversity loss and increase benefits. For all projects, the promoter shall identify, assess and manage the impacts and risks that could potentially affect biodiversity and ecosystems, either positively or negatively, directly or indirectly, and on which the project may depend on for its success. The promoter shall also take into consideration the risks associated with the accidental or deliberate introduction of invasive alien species throughout the project's life cycle; ecosystem services assessment; identification and assessment of supply chains.	The proposed project site does not host any biodiversity with significant conservation concerns.
Standard 5 – Climate Change	This Standard acknowledges the urgent need to combat climate change, a global threat causing severe impacts on people, ecosystems, and the planet. It emphasizes the role of finance in supporting low-carbon and climate-resilient development. All projects shall also be consistent with the delivery of applicable climate change mitigation and adaptation objectives, and/or be consistent with reaching emission reduction or resilience pathways, in accordance with relevant national legislation implementing the Paris Agreement as well as any other international agreements relevant to the fight against climate change. All projects shall comply with the EIB's alignment framework, as set out in the EIB Group Climate Bank Roadmap (CBR), including to ensure consistency with the "Do No Significant Harm" principle to climate change mitigation or adaptation objectives, as defined by the EU Taxonomy Regulation. The promoter shall provide the EIB with information establishing the project's impact on GHG emissions and its vulnerability to physical climate change risks, as well as its alignment with relevant low-carbon and climate-resilient pathways. The extent of the promoter's reporting requirements relating to physical and transitional climate risks and impacts shall be commensurate to the risks and potential impacts	The ESIA has identified possible impacts of the proposed project, especially on-air pollution. Appropriate mitigation measures have been proposed for the two project phases, construction and occupation. On the basis of the analysis undertaken as part of this ESIA, the project will not pose significant threats to both macro- and micro-climates.

Item	Description	Relevance
	identified.	
Standard 6 – Involuntary Resettlement	Involuntary resettlement is displacement resulting from land acquisition or restriction on land use, including physical and economic displacement. It can have severe negative effects on the economic, social, and cultural well-being of rights-holders. It can lead to temporary or permanent loss of income sources, relocation to less suitable environments, and inadequate compensation. Efforts should be made to avoid involuntary resettlement in the first instance. Where involuntary resettlement cannot be avoided, it should be minimised and appropriate measures should be implemented to mitigate adverse impacts on rights-holders with a view to improving or at least restoring their socioeconomic and cultural conditions. Management of involuntary resettlement shall be based on consultation of affected persons and disclosure of information to the public. In projects requiring the displacement of persons, such as slum-dwellers or squatters, that are occupying land or assets without a formal title, the promoter shall prepare and implement a plan in compliance with this Standard.	The project will not involve involuntary resettlements as it will be undertaken on a site already acquired and designated for the proposed project. As such, the project does not trigger EIB Standard No. 6.
Standard 7 – Vulnerable Groups, Indigenous Peoples and Gender	This Standard outlines the responsibilities of promoters in terms of assessing, managing and monitoring project impacts, risks, and opportunities related to Indigenous Peoples as well as persons or groups that are vulnerable, marginalised or discriminated against due to their socioeconomic characteristics. The vulnerability of vulnerable or marginalised persons and groups, who are exposed to multiple risks and adverse impacts simultaneously, are more sensitive to these risks, and have a weaker adaptive capacity due to limited access to resources. These individuals or groups may be systematically discriminated against or excluded based on their socioeconomic characteristics, such as sex, gender, race, ethnicity, religion, or economic status. The promoter shall take the necessary measures to identify and avoid potential project risks and impacts that would affect the lives and livelihoods of vulnerable, marginalised or discriminated against persons and groups, and Indigenous Peoples; or when avoidance is not feasible, to reduce, minimise, mitigate or effectively compensate/remedy such impacts. Such projects shall comply with the relevant national legislation and this Standard, To this end, the promoter shall, as relevant, seek to strengthen their adaptive capacity and give them equal opportunity to voice their opinions about proposed project activities and mitigation measures that	The proposed project will not have effects on vulnerable, indigenous peoples or gender. The project will be undertaken on a site already acquired and designated for the proposed project. As such, the project does not trigger EIB Standard No. 7.

Item	Description	Relevance
	might affect them. The promoter shall adopt a gender-responsive approach to the identification, management, and monitoring of environmental and social impacts and risks that considers the rights and interests of women and girls, men and boys, and non-binary and gender non-conforming persons, including specific attention to the differential burdens, barriers and impacts that they might experience, including gender-based violence and harassment.	
Standard 8 – Labour Rights	This Standard applies to project workers including full-time, part-time, temporary, seasonal and migrant workers. It aims to ensure that promoters of EIB projects comply with the core labour standards of the International Labour Organization and with national labour and employment laws. It sets the need for a workers' grievance mechanism. It further defines standards to protect migrant workers and workers affected by collective dismissals. The standard also requires the establishment, maintenance and improvement of worker-management relationships and terms and conditions of employment. The standard defines the assessment requirements that are needed for the promoter's own workforce, third-party workers and supply chain workers. The promoter shall pay special attention to identifying the likelihood of risks of child labour, forced labour, discrimination and unequal treatment towards migrant or non-national workers, discrimination and/or restrictions to freedom of association or other risks of violations of fundamental labour rights, due to the country context, sector, contractor or supply chain. In addition, projects shall as well comply with any obligations deriving from the relevant international conventions and multilateral agreements signed and ratified by the host country or otherwise applicable in the host country.	The promoter (IHS) should use reasonable efforts prior to contracting for the construction work to ascertain that the contractor(s) or the intermediaries to assume their legal responsibilities with regard to employment and the implementation of the requirements of this Standard. The promoter should establish policies and procedures for managing and monitoring the performance of third parties in relation to contracted workers and the requirements of this Standard. IHS has already developed an elaborate grievance redress mechanism for the project. The GRM addresses key issues related to labour rights.
Standard 9 – Health, Safety and Security	This Standard, whilst acknowledging the role of relevant authorities in protecting and promoting the health and safety of workers and the public, outlines the promoter's responsibilities in assessing, managing and monitoring occupational and public health, safety and security risks associated with projects supported by the EIB. The Standard requires promoters to use reasonable efforts to identify these hazards, risks and impacts and to design and use of appropriate measures to avoid or mitigate adverse health and safety impacts associated with project activities on the rights-holders (project workers, supply chain workers, and	As part of the ESIA, health, safety, and security concerns were identified, and appropriate mitigation measures were proposed to address them.

Item	Description	Relevance
	affected people and communities).	
Standard 10 – Cultural Heritage	This Standard emphasizes the importance of protecting and conserving cultural heritage, which is a source of valuable historical and scientific information, an asset for economic and social development, and an integral part of people's cultural rights, identity, and practices. Projects that are likely to have significant cultural heritage impacts shall be subject to an Environmental and/or Social Impact Assessment (ESIA) process and should include considerations of potential human rights risks. All projects shall also align with the principles and standards set out in the international instruments concerning the protection of cultural heritage, such as the UNESCO 1972 Convention concerning the Protection of the World Cultural and Natural Heritage. The promoter is responsible for locating and designing a project in such a manner that it will avoid significant adverse impacts on cultural heritage. This Standard also applies to projects under implementation that are likely to have a significant impact on cultural heritage but were not previously identified as such and for which chance find procedures shall be applied.	The assessment concluded that there is an absence of any identified sacred shrines or ongoing cultural activities within and the immediate vicinity of the proposed project site. This finding indicates that the project's development is highly unlikely to directly impact or disrupt recognized cultural or religious practices.
Standard 11 – Intermediated Finance	The EIB uses intermediated finance to support smaller projects by SMEs, midcaps, and public entities. These projects are designated as sub-projects and must be identified, assessed, managed, and monitored based on their size, nature, socioeconomic context, location, and sector sensitivity to Environmental, Climate and Social (ECS) impacts and risks. For such projects in Kenya, the Financial Intermediary (FI) shall require final beneficiaries to ensure that rights holders have access to meaningful stakeholder engagement and effective means to raise grievances on ECS matters in connection with sub-projects benefiting from EIB support. In order to enhance transparency on non-financial, sustainability-related information, the FI shall if the located in the rest of the world, comply with the applicable national legislation and as a matter of course make available to the public information on its due diligence and monitoring policies and procedures, or equivalent, for assessing, managing and monitoring the ECS impacts and risks of sub-projects.	The proposed project is of appropriate scale and will not trigger EIB Standard No. 11.

5.7 International Agreements

Multilateral Agreements	Relevance
Paris Agreement, 2015	The treaty for aligning with global climate action goals, particularly in terms of minimizing greenhouse gas emissions and considering climate adaptation.
Vienna Convention for the Protection of the Ozone Layer (1985)	This treaty mandates the reduction of ozone-depleting substances. The project must ensure that construction and operational processes do not involve or release such substances, thus contributing to global efforts to protect the ozone layer.
The International Convention on Biological Diversity	The Convention is a multilateral treaty with three main goals. These are the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources.
The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)	The agreement aims to conserve migratory water bird species.
The convention on International Trade and Endangered species of Wild Fauna and Flora (CITES).	CITES is a multilateral treaty to protect endangered plants and animals. It aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival.
Convention on the Conservation of Migratory Species of Wild Animals.	The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) aims to conserve terrestrial, aquatic and avian migratory species throughout their range.
International Plant Protection Convention	The objectives of this agreement is to: protect sustainable agriculture and enhance global food security through the prevention of pest spread; protect the environment, forests and biodiversity from plant pests; facilitate economic and trade development through the promotion of harmonized scientifically based phytosanitary measures. The convention requires the parties to secure common and effective action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control.
Stockholm Convention on Persistent Organic Pollutants	The objective of the Stockholm Convention, which was adopted on 22 May 2001 and entered into force on 17 May 2004, is to protect human health and the environment from Persistent Organic Pollutants (POPs). The Convention requires Parties to adopt and implement measures aimed at reducing and/or eliminating the releases of POPs into the environment.
Aichi Biodiversity Target on Invasive Species	The major aim of this agreement is to eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, and reducing the rates of introduction.
Convention on the Elimination of All Forms of Discrimination against Women	These treaty require that the project promotes gender equality and safeguards women's rights. This involves ensuring equal employment opportunities and addressing specific needs of women in community engagement and project implementation.
The Protocol to the African Charter on the Rights of Women in Africa (Maputo	The Maputo Protocol underscores the importance of gender equality, emphasizing equitable access to resources and the involvement of women in decision-making. In the context of the water pipeline project, this means ensuring

Protocol)	that women and girls have equal access to the new water resources and are actively included in planning and decision-making processes to address their specific needs. By aligning with these principles, the project supports gender equality and enhances its overall effectiveness.
Convention on the Rights of the Child	The project must consider and protect the rights and welfare of children, ensuring that construction activities do not adversely affect their health, education, or overall well-being.
The African Charter on the Rights and Welfare of the Child	The African Charter on the Rights and Welfare of the Child emphasizes the right to access clean water and protection from harm. For the water pipeline project, this means ensuring the pipeline delivers safe water to children and implementing measures to safeguard them from construction-related hazards.
Convention on the Rights of Persons with Disabilities	This requires the project to ensure accessibility for persons with disabilities, both in terms of physical access to project areas and in employment opportunities.
The African Charter on Human and Peoples' Rights (African Charter)	The project must respect and uphold the human rights of local communities, including their right to a healthy environment and participation in decision-making processes

6 CHAPTER 6: STAKEHOLDER ENGAGEMENT

6.1 Introduction

The Government of Kenya policy on stakeholder engagement is to engage communities in policy formulation and implementation at a local level. More specifically, the Community Action Planning Programme's objective is to put in place a durable system of intra-community co-operation through collective action, which creates communal discussion forums for the implementation of development activities. The Government of Kenya has enshrined the need for human societies' involvement in project development in the Constitution. The engagement process has been designed to meet both Kenyan legal requirements, specifically the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 for public participation in an ESIA report. Community consultation and participation ensures that communities and stakeholders are part and parcel of the proposed developments and in doing so assures the sustainable use of resources. It has also demonstrated successfully that projects that go through this process will acquire high level of acceptance and accrue benefits to a wider section of the society.

Continuous stakeholder engagement forms a useful component for gathering, understanding, and establishing likely impacts of projects determining community and individual preference and selecting alternatives. Furthermore, through stakeholder engagement, it is possible to improve project designs and ensure sustainability of the project. This chapter sets out the general approach to participation and communication with stakeholders, proposed as part of the Environmental and Social Impact Assessment (ESIA) for the proposed development of 375 green housing units by IHS Kenya. Community participation and consultation were undertaken among people living around the proposed housing unit's development project area of influence as an integral part of the ESIA study.

This chapter begins by outlining the benefits of public participation to the developer, the public, and to the decision makers. The next section discusses the objectives of undertaking consultation and public participation, key informants, key issues, concerns, and expectations raised by the stakeholders. The section further discusses the national framework for undertaking stakeholder consultation. Subsequently, it outlines the stakeholder identification and mapping process followed for undertaking the consultation meetings to ensure relevant parties are recognized. Additionally, the section concludes by discussing the Proponent's robust Grievance Redress Mechanism, designed to address complaints received regarding the proposed project, and suggesting the next steps following the stakeholder engagement associated with this ESIA Study.

6.2 Objectives of stakeholder consultation

Stakeholder engagement refers to a process of sharing information and knowledge, seeking to understand the concerns of others and building relationships based on collaboration and partnership. It is a long-term process that requires the building of trust through open dialogue and the delivery of commitments.

The most important objective of stakeholder consultation is to provide sufficient and accessible information to potential Interested and Affected Parties (I&APs) in an objective manner and to provide a platform for constructive participation in the application process.

Specific objectives of the Stakeholder Engagement for the proposed green affordable housing units include the following:

- ❖ **Communication with stakeholders:** To identify the best methods for project developers to provide stakeholders with balanced and objective information on the proposed projects and to obtain their feedback;
- ❖ **Ensuring understanding:** An open, inclusive and transparent process of culturally appropriate engagement and communication is undertaken to ensure that stakeholders are well informed about the proposed project as it develops. Information is disclosed early and as comprehensively as possible and as appropriate
- ❖ **Involving stakeholders in the assessment:** Stakeholders are included in the scoping of issues, the assessment of impacts, the generation of mitigation measures and the finalization of the EIA study. They also play an important role in providing local knowledge and information for the baseline to inform the impact assessment.
- ❖ **Building relationships:** Develop a model for the project developers to use for enhanced community participation and collaboration through the project lifecycle, including environmental mitigation and management;
- ❖ **Managing Expectations:** It is important to ensure that the project does not create or allow unrealistic expectations to develop amongst stakeholders about Project benefits. The engagement process serves as one of the mechanisms for understanding and then managing stakeholder and community expectations, where the latter is achieved by disseminating accurate information in an open manner
- ❖ **Ensuring Compliance:** The process is designed to ensure compliance with both local regulatory requirements and international best practices on stakeholder engagement
- ❖ **Grievance Redress:** To provide tools for effective resolution of community issues during project implementation.

One of the key outcomes of engagement should be free, prior, and informed consultation of stakeholders, where this can be understood to be:

- **Free:** engagement free of external manipulation or coercion and intimidation;
- **Prior:** engagement undertaken in a timely way, for example, the timely disclosure of information; and
- **Informed:** engagement enabled by relevant, understandable and accessible information

IHS recognizes that open and transparent communication is essential due to the importance of the activities in which it is engaged and the impact on the local, regional, and national economies and individuals.

6.3 Benefits of Public Participation

6.3.1 *Benefit to the Project Developer*

The following benefits of public participation will accrue to the developer:

- The developer will gain valuable insights from local knowledge and community perspectives.
- Project costs may be minimized since public input will help identify priority concerns, allowing studies to focus on critical issues rather than a broad range of matters.

- Stakeholders will help identify suitable measures for mitigating negative impacts and enhancing project benefits.
- Engagement will strengthen relationships between the developer and the surrounding communities.
- Early and effective participation will help reduce delays in decision-making processes.
- The likelihood of public opposition to the project will be minimized through inclusive engagement.
- Meaningful public participation will enhance the developer's image and overall reputation.

6.3.2 Benefits to the Public

The following benefits of public participation will accrue to Civil Society and the public:

- Capacity will be built as people actively participate in the process, and the skills gained may be applied in other community projects.
- Civil Society and the public will exercise and advance their rights through active participation.
- Their inputs will influence the form and nature of the development, likely resulting in improved outcomes that better reflect societal needs.

6.3.3 Benefits to the Decision Makers

The following benefits of public participation will accrue to decision makers:

- Public participation will improve decision-making by providing access to a wider range of perspectives and opinions on the proposed development.
- The development will likely be more sustainable as it will incorporate the needs and views of the people affected.
- Governance and the legitimacy of the government will be strengthened through inclusive and transparent processes.

6.4 Overview of Engagement Requirements

6.4.1 National requirements

6.4.1.1 The Constitution of Kenya, 2010

Consultation and Public Participation (CPP) is a mandatory requirement for proposed projects as entrenched in the Constitution of Kenya, 2010, and in the EMCA 1999 (amended 2015) section 58, by achieving sustainable development. Part III Section 17 of the Environmental (Impact Assessment and Audit) Regulations of 2003, further requires that all ESIA studies incorporate public consultation to ensure all parties interested in the proposed project are informed of anticipated project impacts and benefits, and that their views, concerns, and recommendations are incorporated in project planning, design, construction, operation and decommissioning phases. The CPP process is further supported by the Kenya Public Participation Bill of 2018 further supports the CPP process.

6.4.1.2 The Environmental and Management Coordination Act- Legal Notice 32

Legal Notice 32 of 2019 titled "The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 public participation and consultation requirements states that the Proponent will:

1. Seek the views of persons who may be affected by the project in consultation with the Authority (NEMA);
2. Publicize the project and its anticipated effects and benefits by erecting posters in strategic public places informing the affected parties and communities of the proposed project;
3. Hold public meetings with the affected parties and communities to explain the project and its effects, and to receive their oral or written comments.
4. Ensure that appropriate notices are sent out at least one week prior to the meetings and that the venue and times of the meetings are convenient for the affected communities and the other parties concerned.
5. Publish a notice on the proposed project in a newspaper that has a nationwide circulation and announce in both official and local languages on a radio station with nationwide coverage;

Upon submission of the ESIA report to NEMA, the Authority shall, within fourteen days of receiving the report, invite the public to provide oral or written comments. If deemed necessary, the Authority may then hold a public hearing based on these comments.

6.4.2 Lender Requirements

Lender(s) expect that promoters uphold an open, transparent, and accountable dialogue with all relevant stakeholders at the local level targeted by its operations. This stresses the value of public participation in the decision-making process throughout the preparation, implementation, and monitoring phases of a project.

A meaningful engagement process allows for the efficient implementation of a financed operation and in particular, the early and effective identification, assessment and management of any environmental and social risks, impacts, and opportunities. The views, interests and concerns of project-affected communities and other interested stakeholders are heard, understood, and taken into account throughout the project lifecycle.

Effective and meaningful engagement and consultation is a two-way process to be guided by the following general principles:

- ✚ be initiated by the promoter early in the process of identification of environmental and social risks and potential adverse impacts and continue throughout the project life cycle as risks and impacts arise;
- ✚ be inclusive of the affected communities and accessible to any vulnerable groups within, and differentiated by various segments;
- ✚ be inclusive, beyond the affected parties, of any groups or individuals who have been identified as other interested parties; and
- ✚ be adequately documented both in substance and process

Specific objectives of stakeholder engagement and public consultation include the following:

- ✚ Establish and maintain a constructive dialogue between the promoter, affected communities and other interested parties throughout the project life cycle;
- ✚ Ensure that all stakeholders are properly identified and engaged;

- ✚ Engage stakeholders in the disclosure process, engagement, and consultations appropriately and effectively throughout the project lifecycle, in line with the principles of public participation, non-discrimination and transparency;
- ✚ Ensure that the relevant stakeholders including commonly marginalized groups on account of gender, poverty, educational profile, and other elements of social vulnerability, are given equal opportunity and possibility to voice their opinions and concerns, and that these are accounted for in the project decision-making.

6.5 Engagement Approach: Affected Parties and Other Stakeholders

6.5.1 Stakeholder Identification and Analysis

Stakeholder identification and analysis is the first critical step in the stakeholder consultation and engagement process. This section outlines the process of addressing the following:

- Approach to the identification of stakeholders;
- Analysis of stakeholders to determine the extent to which they are potentially impacted by the project, or could exert influence on the project; and
- Overview of consultation and engagement approaches and tools relevant

As it is not practical and not necessary to engage with all stakeholder groups with the same level of intensity all of the time, a stakeholder identification and analysis process was conducted where stakeholders were identified and mapped. This will form the foundation for planning and designing of successive stakeholder engagement activities. The stakeholder mapping was done based on the identification of individuals, communities, groups and institutions who:

- Are most likely to experience at significant levels, the negative and/or positive impacts of the proposed project;
- Have the mandate over the various elements of the project's activities (such as Government ministries and leadership);
- Are considered the projects main supporters and opponents

For the proposed project, project stakeholders include the following categories of persons or institutions:

1. Project Owners & Financiers

- The Project Proponent-IHS Investments
- The project financiers

2. Those directly and indirectly affected by the project, including their legitimate representatives

- a) Directly affected persons/parties such as;
 - Occupiers of neighbouring residential estates e.g. Waiyaki Real Garden
 - The neighbouring communities (men, women, and the youth living in close proximity to the project area)

- b) Indirectly affected people/parties: private sector businesses operating in the vicinity of the proposed project.
- c) Legitimate representatives of project-affected people;
 - Project Area Administration Personnel
 - National Government Administrative Officials (NGAOs) i.e., Chiefs, Assistant Chiefs, and Nyumba Kumi Representatives
 - Level three Property Managers/Members of Resident Associations, and neighbouring residential parks and estates..

3. Stakeholders with an influence on the project;

- a) Institutions, groups, and individuals who are involved in approving/implementing aspects of the:
 - County Government of Nairobi
 - Government parastatals such as the National Environment Management Authority (NEMA), National Construction Authority and Directorate of Occupational Safety and Health Services (DOSHS), and Water Resource Authority.
 - Landowners
 - Resident/Unit Owners
 - Tenants

6.5.2 Stakeholder Mapping and Analysis

The stakeholder analysis process sought to prioritize identified stakeholders based on: interests and expectations in relation to the proposed project; required levels of participation for each stakeholder throughout the project lifecycle; degree of influence of each stakeholder group to the direction and success of the proposed project; interrelationships between different stakeholders and the convergence/divergence between their interests and expectations.

'Interest' measures the degree to which stakeholders are likely to be affected by the project and the degree of interest/concern they have in or about it.

'Power/Influence' refers to leverage a stakeholder may have in relation to decisions either taken by or affecting the project and the degree to which they can affect project success/failure.

A comprehensive stakeholder identification and mapping exercise was conducted to ensure recognition of all relevant parties. Stakeholders were categorized based on:

- Their likelihood of experiencing significant positive or negative impacts from the project;
- Their mandate or authority over various project elements, including local administration;
- Their vulnerability within the project area; and
- Their potential role as supporters or opponents of the development.

For the proposed project, stakeholders include:

- Project Proponent/ Developer: central to decision-making and ESIA compliance.

- Contractors/ Sub-contractors: construction implementation, safety, ESMP adherence.
- Nairobi City County Technical Departments: Lands, Planning & Housing- review of site plans, zoning compliance, and approvals. Environment & Water-guidance on stormwater, water supply, and environmental compliance. Fire Safety- review and inspection of fire-fighting infrastructure and emergency preparedness.
- Local Administration /Community Leaders: Chiefs, Assistant Chiefs, and Nyumba Kumi representatives – facilitate communication with the local community and support conflict resolution during construction.
- Directly impacted neighbours / landowners: Households living adjacent or near the site who may experience temporary or long-term impacts such as dust, noise, traffic changes, or changes to access routes.
- Adjacent property managers / occupiers: Commercial or residential property managers located immediately next to or near the project site who may be affected during construction and operation.
- Vulnerable groups: Women, youth, elderly, and persons with disabilities within the area of influence, whose perspectives are essential to ensuring inclusive project planning.
- Utility Authorities: water service providers, KPLC, internet service providers

To ensure comprehensive and inclusive participation, the Stakeholder Engagement Plan (SEP) identifies the relevant parties and outlines the strategy for their involvement, as presented in the subsequent table. This matrix classifies stakeholders based on their primary area of interest, quantifies their relative influence and level of interest in the project, defines the periods of planned active consultation, and stipulates the formal communication methods to be employed for sustained and transparent dialogue.

Table 12 below depicts the recommended stakeholder communication strategy based on their level of influence/power and interest in relation to the proposed project.

Table 12: Communication strategy based on the stakeholder power/ interest matrix

Stakeholder Category	Influence/ Power	Interest/ Impact	Engagement Approach	Frequency
Project Proponent	High	High	Direct coordination meetings, review of ESIA, decision-making	Continuous throughout ESIA and construction
Contractors/Sub-contractors	Medium-High	High	KIs, coordination meetings, site briefings	Throughout construction phases
Nairobi City County Technical Departments (Lands, Planning & Housing, Environment & Water, Fire Safety)	High	Medium	Technical consultations, review of mitigation measures	At ESIA milestones and compliance checks
Local Administration /Community Leaders (Chiefs, Assistant Chiefs,	High	Medium	Meetings, information dissemination, liaison	Early ESIA stages, ongoing as

Nyumba Kumi representatives)			with residents	needed
Directly Impacted Residents / Landowners	Low	High	FGDs, public meetings, surveys, complaint registers	ESIA scoping, disclosure, and construction feedback
Adjacent Property Managers / Occupiers	Medium	Medium	Focused meetings, site inspections, liaison	Initial consultation and follow-up during construction
Vulnerable Groups (Women, Youth, Elderly, Persons with Disabilities)	Low	High	Targeted interviews, FGDs, participatory discussions	Early ESIA stages and ongoing feedback sessions
Utility Providers (Telecommunication, KPLC, Water Service Providers)	High	Medium	Formal submissions, technical consultations, site inspections	During ESIA review, approvals, and compliance m

The table overleaf presents the findings of the stakeholder analysis for the proposed project. This is a live matrix that will be updated prior to the commencement of and during every phase of the proposed road project improvements.

Power/Interests Rating Colour Scale

	Very Low
	Low
	Moderate
	High

Scale for Categorizing Influence/Power and Level of Interest

Category	1-2	3-4	5-7	8-10
Influence/Power	Very Low	Low	Moderate	High
Level of Interest	Very Low	Low	Moderate	High

Table 13: Stakeholder Analysis and Communication Plan (PUS-Public Sector PRS-Private Sector)

ID	Stakeholder	Area of interest	Periods of Active Engagement	Influence /Power	Level of Interest	Method of communication
PRS 1.	IHS Investments	- In charge of the design of the proposed green housing units - Undertakes asset management - Cooperation with Govt. agencies and all other stakeholders - Ensures compliance with Kenyan ESHS laws	- Throughout the project lifetime	9	9	
PRS 2.	Nairobi City County Technical Departments	- Permits and licenses - General county development - Ensuring county social and economic development	- Preconstruction and Construction phases	7	4	- Emails - Phone - Official letters - One on one meetings
PRS 3.	Service Providers like NCWSC and KPLC	- Provide connection of utility service, such as water, sanitation, and power	- Operation phase	7	9	- Emails - Phone - Official letters - One on one meetings - Lease agreement - Project Design, architectural and structural plan - Applications for design approvals - ESIA Report - Application for approvals

ID	Stakeholder	Area of interest	Periods of Active Engagement	Influence /Power	Level of Interest	Method of communication
PRS 4.	Neighbouring Establishments Residential Estates Private Institutions	- Project affected - Impacts of the project - Proposed Mitigation Measures - Project Grievance Mechanism	- Preconstruction and construction phases	5	7	- Official Letters - Phone - One-on-One Meetings
PRS 5.	Contractors + sub-contractors)	- Successful completion of the project - Compliance with Kenya's construction and	- Preconstruction and construction phases	7	8	- Emails - Phone - One-on-one meetings - Contractual Agreements
PRS 6.	Residents/Unit owners	- Housing units built to standard - Costs of the units - Maintenance of the units	- Operations Phase	8	9	- Media announcements - Sale Agreements - Emails - Official letters
PUS 1.	National Construction Authority	- Compliance with construction industry laws - Registration of the project	- Preconstruction and construction phases	6	4	- Emails - Official letters - Phone - One on one meetings
PUS 2.	DOSHS	- Issues Workplace Registration certificate to the construction company (contractor) - Registers the site as a	- Preconstruction and construction phases	6	4	- Emails - Official letters - Phone - EIA Report

ID	Stakeholder	Area of interest	Periods of Active Engagement	Influence /Power	Level of Interest	Method of communication
PUS 3.	County Department of Water and Environment, Energy & Natural Resources	"construction site". - Environmental and natural resource conservation	- Preconstruction and construction phases	7	4	- Emails - Official letters - Phone conversations - One on one meetings - Project Design, architectural and structural plan - ESIA Report
PUS 4.	National Government Administrative Officers (NGAOs, Chiefs, Asst. Chiefs)	- Community development and participation - Mobilization of Locally affected persons (neighbouring communities etc.) - Have an interest in the CSR Program	- Throughout the project's lifetime	4	4	- Official Letters - One on one meetings - Phone - Public/Baraza Meetings
PUS 5.	National Environment Management Authority (NEMA)	- Ensures compliance with environmental regulations - Grants or withdraws environmental-related permits (such as EIA License) and monitors compliance with operations - Inspect and monitor the impact of the project on the environment - Imposes measures (Improvement Orders) to fulfil legal obligations	- Preconstruction and construction phases	8	4	- Emails - Official letters - Phone - One-on-one meetings - ESIA Report - ESIA Licence

6.5.3 Disclosure of Project Information

Dissemination of project information was done through both verbal discussions and visual/diagrammatic presentations. The ESIA consultant team together with the IHS Project Team were able to provide stakeholders with information on:

- the purpose, nature, objectives, and scale of the project;
- potential adverse impacts and risks with regard to the environment, socio-economic setting, impact on safety, and security on the communities;
- the proposed mitigation measures;
- Potential benefits and enhancement measures;
- the available grievance mechanism; and
- The ESIA process

The following support materials were prepared for stakeholder dialogue:

Table 14: Materials used for stakeholder dialogue

Tools/Material	Contents	Usage
- Public Posters	- Prepared in both English and Swahili languages - Highlight of the proposed project - The ESIA requirements - Invitation to the Public Participation Meeting - Contact information through which comments/concerns on the proposed project can be submitted	- Placed in a strategic venue within the project area accessible to the public i.e., the Area Chief's camp
- PowerPoint Presentation	- Contained a synopsis of the proposed project and the project team - The EIA and stakeholder engagement process	- PowerPoint presentations during the public barazas



Plate 19: Public Notices posted at the Chief's Office noticeboard

6.6 Data Collection Tools

Data collection tools/materials were developed prior to the stakeholder consultation and participation activities.

The tools developed were mainly a project brief, semi-structured questionnaires/checklist and questionnaires to disseminate information to the stakeholders regarding the proposed project and receive feedback on its potential environmental and social impacts. The tools aimed to capture public concerns/views regarding the project and gather demographic data of the target stakeholder group. The nature of the data collected using these materials was a combination of both qualitative and quantitative depending on how the tool was structured. The following are the data collection tools that were used:

1. Minutes Template

The views/concerns expressed by the stakeholders and all other discussions were captured and recorded in the minutes. The minutes also detailed how specific project team members who were available in the meetings to provide information on the proposed project responded to the issues raised.

2. General ESIA Questionnaire and Semi-Structured Questionnaire/Checklist

Questionnaires were used as part of the data collection tool to gather comprehensive information from various stakeholders. Semi-structured questionnaires/checklists were used during KIs and FGDs. The questionnaires included sections designed to capture detailed insights on the environmental and social aspects of the project, mitigation measures, etc.

3. Key Informant Interviews

Key Informant Interviews were conducted to gather concerns of relevant key stakeholders within Nairobi County and Westlands Subcounty in the following departments; physical planning, environment, public health, NCWSC, and department of labour.

4. Attendance Logs

The attendance logs were used to capture the number of stakeholders, gender, and socio-economic activities of the participants. See Annex vii.

6.7 Stakeholder Consultations

Public engagement and stakeholder consultation is fundamental to an effective environmental and social impact assessment process and for the successful implementation of the proposed residential project. It serves to promote mutual confidence and trust between the proponent and project stakeholders.

Public engagement is an on-going process; for the proposed housing units project, stakeholder consultation was initiated during the scoping phase, continued throughout the detailed ESIA process and will continue during the construction, operational and decommissioning phases of the project respectively. The approach to public engagement has been designed to promote meaningful, two-way communications between the proponent and the stakeholders.

The ESIA team identified and engaged stakeholders likely to be affected by the proposed residential development, including, neighbouring landowners and tenants, local residents, business operators, local administration, utility providers, and relevant County and Subcounty technical departments.

Consultations were carried out through a combination of Key Informant Interviews (KIIs), public baraza, and questionnaires. KIIs involved one-on-one interviews with key individuals, such as local leaders, utility officers, and planners, to gather technical and institutional insights. Questionnaires and stakeholder meetings were aimed at bringing together specific groups, including women, youth, residents, and business operators, to capture shared concerns and expectations. Additionally, public meetings provided a forum for the wider community to receive project information, ask questions, and provide feedback. All consultations focused strictly on project-specific issues. Consultation outcomes, including attendance lists, meeting minutes, and survey responses, were documented and used to inform the impact assessment and the design of mitigation measures.

6.7.1 Engagement Planning

The promoter should organise an initial consultation (with the identified stakeholders) or an initial round of consultations (if it is more appropriate to have separate meetings with different categories of stakeholders), until significant differences have been resolved.

In consideration of the aforementioned, during the EIA stage, the method adapted for consultation participatory process is highlighted below. The following elements were carefully planned for each consultation activity:

- the message to convey to each group of stakeholders

- how stakeholders will be notified for upcoming meetings and the invitation process
- the choice of appropriate venue
- the preparation of tools to be used during consultation;
- the resources required to facilitate the consultation;
- how minutes will be written, recorded, and disclosed; and
- how grievances will be addressed

The public consultation program included:

- ✚ Preliminary consultations;
- ✚ One-on-One Meetings
- ✚ Public (Baraza) Participation Meeting;

It is important to note that stakeholder consultation is an ongoing process and further consultations will be conducted as the project progresses. Minutes and stakeholder logs of the meetings held during the public consultation and digital photographs taken during the meeting are appended at the end of this report (*Annex vii*).

6.8 Preliminary Consultations

A reconnaissance site visit to the proposed site was made by the Consultants to the project site in Dam area along Waiyaki in Kitusuru Ward, Nairobi County on 14th May 2026. The consultants established the boundaries of the project site and were also able to identify the neighbouring residential estates and institutions in addition to the neighbouring local community.

In preparation for the public baraza, a meeting was held with the Area Chief to notify her of the planned public baraza meeting with the neighbouring community in the project area. It was agreed that mobilization of the attendees would be done through, a). Word of mouth with the assistance of the Nyumba Kumi representatives, and b) through phone calls and text messages. The Chief was also requested to ensure that vulnerable members of the community i.e., PWDs, widows, the elderly, the youth, etc, were invited to the meeting.

In preparation for the public baraza meeting, a one-week notice was issued through the Area Chief, initiating a mobilization effort for community engagement. The notice was displayed to the public within the Area Chief's camp, communicated through local Assistant Chiefs and village administrators, informed community members about the upcoming meeting.

6.8.1 Questionnaire Findings

The questionnaire survey indicated that respondents generally supported the proposed development, acknowledging the growing demand for quality housing within the area and the potential contribution of the project towards meeting this demand. Most respondents perceived the project as an opportunity to promote planned urban development, stimulate economic activity, and improve the overall value and attractiveness of the neighbourhood. Respondents identified employment creation as one of the key anticipated benefits of the project, particularly during the construction phase through engagement of both skilled and unskilled labour. The proposed development was also expected to create indirect economic opportunities for local businesses, including retail shops, food vendors, transport operators, and suppliers of construction materials and other goods and services. Increased commercial activity associated with the development was viewed as likely to contribute to local economic growth and increased household incomes.

Several respondents observed that the project would improve utilization of the currently vacant site and enhance the visual appearance of the area through orderly development and improved property management. The development was also expected to contribute to appreciation of neighbouring property values as a result of improved infrastructure and continued urban growth. Despite the generally positive perception of the project, respondents expressed concerns regarding potential environmental and social impacts that could arise during construction and operation if not adequately managed. The most frequently cited concerns included increased traffic along the surrounding road network, pressure on existing water supply and sewerage infrastructure, increased demand for electricity, noise and dust emissions during construction, and possible deterioration of local road conditions due to construction vehicles.

Respondents also raised concerns regarding the capacity of the existing drainage infrastructure to accommodate additional stormwater runoff and emphasized the need for effective stormwater management measures to prevent flooding and downstream impacts. Adequate solid waste management, wastewater disposal, and pollution control measures were also identified as important considerations throughout the project lifecycle. Social concerns highlighted by respondents included the need to maintain adequate security during construction and operation, minimise disturbance to neighbouring properties, and ensure that local residents benefit from employment and business opportunities generated by the project. Respondents further emphasized the importance of complying with all statutory requirements, maintaining continuous stakeholder engagement, and implementing effective environmental and social mitigation measures to minimise adverse impacts while maximising the project's anticipated benefits.

Participants generally expressed support for the proposed project, noting the increasing demand for housing within the area and the potential contribution of the development towards addressing the housing deficit. The participants indicated that the project is likely to contribute positively to the local economy and the overall growth of the town, provided that community concerns are adequately addressed during project implementation and operation. The anticipated positive impacts highlighted during the discussions included employment opportunities for local youth during both the construction and operational phases of the project. Participants also noted that the project is likely to stimulate growth of nearby businesses due to increased population and economic activity within the area. Increased traffic to surrounding commercial establishments was also anticipated, which may contribute to improved business performance and expansion of the local trading environment.

Participants further observed that the project may contribute to appreciation of property values within the neighbourhood due to improved infrastructure and urban development. In addition, the development was

viewed positively because the project site, which is currently underutilized, has reportedly been used by some residents as an informal dumping area. The proposed development is therefore expected to improve the environmental condition and aesthetic value of the area through proper site utilization and management. Despite the anticipated benefits, participants also raised concerns regarding potential adverse impacts associated with the project. Key concerns included the possibility of increased insecurity and reduced privacy for neighbouring residents due to the anticipated increase in population and human activity within the area. Concerns were also raised regarding possible congestion, particularly increased traffic and pressure on existing infrastructure and social amenities.

Environmental concerns highlighted during the discussions included the potential for sewer and storm water management challenges if not properly planned and mitigated. Participants emphasized the need for adequate drainage systems and proper sewer management to prevent flooding, pollution, and related public health concerns. In addition, concerns were raised regarding possible strain on existing water and electricity supply systems arising from the increased demand associated with the proposed development. Participants therefore recommended that adequate utility infrastructure and mitigation measures be incorporated into the project design and implementation process.

6.8.2 Key Informant Interviews (KIIs)

During the stakeholder identification and mapping process, the ESIA consultants identified the following specialized entities and departments within County Government of Nairobi, Westlands Subcounty that are relevant to the proposed project;

- a) Subcounty Administrator
- b) Physical planning department
- c) Environment department
- d) Public health office
- e) NCWSC
- f) Labour department

Requests for engagement with these entities were made formally through letters. A sample of the invitation letter is annexed to this report (*Annex vii*). Subsequently, arrangements for consultation meetings were made on 8th June 2026 and venues were agreed upon. The responses obtained from the Key Informants are highlighted in the following table:

Table 15: KII feedback

Name and Designation	Conditions Given/Proposed
Engineering Manager (on behalf of the Director) Nairobi City Water and Sewerage Company (NCWSC)	- Undertake the necessary due diligence before commencement of the proposed development to confirm the adequacy of existing water supply and sewerage infrastructure. - Clearly demonstrate, within the project design and ESIA, how the anticipated water demand will be met, particularly considering the project's location relative to the existing water distribution and sewerage networks. - Upgrade the existing water supply and sewer infrastructure, where necessary, to adequately accommodate the projected water demand and wastewater generation associated with the proposed development. - Share the stakeholder consultation review report with the Company for review and incorporation of any technical comments prior to project implementation.
Nairobi County Physical planner	- Obtain all the requisite County Government approvals prior to commencement of construction, including approval of the Architectural Plans, Structural Plans, and the approved Change of User (Form DC8). - Provide the correct land reference (plot) number to facilitate verification of the applicable planning requirements, zoning provisions, and development controls governing the proposed site.
Public Health Officer (PHO) Westlands Sub-County	- Ensure the proposed development has access to an adequate and reliable water supply throughout the construction and operational phases. - Provide a suitable access road to facilitate safe access to and from the development, including emergency access. - Confirm the availability of adequate sewer infrastructure and ensure proper connection to an approved sewerage system. - Establish an appropriate solid waste management system, including waste collection arrangements with a licensed service provider. - Provide a designated waste holding area for temporary storage of solid waste prior to collection. - Incorporate open stormwater drains or other suitable stormwater drainage measures to facilitate effective surface runoff management.
County Labour Officer	- Comply with the applicable minimum wage requirements as provided under the Regulation of Wages (Building and Construction Industry) (Amendment) Order, 2026. - Notify the Directorate of Occupational Safety and Health Services (DOSHS) before commencement of construction works in accordance with the Occupational Safety and Health Act and other applicable labour legislation.
Sub-County Environment Officer	- Ensure full compliance with all applicable environmental laws, regulations, licence conditions and mitigation measures throughout the construction, operation and decommissioning phases of the project. - Recognize that the proposed development is located within a sensitive environment in close proximity to the dam, and implement appropriate environmental protection measures to safeguard the water body and the surrounding ecosystem from pollution, sedimentation and other project-related impacts.



Plate 20: Sample KIs with Environment enforcement officer and labour officer

6.8.3 Public Baraza Meeting

Three public baraza meeting were conducted with the affected and interested neighbouring community from Loresho-Mountain View area. The first meeting took place on 15th June 2026 from 2:30pm to 4.06 pm at the project site along Waiyaki way, engaging Dam Resident Association members and landowners. The meeting comprised 18 male and 9 female participants. The second meeting took place on 16th June 2026 from 9:40am to 11:10 pm at the project site, Nyumba kumi, village elders and Mountain View Estate Resident Association. The meeting comprised 10 male and 8 female participants. The third meeting also took place on 16th June 2026 from 11.46am to 12.26 pm at the project site, engaging the faith-based organizations, youths, and general residents. The meeting comprised 12 male and 5 female participants. Minutes and attendance lists of the participants incorporated in the report.

The meeting point was an ideal venue for the baraza meeting because it was a convenient congregation point for the majority of the targeted stakeholders. The number of participants, including the project team and local administration is available in the attendance list attached to the minutes annexed in this report. The baraza was held with communities from Kitisuru location and Mountain View because of the close proximity to the site. This administrative area represents the stakeholders who will be affected by the proposed project.

The meetings were also attended by the National Government Authority Officers in charge of the area, i.e., the Area Chiefs, together with the community leaders.

The Consultants (Environmental and Social Expert), together with team from IHS, Howard Humphreys and Studio Infinity were in attendance to provide information to the public and to receive and address comments. Through verbal discussions, the baraza was presented with information on:

- Description of the project (project design, location, and technology);
- The requirements of the EMCA for new projects in Kenya;
- The Environmental Assessment Process;
- Potential environmental and social impacts associated with the proposed project.
- Proposed enhancement and mitigation measures for positive and negative impacts, respectively
- Grievance Redress Mechanism

Following the presentation on the proposed project, stakeholders were allowed to share their comments and express their views regarding their perceptions of the project. The verbal discussions were done in both English and Swahili languages as it had been established through the participants and the Chiefs that the audience would be most comfortable with the two languages.

Respondents provided their views on the project, identified potential positive and negative impacts, and indicated whether they support or oppose the proposed development. All substantive issues raised with the project team during the baraza were noted, recorded and incorporated in the ESIA report.



Plate 21: Public participation meeting with Mountain View Estate Residents Association and Village elders



Plate 22: Public participation with FBO, youths, and general public

6.8.3.1 Identification and recording issues of concern

During the baraza meetings, different views and concerns were expressed by the participants. These views were captured and recorded through meeting minutes. Responses to the views and comments will be undertaken as part of the detailed environmental and social impact assessment.

Table 16 below shows a summary of the views expressed by various stakeholders during the meeting.

Table 16: Summary of Issues raised in the community meetings

Issue/Concern Raised	Response Provided by Project Team
Dam Resident Association, landowners, landlords Mountain view estate resident association, business community, village elders and local administration	
Access to borehole water: A resident sought clarification on whether the surrounding community would be allowed to access water from the proposed borehole to be drilled within the project site.	The Architect explained that the borehole is intended to serve as a supplementary water source for the proposed development during periods of inadequate supply from Nairobi City Water and Sewerage Company. Its expected yield would not be sufficient to supply both the development and the surrounding community.
Road safety and supporting infrastructure: A resident observed that the area experiences frequent road accidents due to the absence of a pedestrian crossing facility and enquired whether the developer could support the construction of a pedestrian bridge or other road improvements in anticipation of increased population. The participant also raised concerns regarding insecurity in the area.	The project team acknowledged the concern and explained that while the development may strengthen the justification for additional public infrastructure, the provision of pedestrian bridges and road infrastructure falls under the mandate of the relevant government agencies, including KeNHA and KURA. Community members were encouraged to continue engaging the relevant authorities through their local leadership.
Housing allocation and affordability: A participant asked whether the proposed housing units would be allocated free of charge or sold to beneficiaries.	The ESG Lead clarified that the units will not be provided free of charge. The project will offer both home ownership and rental options in accordance with the developer's affordable housing programme.
Project implementation timeline: A participant requested clarification on when construction activities are expected to commence.	The project team explained that implementation is subject to obtaining all the necessary statutory approvals and indicated that construction is anticipated to commence before the end of the year, subject to these approvals.
Local employment opportunities: Participants requested that residents from the project area be given priority for employment opportunities during construction and operation.	The project team affirmed its commitment to maximizing local employment opportunities. It was explained that recruitment would be undertaken based on the skills required for each position, with local residents encouraged to submit their details through the Area Chief's office for consideration by contractors during recruitment.
Commercial opportunities within the development: A participant enquired whether commercial shops could be developed along the road frontage to create rental opportunities for local businesses.	The Architect explained that planning regulations require a road reserve setback of approximately nine metres from the road boundary, thereby limiting the possibility of developing roadside commercial shops within the project site.

6.9 Grievance Mechanism

The proponent seeks to build strong relationships with stakeholders and manage the impact of its business activities on affected communities. The proponent will aim at minimizing grievances by managing project impacts and through preemptive community liaison activities designed to anticipate and address potential issues before they become grievances. Nevertheless, the proponent recognizes that complaints about its activities may occur from time to time.

The Grievance Procedure should allow stakeholders to raise questions or concerns with the Company and have them addressed promptly and respectfully. The procedure should aim to address all complaints received, regardless of whether they stem from real or perceived issues and whether the Grievant/Complainant is named or anonymous. Any stakeholder who considers themselves affected by the proposed activities should have access to the procedure at no cost. The statutory rights of the Complainant to undertake legal proceedings shall remain unaffected by participation in the process.

The proponent shall seek to foster trust in the process, its outcomes and understandably communicate the procedure to affected stakeholder groups. Confidentiality will be respected, and the proponent will take all reasonable steps to protect parties to the process from retaliation.

In addition to workers directly engaged by IHS (direct workers), workers engaged through third parties to perform work related to core business processes of the project for a substantial duration (third-party workers), as well as workers engaged by company primary suppliers (supply chain workers), the Grievance Mechanism covers external stakeholders of their operations including communities where they have their operations and relevant authorities.

The GRM is a dynamic document that shall be revised by referencing any new statutory guidelines, contract changes, or representation and updated periodically based on experience and stakeholder feedback.

The IHS GRM is guided by the following principles:

- I. **Transparency and fairness:** the process for grievance resolution shall be transparent, in harmony with the local culture, and written in the appropriate language. It will also not impede access to other judicial or administrative remedies
- II. **Accessibility and cultural appropriateness;** All stakeholders directly or indirectly affected by the Company's and its contractor's activities shall have access to the grievance procedure and can raise a grievance
- III. **Openness and communication regularity;** Multiple channels will be made available for individuals and groups to choose their preferred method for lodging grievances
- IV. **Channels of communication;** Channels of communication shall be kept open throughout the process of addressing each grievance and up to 3 months after the situation has been resolved
- V. **Timely Resolution:** The company aims to resolve grievances within 30 working days
- VI. **Confidentiality;** The process shall ensure that the complaints are dealt with utmost confidentiality with a few exceptions such as where there is the threat of physical harm to self or others or property, etc.
- VII. **No cost:** Access to the Grievance Mechanism will be free of any charges or costs
- VIII. **Non-Retaliation:** Any affected party shall not suffer any discrimination, victimization, retaliation, or loss of earnings

- IX. **Human Rights:** All stakeholders shall be treated equally and in a dignified manner, regardless of **race, ethnicity, nationality, class, caste, religion, belief, sex, gender, language, sexual orientation, gender identity, sex characteristics, age, health or other status**

Based on the principles described above, the grievance mechanism process involves four main stages

1. Receiving and recording the grievance; Both verbal and non-verbal, using multiple channels
2. Investigation and site inspection; Assessing the eligibility of the complaint/Grievance
3. Roles and Responsibilities; Team of staff involved in Grievance handling and resolution, and their roles and responsibilities
4. Response: A formal response detailing how the grievance will be resolved
5. Monitoring and evaluation; Logged grievances are reviewed quarterly to determine if the same or similar grievances are being recorded in one or more locations to establish the root cause and develop an action plan for implementation

IHS is committed to assessing and/or seeking advice as to whether a specific grievance mechanism needs to be established for vulnerable groups if certain aspects of the general community grievance process, i.e. language issues or the need to file a grievance in writing) are deemed unsuitable for the community in question. IHS has to be satisfied that the grievance management process accommodates any specific requirements of the people.

6.10 Post-ESIA Engagement

The Project is committed to continuous engagement with stakeholders throughout the life of the Project, from the current stages of planning and design, through construction into operation, and eventually to closure and decommissioning.

Plans and activities implemented during the next stages of project planning and development will therefore feed into and inform on-going stakeholder engagement as the project moves into these stages, ensuring that two-way dialogue with those affected, both positively and negatively by the proposed project is maintained.

The aim will be to ensure that the project remains in contact with all interested parties and cognizant of their concerns, and that these are addressed in an effective and timely manner. At each stage, a detailed schedule of activities and events will be developed and widely disseminated so that people know how to interact with and participate in the Project.

In particular, post-ESIA stakeholder engagement is expected at the following stages:

- **Pre-construction phase:** Engage with key stakeholders—such as DOSHS, the National Construction Authority, to obtain the necessary project approvals.
- **Mobilization phase:** At this stage, information regarding the exact locations of specific Project infrastructure, detailed construction schedule, and expected construction team (including employment opportunities) will be shared with the Project stakeholders.
- **Construction phase:** Periodic Project updates, as well as any changes in planning, will be shared with Project stakeholders. There will also be the implementation of a worker and community grievance mechanism
- **Demobilization phase:** Notifying the stakeholders about the end of the construction activities and the closeout of outstanding construction phase-related grievances. This is also expected to mark

the start of the occupancy phase.

- **Operations/Occupancy Phase:** Resident onboarding and orientation on environmental and social commitments, i.e., waste disposal, noise, security, and operationalization of the tenants' grievance mechanism.
- **Decommissioning Phase:** Inform stakeholders when the Project comes to an end, as well as plans for the Project Site.

7 CHAPTER 7: ANALYSIS OF ALTERNATIVES

7.1 Overview

This Chapter outlines the alternatives considered for the proposed IHS green affordable housing project in Loresho-Mountain View area, Westlands Sub-county in Nairobi City County.

7.2 No-go Alternative

A no-project option will mean that any potential impacts are not manifested, but the economic as well as environmental benefits of the affordable green housing project as proposed by IHS will be lost. This scenario means that the project will not inject an additional 375 affordable green housing units, which is in contradiction to the objectives of Kenya Vision 2030, the Bottom-up Transformation Agenda Model, and the Fourth Medium Term Plan. With demand for affordable housing, without investment in affordable housing, the country will have a shortfall in years to come if all factors remain constant. This alternative can highly likely contribute to urban sprawl and an increase of slums in the city. The no-go alternative is thus not supported.

7.3 Site location

As part of the site selection process, a number of potential sites were investigated in Mountain View and its environs through site visits, desk-top analysis and a variety of studies. Upon evaluating the option of developing the green affordable housing outside the proposed site, it was apparent that the proposed site was the most ideal for the proposed project as it has the potential to support the investment venture. The proposed site was therefore identified based on a number of criteria including:

Table 17: Site location alternatives

Site characteristic	Description
Availability of adequate utilities (<i>water, electricity and ICT</i>)	The proposed area is connected to NCWSC water infrastructure, KPLC electricity distribution lines and Information & Communication Technology services provided making it more viable.
Site extent	The proposed site has sufficient space (1 acre) that has already been acquired by IHS for purposes of the investment.
Road infrastructure and access	Access to the project site is good. The site is adjacent to Waiyaki Way (A8 highway) with service lanes and an access road for last mile connectivity. This proximity makes the investment attractive to potential clients.
Land suitability	The site is surrounded by residential establishments thus suitable for housing developments.
Landowner consent	The selection of a site where the landowner is supportive of the development of a housing project is essential for ensuring the success of the project. The absolute

	proprietor, has given consent to the proponent.
Environmental and socio-economic impacts	The anticipated environmental impacts of the proposed housing project are expected to be site specific with no significant and irreversible detrimental effects. No adverse social impact is expected from the proposed project. In addition, no resettlement will be carried out as there are no indigenous people nor local communities occupying the targeted site.
Workforce	The availability of a potential workforce in the surrounding area was taken into consideration. Mountain View and its environs has a high population of youth, offering a substantial workforce across all levels i.e., skilled, semi-skilled, and unskilled.

Comparison of the environmental and social effects

Alternative locations in Mountain View might involve repurposing brownfield sites. The potential urban sites within the area often have limited spaces. Alternative locations within Mountain View might lack a more serene environment, access to essential services and amenities typically found in the proposed project location. This ESIA study will be sufficient to address the identified environmental and social impacts.

7.4 Site layout

Site layout for residential apartments is crucial for maximizing space usage while at the same time enhancing resident's experiences. When choosing a site layout for residential apartments, it's crucial to consider the local context, market demand, sustainability goals, and the needs of the future residents to create a functional and appealing living environment. Additionally, complying with local zoning and building codes is essential to ensure regulatory approval and safety compliance. The following site layout alternatives were considered:

Table 18: Site layout alternatives

Alternative	Description	Selected/Not selected
Traditional high-rise apartment building	These are typically tall structures with multiple floors, suitable for densely populated urban areas.	Not selected
Mid- & low rise Buildings and mixed-use developments	- Smaller in scale than high-rises, mid-rise buildings usually have fewer stories and can fit into both urban and suburban settings. - These are often found in suburban and rural settings, with typically 2-3 floors per building. - Combining residential apartments with retail, office, or recreational spaces can create vibrant and walkable communities.	Not selected
Garden apartments	These are typically low-rise buildings, often with two or three stories, arranged in a garden-like setting with green spaces and courtyards. They provide a more open and community-oriented feel.	Not selected
Townhouses	Townhouses are typically multi-story units attached in rows, sharing common walls. They are suitable for	Not selected

	urban and suburban environments and can create a sense of community.	
Podium buildings	A podium-style layout involves placing apartment buildings on top of a shared podium, which can contain parking, retail, or other amenities. This is common in denser urban areas.	Not selected
Courtyard apartments	Courtyard-style layouts feature apartment buildings arranged around a central courtyard, providing open space and a sense of community.	Not selected
Cluster housing	In this layout, apartment buildings are grouped in clusters with green spaces and pedestrian pathways between them.	Not selected
Stacked flats	Stacked flat designs involve multiple units stacked on top of each other in low- to mid-rise buildings, often with shared entryways and elevators.	Not selected
Affordable housing communities and eco-friendly designs	- These layouts prioritize affordability and may include a mix of housing types, such as apartments, townhouses, and single-family homes. - Sustainable site layouts can incorporate features like rain gardens, green roofs, and renewable energy sources to minimize environmental impact.	Selected
Modular or prefabricated housing	Modular construction methods can speed up the development process and provide flexibility in layout design.	Not selected

Comparison of the environmental and social effects

The proposed design can be described as compact layout. The alternative to the compact layout is sprawling layout that spreads housing units over a larger area, resulting in greater land consumption and habitat fragmentation. While residents may enjoy more space and privacy, this approach often leads to increased resource consumption, longer commute times, and higher infrastructure costs. Sprawling developments can also contribute to urban sprawl, exacerbating social segregation and environmental degradation.

7.5 Technological and Material Alternatives

Green affordable housing technologies are innovative solutions and practices aimed at creating sustainable and energy-efficient housing options that are also affordable for low- and moderate-income individuals and families. These technologies help reduce the environmental impact of housing projects while lowering energy costs and improving overall living conditions. The following technologies and materials were considered:

Green building certifications of energy monitoring systems

Pursuing certifications such as EDGE can ensure that affordable housing projects meet specific green building criteria. The technology also involves installing real-time energy monitoring systems that allow

residents to track and manage their energy usage, encouraging conservation. It is quite commendable to note that the proponent has already initiated the initial EDGE assessment for the proposed housing design in efforts to ensure that the proposed affordable housing project is green and certified accordingly after completion.

Bamboo

Bamboo is a sustainable material widely available in Kenya that provides natural insulation. It is increasingly being used for eco-friendly construction in walls, roofs, and floors, helping to regulate indoor temperatures. Bamboo also sequesters carbon both as it grows and after harvest, making it potentially carbon-negative. Bamboo's renewability credentials far exceed timber. It can be harvested within three to five years of planting, as opposed to the decades timber requires. It regrows without needing to be replanted, which provides additional environmental benefits as a sustainable construction material. It is recommended that bamboo should be promoted for flooring, ceiling, walling and partitioning in housing schemes (*Kibwage, 2011*).

Passive Solar Design

Passive solar design principles involve maximizing the use of natural sunlight and heat to reduce the need for artificial lighting and heating. Proper orientation of buildings, strategic placement of windows, and thermal mass materials can help regulate indoor temperatures.

Solar Carports

Solar carports make open space car parks more productive, generating electricity for home appliances and Electric Vehicles (EV) charging stations. They have a higher cost than rooftop solar systems, since they require an independent structure. However, the solar carport design can have an orientation that increases solar radiation on the PV modules, which results in a higher electricity output. A solar carport is a viable option for the proposed housing project outdoor parking area that will get abundant sunshine, especially where the proposed four residential blocks are likely to be shaded from the adjacent long trees at Mashiara Park's undeveloped area. The following are the benefits to building a solar carport:

- The unproductive open parking spaces can be converted into a renewable energy system.
- Reduced energy bills
- Solar panels and inverters can be accessed more easily for cleaning, inspections and maintenance
- Shaded parking areas protect parked cars from the elements of harsh weather such as ultraviolet rays that may damage vehicles body works and cabin aesthetics.
- Encourage use of EV by the residents and ease of EV charging

Solar Window Film

Solar window film blocks most of the sun's ultraviolet rays from entering residential houses while allowing safe natural light from the outside environment. This helps reduce glare while protecting skin and eyes from damage. By blocking UV rays, window tinting also helps protect furnishings, upholstery, paintings, and tapestries from fading and discoloration. These films also provide greater temperature stability and comfort.

Integration of green spaces, green roofing and community gardens

As the proposed project also integrates green spaces in the design, it would also be more environmentally friendly to include community gardens which promote sustainable living and enhance the quality of life for

the residents. Green roofs or living roofs covered with vegetation is also recommended. These proposed interventions can contribute to insulation improvements, reduction of stormwater runoff, and provide green spaces for the residents.

Energy Efficient Insulation

High-quality insulation materials and techniques help retain indoor temperatures, reduce heating and cooling costs, and improve overall comfort. Climate-resilient construction materials with high thermal insulation properties that can be used in the proposed Green Affordable Housing Project include:

- **Insulated Concrete Forms (ICFs)**
ICFs are hollow blocks or panels made of expanded polystyrene filled with concrete. They provide excellent thermal insulation and energy efficiency by reducing the need for heating and cooling.
- **Aerated Autoclaved Concrete (AAC) Blocks**
AAC blocks are lightweight and have excellent thermal insulation properties. They are widely available in Kenya and are ideal for reducing indoor heat
- **Fiber Cement Boards**
Fiber cement boards offer durability and heat resistance. They can be used for interior applications of the proposed project as they are suitable for insulating walls.
- **Reflective Roof Coatings**
Reflective coatings or cool roof paints help reduce heat absorption by reflecting sunlight, thereby keeping buildings cooler. This can be applied to the flat roof of the proposed residential blocks.
- **Expanded Polystyrene (EPS) Panels**
EPS panels are lightweight and energy efficient. They provide excellent insulation by trapping air within their foam structure, reducing heat transfer. They are cost-effective, easy to install, and can be used for wall cladding to provide thermal insulation, especially in areas experiencing high temperatures, making them versatile for residential projects.
- **Double-Glazed Windows**
Double-glazed windows with insulated glass units help reduce heat transfer and provide good thermal insulation. These can be used to maintain comfortable indoor temperatures.

Comparison of the environmental and social effects

While conventional construction materials like concrete and steel have significant environmental footprints due to high energy consumption and carbon emissions during production, they are widely available and familiar to builders, which can streamline construction processes. Sustainable alternatives such as recycled steel, bamboo or engineered wood products that reduce environmental impact by minimizing resource depletion and waste generation can also be sourced locally. Some of these eco-friendly materials are slightly more expensive but offer better long-term sustainability. Using these materials in construction can significantly enhance a building's thermal performance, reduce energy consumption, and improve comfort in the face of rising temperatures in Kenya.

Financial, technical and environmental factors were considered when choosing the type of building technology to be applied by IHS for the proposed project. This included consideration of the local construction materials, the economics of the proposed housing project, and the requirement for other development inputs such as water and energy resource requirements. The types of technologies

evaluated, and the preferred configuration should be selected based primarily on the operating environment.

7.6 Water Sources

Industry's best practice recommends that rainwater harvesting systems are incorporated in new building projects. Rainwater harvesting promotes sustainability by utilizing a natural water source, reducing strain on county supplies and groundwater sources. Rainwater is also free, which can lead to substantial cost savings in the long term, especially for non-potable water uses like irrigation or toilet flushing. Since rainwater quality can be influenced by atmospheric pollutants and contaminants on rooftops or collection surfaces or in storage tanks, user awareness is important to prevent waterborne diseases. Appropriate filtration and treatment measures are necessary for potable water use. The rainwater harvesting systems can be included in each residential block's development plans to suit their unique function and aesthetic needs.

Recommendations

As per the preliminary assessment it is recommended that the proponent Incorporates a rainwater harvesting system into the proposed housing project design to supplement the NCWSC water sources. Implementing rainwater harvesting as proposed can further reduce dependence on NCWSC water sources and alleviate pressure on water infrastructure. However, these systems may require additional maintenance and upfront investment.

7.7 Wastewater Management Options

Greywater Recycling

Implementing a wastewater treatment plant for the proposed residential project offers a sustainable, efficient way to manage greywater while also supporting on-site needs. By treating greywater on-site, the plant significantly reduces the project's environmental footprint, cutting down reliance on NCWSC water supplies for non-potable purposes. Treating greywater and repurposing it for non-potable uses such as cleaning, landscaping, flushing toilets and firefighting conserves fresh water, a critical resource especially in urban areas like Westlands Sub-county. Additionally, reusing treated water aligns well with Kenya's environmental sustainability goals, reducing discharge into municipal sewer systems and minimizing pollution risks.

While the initial setup of a wastewater treatment plant involves capital investment, the system offers long-term cost savings by lowering water consumption rates. Over time, these operational savings can offset the initial costs, yielding financial benefits for residents and developers alike, and enhancing the project's value. Residents benefit from a reliable source of non-potable water, which enhances their access to water for non-drinking purposes even during periods of water scarcity. This consistent water source for firefighting, cleaning, and landscaping adds security and improves overall living conditions in the development, appealing to environmentally conscious tenants or buyers.

Modern wastewater treatment systems are adaptable, scalable, and suitable for residential developments, making implementation straightforward. Systems can be customized to meet the greywater volume specific to the project, ensuring effective treatment that meets regulatory standards. By treating greywater

on-site, the project demonstrates compliance with Kenyan water conservation policies and establishes itself as a sustainable residential model. This approach provides resilience against future water shortages and rising utility costs, aligning with the principles of long-term, climate-resilient urban planning.

Recommendations

For effective wastewater management, a system that integrates on-site wastewater treatment is recommended. This approach offers a balanced solution, enhancing environmental sustainability, operational flexibility, and compliance with regulatory standards. This approach provides a dependable system that ensures wastewater is properly managed even in cases where treatment capacity might be temporarily exceeded. Initial and ongoing costs are offset by savings in water consumption, with the added benefit of complying with local environmental and health regulations. Furthermore, treating greywater on-site before discharge potentially contributes to more favourable regulatory reviews and operational permits.

8 CHAPTER 8: ANTICIPATED IMPACTS AND MITIGATION MEASURES OVERVIEW

8.1 Anticipated impacts

Four main factors were used to classify the potential effects of the proposed project on the environment, which may be positive or negative. The extent was assessed as being specific (on-site) or widespread, the magnitude was characterized as being major or minor, the duration as short-term or long-term, and the reversibility stated as being temporal or permanent. The probable environmental effects of the proposed project are compiled in Table 19 based on the data amassed during the desk and field studies.

Table 19: Impact analysis throughout the project cycle

Category	Impact description	Impact significance criteria	Project phase		
			Construction	Operation	Decommissioning
Positive	Optimal utilization of the land	Scale	Major positive,	Major positive,	
		Duration	Short term	Long term	
		Extent	On-site	On-site	
		Intensity	Temporal	Permanent	
	Promote sustainable urban development	Scale	Major positive,	Major positive,	
		Duration	Short term	Long term	
		Extent	On-site	Localised	
		Intensity	Temporal	Permanent	
	Income generation and employment	Scale	Major positive,	Major positive,	Minor positive
		Duration	Short term	Long term	Short term
		Extent	Localised	Localised	On-site
		Intensity	Temporal	Permanent	Temporal
	Provision of affordable housing & addressing the housing shortage	Scale		Major positive	
		Duration		Long term	
		Extent		Localised	
		Intensity		Permanent	
	Increase government revenue	Scale	Major positive	Major positive	Minor positive
		Duration	Short term	Long term	Short term
		Extent	Widespread	Widespread	Widespread
		Intensity	Temporal	Temporal	Temporal
	Creation of market for goods/services	Scale	Major positive	Major positive	Minor positive
		Duration	Short term	Long term	Short term
		Extent	On-site	Widespread	On-site
		Intensity	Temporal	Permanent	Temporal
	Improved security	Scale	Major positive	Major positive	Minor positive
		Duration	Short term	Long term	Short term
		Extent	On-site	Localised	On-site

Category	Impact description	Impact significance criteria	Project phase		
			Construction	Operation	Decommissioning
		Intensity	Temporal	Permanent	Temporal
Negative	Loss of vegetation and trees	Scale	Minor negative		
		Duration	Short term		
		Extent	On-site		
		Intensity	Temporal		
	Air pollution	Scale	Major negative		Major negative
		Duration	Short term		Short term
		Extent	On-site		On-site
		Intensity	Temporal		Temporal
	Soil disturbance and erosion	Scale	Major negative	Minor negative	Major negative
		Duration	Short term	Short term	Short term
		Extent	On-site	On-site	On-site
		Intensity	Temporal	Temporal	Temporal
	Noise pollution	Scale	Major negative		Major negative
		Duration	Short term		Short term
		Extent	Localised		Localised
		Intensity	Temporal		Temporal
	Storm water management issues & surface run-off	Scale	Major negative	Major negative	Minor negative
		Duration	Short term	Long term	Short term
		Extent	Widespread	Widespread	Widespread
		Intensity	Temporal	Temporal	Temporal
	Water resources	Scale	Minor negative	Minor negative	Minor negative
		Duration	Short term	Short term	Short term
		Extent	Widespread	Widespread	Widespread
		Intensity	Temporal	Temporal	Temporal
	Energy resources	Scale	Major negative	Major negative	Major negative
		Duration	Short term	Long term	Short term
		Extent	Widespread	Widespread	Widespread
		Intensity	Temporal	Temporal	Temporal
	Oil leaks and spills pollution	Scale	Minor negative		Minor negative
		Duration	Short term		Short term
		Extent	On-site		On-site
		Intensity	Temporal		Temporal
	Occupational & Public health safety	Scale	Major negative	Minor negative	Major negative
		Duration	Short term,	Long term	Short term
		Extent	On-site	On-site	On-site
		Intensity	Permanent	Permanent	Permanent
	Fire hazard	Scale	Minor negative	Major negative	Minor negative
		Duration	Short term,	Long term	Short term
		Extent	On-site	Localised	On-site
		Intensity	Permanent	Permanent	Permanent
	Wastewater	Scale	Major negative	Major negative	Major negative
		Duration	Short term	Long term	Short term
		Extent	Localised	Widespread	Localised
		Intensity	Temporary	Temporary	Temporary
	Solid wastes	Scale	Major negative	Major negative	Major negative
		Duration	Short term	Long term	Short term

Category	Impact description	Impact significance criteria	Project phase		
			Construction	Operation	Decommissioning
		Extent	On-site	On-site	On-site
		Intensity	Temporary	Temporary	Temporary
	Public safety & security risks	Scale	Major negative	Minor negative	Minor negative
		Duration	Short term	Long term	Short term
		Extent	Localised	Localised	Localised
		Intensity	Temporal	Temporal	Temporal
	Traffic management	Scale	Minor negative	Moderate negative	Minor negative
		Duration	Short term	Long-term	Short-term
		Extent	Localised	Localised	Localised
		Intensity	Temporal	Temporal	Temporal

8.2 Anticipated positive impacts

8.2.1 Optimal utilization of the land

Land is a finite resource that is limited in quantity and cannot be created nor reproduced. However, the demand for land is rising along with the national population, putting strain on the amount of accessible land resources. The proposed project has incorporated efficient use of the available land (1 acre) into the design by constructing 375 affordable housing units. This approach minimizes land disturbance, preserving surrounding ecosystems and reducing the need for further vegetation clearance or habitat disruption. The proposed green affordable housing project will enhance optimal utilization of land, especially in Mountain View through various design and planning strategies that will maximize the efficiency of space and resources. Overall, the proposed project will concentrate housing, amenities, and services in a smaller footprint, and incorporating sustainable practices.

Description
<i>Construction phase:</i> • Apartments promote efficient land use in urban areas, reducing urban sprawl. • Multi-storey structures minimize land footprints. • Developers invest in efficient infrastructure systems and sustainable building practices, reducing environmental impact and promoting resource efficiency. • The developments encourage mass transit and reduce private vehicle ownership. <i>Occupation phase:</i> • Transforming underutilized land into a productive asset • Large number of residents in a small area promote efficient land use. • They offer affordable housing for individuals with varying income levels. • Proximity to commercial establishments and public transportation encourages residents to use these facilities & services.

8.2.2 Promote sustainable urban development

The proposed project exemplifies sustainable urban development by integrating environmental, social, and economic sustainability principles. By pursuing EDGE certification, the project demonstrates a commitment to resource efficiency, reducing energy and water consumption by adopting innovative design and materials.

This compact, high-density design optimizes land use, addressing urban sprawl challenges while maintaining a lower ecological footprint. The incorporation of green building practices, such as energy-efficient systems and water recycling initiatives, contributes to climate resilience, reducing greenhouse gas emissions and conserving natural resources.

Furthermore, affordable housing within an urban setting such as Westlands Sub-county ensures inclusive growth by providing access to amenities and opportunities for low- and middle-income groups. The project fosters a socially cohesive environment, promoting equity and enhancing quality of life while aligning with Kenya's sustainable urban development agenda.

Description
<i>Construction phase:</i> • Adoption of green building practices reduces waste and optimizes materials use. • Sustainable practices, such as low-emission machinery, minimize air and noise pollution. • Local employment opportunities foster economic growth and community engagement. • Use of modern, sustainable construction techniques encourages technological advancement. • Alignment with environmental policies ensures smoother approval processes. <i>Occupation phase:</i> • Lower operational costs through energy-saving designs and renewable energy use. • Efficient water systems reduce consumption and enhance resource availability. • Better indoor air quality and access to green spaces promote well-being. • Affordable housing options enhance accessibility for diverse income groups. • Modern, eco-friendly designs improve the neighbourhood's visual appeal. • Lower utility bills for residents due to sustainable energy and water management systems. • Compact development optimizes land use, preserving natural ecosystems. • Sustainable features enhance the marketability and long-term value of the development by appealing to environmentally conscious buyers and renters.

8.2.3 Addressing the housing shortage in Nairobi City County

The proposed development increases the availability of quality, affordable housing in a rapidly urbanizing area, meeting the needs of middle and lower-income families who are often priced out of the housing market. Additionally, the affordability aspect ensures inclusivity, contributing to the government's efforts to reduce informal settlements and improve living standards. This initiative aligns with Nairobi's urban development goals and the broader national agenda of improving housing accessibility.

Description
<i>Occupation phase:</i> • Provision of 375 affordable housing units, reduces pressure on the housing market. • Provision of a variety of housing options, catering to diverse needs and preferences, from single professionals to families and retirees. • Promotion inclusivity by catering to middle and low-income families. • Offers safe, decent, and affordable living conditions, reducing informal settlements.

8.2.4 *Employment and income generation*

The proposed project is envisaged to generate direct and indirect employment opportunities for unskilled, semi-skilled and unskilled workers. Direct employment includes jobs for constructing the housing units during the construction phase. Indirect employment will be realized through increased business opportunities and spurred economic growth both at the local, regional and national levels through procurement of goods and services required for the project.

Creation of employment opportunities is mainly expected to benefit the unemployed people living within and around the project site. It was perceived to be the most important benefit of the project by the local communities. This will contribute to easing unemployment level in the area.

During the operations phase, local labour such as cleaners, gardeners, plumbers and security personnel will be required for maintenance and surveillance of the housing units.

Enhancement measures

- IHS will direct its Project Contractor to prioritise the local community in the project area in the allocation of job opportunities from the locals neighbouring the project.
- IHS will also ensure opportunities for capacity building are afforded to the local communities to enable them to benefit from the available employment opportunities. This includes training in skills set required during the construction of the project.
- Job advertisements will be made through mediums that are easily accessible to the local communities living near the proposed distribution line project.
- Where possible, expertise will be sourced locally then regionally and nationally before resorting to the engagement of international experts
- The recruitment selection process will seek to promote gender equality and the employment of women where possible.
- Management and enhancement measures for local employment will be included in the Project Contractor's labour and human resources plan.
- A Community Liaison Officer should be appointed from the local community and a Grievance Mechanism implemented in order for the local community to express any complaints or grievances with the construction process
- The Project Contractor will make a conscious effort to promote local business people in the procurement of goods and services to assist in providing more economic and employment opportunities for the local community.

8.2.5 *Transfer of skills*

During the construction phase of the project there will be enhanced interaction between the experts and hired locals in their areas of expertise.

Through employment of the locals during construction, various skills may be passed on to the community. This is likely due to the expected enhanced interaction between the experts and hired locals in their area of expertise. Such interactions are likely to result to skills transfer or enhancement.

These skills will be retained in the community and will increase the residents' employability where they will be able to secure jobs in other developments that will come up in the area.

Enhancement measures
• IHS should institute programs aimed at promoting and enhancing skills transfer between project experts and the local employees. • IHS should establish a standard requirement for contracted firms to ensure transfer of skills. Such efforts will promote local capacity development and offer viable employment opportunities. • IHS should envision strong collaboration with local institutions to ensure effective capacity building is affordable to the local communities. • IHS and its contractors should effectively and continuously communicate the specific skills/expertise requirements to the local community prior to the construction and operational phases. In doing this, IHS should utilize easy to reach mediums for local community such as CLOs, community noticeboards, local administrator forums etc. .

8.2.6 Increase government revenue

Apartment buildings generate revenue for the county and national governments through various channels during construction and occupation phases. During the construction phase, developers obtain permits and licenses, which includes some fees paid to the issuing authority. In an ideal scenario, the value of the property is expected to increase over time, leading to higher property tax assessments. Certificate of occupancy, sales tax, employment taxes, and utility connections also generate revenue for the government. During the occupation phase, residential apartments contribute significantly to property tax revenue for local governments. Residents pay utility fees which generate additional revenue for the government. Sales tax revenue is generated by residents spending on goods and services in the local community.

Description
<i>Construction phase:</i> • Construction contractors require licenses generate licensing fees. • Developers obtain permits for construction generate revenue. • Employment opportunities and connection fees generate revenues. • Sales tax revenue is generated from construction expenditures. <i>Occupation phase:</i> • Property transfer taxes during units' sale is a key source of revenue to the government. • Residential apartments significantly contribute to property tax revenue. • Residents also spend on local goods and services which include taxes such as VAT. • Residents pay utility fees, taxes, and licenses, etc.

8.2.7 Local economic development

There are likely to be opportunities for local businesses to provide services and materials for the construction phase of the development. The local service sector will also benefit from the proposed development.

However, locally sourced materials and services may be limited due to availability. It is important that a fair and equal opportunity is provided when allowing local service providers to tender for work. As rightly perceived by the local communities, this will lead to secondary employment and the creation of small supporting businesses.

The project staff required will provide ready market for various goods and services, leading to several business opportunities for small-scale trades such as food vendors around the construction site

The economic multiplier effects from the use of local goods and service opportunities will include, but is not limited, construction materials and equipment and workforce essentials such as services, safety equipment, ablution, accommodation, transportation and other goods.

Also, the injection of income into the area in the form of wages will present an opportunity for the local economy and a boost of businesses in the area. With increased income comes additional income for expenditure on goods and services supplied. The intention is to maximize local labour employment opportunities, which is likely to have a positive impact on local communities and have downstream impacts on household income, education and other social aspects.

Increased tax revenue through direct and indirect taxes on goods and services will also stimulate the economic growth.

Description
<i>Construction phase:</i> • Developers pay service fees to engage architects, engineers, transportation companies, logistics, environmental consultants, utility companies, security firms, and safety consultants. • Developers purchase construction materials and equipment, boosting sales for suppliers and manufacturers. • Increased demand for construction materials and services stimulates the local economy. • Stimulation of economic activity in the area – workers/contractors spend money on goods and services in the community. • Catering services also benefit local businesses. This creates a market for local businesses and services. <i>Occupation phase:</i> • Apartment complexes organize events, support local artists, and generate revenue for utility providers and county government. • Apartment residents contribute to the local economy by shopping, dining, healthcare, education, public transportation, fitness, maintenance, telecommunications, security, and entertainment. • Apartment residents promote local businesses, such as restaurants, cafes, and food delivery services, which create a market for many businesses. • Services like internet, cable TV, and telecommunications offered to apartments contribute to the telecommunications industry. <i>Enhancement measures</i> • A local procurement policy should be adopted by the developer and Contractor to maximize the benefit of the local economy. • IHS will encourage the Project Contractor to source as many goods required for construction purposes economic opportunities are available or are created for the local community • Communication and information programs will be used to manage expectations and target local service providers • Tender documents will include guidelines for the involvement of local entrepreneurs, businesses and SMEs from the local sector

8.2.8 Improved security in the project area

The proposed residential project will significantly enhance security in the area by transforming the currently undeveloped land, characterized by grass cover and a few exotic trees, into a well-planned and managed residential development. Securing the perimeter of the proposed site will eliminate hiding spots often associated with insecurity, reducing the likelihood of criminal activities. In addition, the proponent will hire security guards throughout the project's lifecycle to ensure a safe and secure environment for the proposed project.

Description
<i>Construction & Operation phase:</i> • The introduction of well-lit pathways, modern fencing, and controlled access points will improve monitoring and deter unauthorized entry. • Increased human activity within the residential complex will discourage illicit behaviour, creating a safer environment for residents and the surrounding community. • The installation of street lighting, security cameras, and on-site security personnel will further reinforce safety. • A safer environment fosters opportunities for local businesses and improves property value in the neighbourhood.

8.3 Anticipated negative impacts and mitigation measures

8.3.1 Loss of vegetation and trees

Construction Phase

The construction of the Project will involve a wide range of activities that have the potential to affect vegetation and trees. The incorporation of green spaces, including native plantings will add value to the general area. With a commitment to fostering a thriving natural environment alongside human habitation, the project will set new standard for sustainable housing developments, demonstrating that harmonious coexistence between people and nature is not only achievable but essential for the well-being.

The relevant activities of the Project likely to give rise to impacts on receptors are summarized in Table 20, along with the likely pathway of the impacts. The largest direct impact of habitat loss will occur at the initial site clearance stage. Indirect impacts have also the potential to occur from disturbance, fragmentation, introduction or spread of invasive species, impacts to air quality, and runoff of sediments and pollution into surrounding areas. Overall, the impacts on flora and fauna is expected to be minor as the flora and fauna species found at the site are not listed in IUCN threat categories. The construction activities may introduce pollutants such as heavy metals and sediments into soil and nearby water sources, affecting ecosystem health.

Table 20: Project activities during the construction phase and the likely pathways of potential impact

Activity	Pathway of Potential Impact
Vegetation clearance and topsoil strip for the construction area.	• Loss of trees • Introduction and spread of invasive species. • Impacts to air quality. • Runoff into surrounding habitats.
Earthworks, including changes to topography.	• Impacts to air quality. • Changes to hydrology. • Runoff into surrounding water courses.

Operation Phase Impacts

The operation of the Project will involve a range of activities that have the potential to affect biodiversity. The relevant activities of the Proposed Project likely to give rise to impacts on receptors are summarised in Table 21, along with the likely pathway of the impacts.

Table 21: Project activities during the operation phase and the likely pathways of potential impact

Activity	Pathway of Potential Impact
Movement of people and ground vehicles.	• Impacts to air quality. • Disturbance.
Physical effects of the housing units	• Changes to hydrology and drainage. • Runoff of pollutants. • Changes to micro-climates • Spread of invasive species

Proposed mitigation measures

Overall, the mitigation measures will implement the following activities during the construction and operation phases. During the construction phase, all the activities will aim to preserve key ecological features by modifying project design to retain significant green spaces; rehabilitate disturbed areas with native vegetation post-construction; and the contractor shall identify the number of trees that will be cut down/ vegetated areas. During the operation phase, the key activities shall include biodiversity monitoring and the establishment of compensatory conservation efforts, such as afforestation programs in nearby areas.

Construction phase

The Contractor should develop Construction Implementation Plans (CIPs), which will set out the detail of how their commitments will be met in alignment with the Contractor-ESMP. The C-ESMP will make specific reference to biodiversity fauna/flora protection measure. This will include the following:

- Employment of EHS Officers who will be responsible for implementation of the ESMP during construction;
- The construction footprint will be carefully surveyed prior to start of construction and measures will be in place to ensure construction activities do not extend beyond the boundary;
- Use environmentally friendly construction materials and minimize the use of harmful chemicals.
- Remove organic top soil and store separately for use in restoration;
- Restore disturbed areas as soon as practicable to establish vegetation to protect from soil erosion
- The landscaping within the project site and area will primarily use native species of plants.
- Conduct weekly site inspections for signs of soil erosion or sediment runoff, and implement remediating actions immediately if any erosion or sediment runoff is identified;
- Prohibit storage of waste materials outside of designated storage areas;
- Burning of waste will be prohibited.

Occupation phase

- An EHS Officer to be employed by the Project to implement the long-term biodiversity monitoring.
- Replace the tree(s) cut during construction phase to ensure optimal ground cover and minimize erosion, dust, and invasive alien species.
- Utilize native plant species in landscaping to promote biodiversity
- Implement waste management practices to minimize waste generation.
- Engage with residents and community members to raise awareness about biodiversity.
- Encourage residents to participate in environmental conservation activities.
- Create and maintain green spaces that residents can enjoy and maintain.

8.3.2 Invasive species

Housing projects can introduce invasive species through land disturbance, invasive plant introduction, transportation networks, poor stormwater management, urbanization, fragmentation, landscape connectivity, and human behaviour. These practices can lead to the spread of invasive species, disrupting natural ecosystems and causing habitat fragmentation.

Proposed mitigation measures*Construction phase:*

- Develop a site-specific invasive species management plan
- Implement erosion control measures, such as mulching and revegetation with native plant
- Clean construction equipment and vehicles before entering and leaving the construction site
- Source construction materials from reputable suppliers to minimize the risk of introducing invasive species.
- Raise awareness among workers about the importance of invasive species management.

Occupation phase:

- Use native plant species in landscaping to reduce the risk of introducing invasive species

- Implement invasive species monitoring and management programs
- Incorporate green infrastructure practices, such as rain gardens and vegetated swales
- Educate residents about the risks associated with invasive species.
- Encourage residents to use native plants in their gardens and landscapes.
- Implement regular monitoring programs to assess the presence of invasive species.

8.3.3 Carbon footprint

The major anticipated sources of carbon in the proposed project will cover both construction and operation phases. During the construction phase, emissions will be from the extraction, processing, and transportation of construction materials, including concrete, steel, wood, and insulation. On-site activities such as excavation, transportation of materials, and energy use for construction equipment and machinery will also be major contributors. During construction phase, the carbon footprints shall be from sources such as energy consumption for heating, cooling, lighting, and appliances in the building, including both electricity and fuel combustion. Other emissions are associated with resident transportation, including commuting and travel, as well as goods and services delivery to the building.

Proposed mitigation measures

Construction phase

- Choose low-carbon building materials such as recycled steel, and low-impact concrete substitutes.
- Select materials sourced from nearby suppliers to reduce transportation emissions.
- Implement waste reduction strategies, such as salvaging and recycling construction materials
- Establish composting facilities to manage organic waste generated by residents and landscaping activities
- Create community gardens and green spaces to promote outdoor activities.
- Proper building orientation to make use of natural lighting and ventilation
- Installation of large windows for maximum utilisation of natural lighting and ventilation.

Occupation phase

- Enhance insulation, use energy-efficient windows, and seal air leaks to reduce heating and cooling loads.
- Install ENERGY STAR-rated appliances and LED lighting to lower electricity consumption.
- Install photovoltaic (PV) solar panels on rooftops to generate renewable electricity for the building.
- Use solar thermal systems to heat water for domestic use, reducing the need for fossil fuel-based water heaters.

8.3.4 E-wastes management

A significant environmental issue in a housing project is the generation of e-waste. In order to reduce detrimental effects on ecosystems, public health, and resource depletion, appropriate handling, recycling, and disposal techniques are essential. A circular economy and sustainable practices supported by increasing public knowledge of the advantages of recycling and managing e-waste can be considered as the best practice. During the construction phase, construction equipment and machinery can contribute to e-waste generation such as:

- Electrical Tools: Drills, saws, grinders, mixers, etc.
- Electronic Measuring Instruments: Laser levels, surveying equipment, etc.

During the operational phase, several sources can contribute to e-waste generation such as:

Household Appliances:

- Large Appliances: Refrigerators, washing machines, stoves, ovens, etc.
- Small Appliances: Microwaves, blenders, toasters, kettles, etc.
- Electronic Gadgets: Televisions, computers, laptops, tablets, smartphones printers, routers, modems etc.

Lighting and Electrical Equipment:

- Light Bulbs and Tubes: Incandescent, fluorescent, and LED bulbs.
- Electrical Wiring and Switches: Old and damaged wiring, switches, and sockets.

Communication Devices:

- Mobile Phones and Accessories: power banks, chargers, and damaged phones.

Electronic Toys and Games:

- Battery-Operated Toys: Remote-controlled cars, dolls, etc.
- Video Game Consoles and Accessories.

Proper disposal of e-waste is essential to prevent environmental contamination and recover valuable materials.

Proposed mitigation measures
<i>Construction phase</i> • Maintain an inventory of electronic equipment and devices used during construction to track usage and minimize surplus. • Consider leasing or renting electronic equipment instead of purchasing, especially for temporary needs, to reduce the volume of e-waste generated. • Prioritize the reuse of electronic equipment and devices from previous projects or within the construction site whenever possible. • Implement a waste management plan that includes separate collection and sorting of e-waste materials to facilitate recycling and prevent contamination. • Provide training to construction teams on the importance of proper e-waste disposal practices and the benefits of recycling. • Partner with certified e-waste recyclers to ensure proper disposal and recycling of electronic equipment and devices at the end of their lifecycle. <i>Occupation phase</i> • Encourage residents to maintain and repair electronic appliances and devices instead of replacing them when minor issues arise. • Provide information to residents about upgrade options and opportunities for extending the lifespan of electronic products through software updates or component replacement. • Establish community exchange programs where residents can donate or exchange their unwanted electronic devices with others, promoting reuse and reducing e-waste. • Partner with local charities or organizations that accept used electronic devices for refurbishment and redistribution to those in need. • Install convenient drop-off locations for residents to dispose of their electronic waste safely and responsibly. • Encourage residents to dispose of e-waste responsibly, such as participating in manufacturer take-back programs, where electronic manufacturers accept their products for recycling or proper disposal at the end of their lifecycle. Also, through designated recycling centers or e-waste collection programs.

8.3.5 Air pollution

Because of the expected higher levels of fugitive dust from excavation activity, stored earth materials, dusty roads, and concrete mixing, it is anticipated that throughout the construction phase, the air quality will be polluted. Small particles can be quite bothersome for the general public and pose a risk to public health. The use of fossil fuels by construction equipment and automobiles will emit pollutants such as carbon dioxide, suspended particulates, nitrogen dioxide, vaporized lead and sulphur dioxide. This is, however, anticipated to produce a temporal effect that only lasts as long as the construction activity. During the occupancy period, a number of elements, including heating, cooling, and ventilation systems, indoor activities, and the usage of specific materials or equipment, can contribute to air pollution from apartment complexes.

Particulates are associated with respiratory and eye diseases such as asthma, lung cancer, and conjunctivitis, especially in the young and elderly who are more vulnerable. Air pollution is also a major contributor to effects such as acid rain, which has been responsible for much damage to soil, fish resources, and vegetation, often very far from the emission sources. Air pollution adversely affects human health and the environment.

Proposed mitigation measures

Construction phase:

- Enclose the site with dust-proof net during construction
- Encourage construction workers to turn off engines when not in use.
- Forbid idling automobiles at the construction site.
- Undertake dust control measures such as using dust suppressants.
- Cover construction materials such as soil heaps and loose materials loaded on trucks to reduce airborne dust particles.
- In dry situations, spray water in the excavated portions and open ground surfaces with loose soil.
- Maintain in good condition all the equipment and machinery.
- Minimize the use of heavy machinery that generates dust.
- Regulate the operation and speed of construction vehicles.
- Store materials in covered areas to prevent off-gassing.
- Use modern construction equipment compliant with low emission standards.
- On gravel or earth roads on site, the vehicles of the Contractor and his suppliers may not exceed a speed of 25 km/h.
- Ensure compliance with NEMA air quality regulations

Occupation phase:

- Design and construct apartments with proper ventilation systems.
- Use low-VOC paints, finishes, and furnishings to minimize indoor air pollution.
- Implement smoking restrictions or designate smoking areas.
- Offer educational programs and resources to residents on indoor air quality.
- Encourage residents to engage in environmental restoration activities.

8.3.6 Soil disturbance and erosion

Excavations during site preparation, for example, in order to build the foundations, will significantly disturb the soil and geology of the project site. The site will be traversed by large machinery, which could cause soil compaction and erosion. Soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities. During the occupation phase, parking lots and paved surfaces can also accelerate runoff and erosion. The mobilization and transport of soil particles may result in sedimentation of surface drainage networks, which may result in impacts to the quality of natural water systems and ultimately the biological systems that use these waters. It may also pose a water quality

issue directly as a result of siltation and indirectly from contaminants carried with or attached to soil particles.

Proposed mitigation measures

Construction phase:

- Undertake well-managed excavations
- Install adequate and proper storm water drainage structures
- Undertake landscape works upon the completion of construction works
- Develop soil nailing details, if required, (a fabric mesh nailed to the surface then stabilized using shotcrete) for construction along the sloped faces on open excavations.
- Stabilize slopes and exposed soil with vegetation as part of restoration
- Use construction techniques that minimize soil compaction
- Designate specific areas for soil stockpiling and storage.
- Cover stockpiled soil to prevent erosion and sediment runoff.
- Develop and implement a siltation and erosion control plans.
- Monitor and maintain all erosion control measures during construction

Occupation phase:

- Plan for the restoration of disturbed areas with native vegetation.
- Ensure proper maintenance and use of green spaces.

8.3.7 Noise pollution

Noise pollution is a natural by-product of construction activity. Heavy machinery, excavations, and automotive activity are all expected to produce noise during building and construction projects, and this may cause nuisance to the surrounding residents. This adverse effect, while bothersome, will only last for the duration of the construction process. Beyond a certain point, noise becomes a nuisance and should be avoided. By taking the necessary steps, such noise emissions from the source site should be reduced as much as feasible. Once inhabited, the neighbourhood will experience varying amounts of noise depending on people's daily activities.

Proposed mitigation measures

Construction phase:

- Restrict noisy construction activities during daytime.
- Erect suitable and adequate noise barriers during construction.
- Inform neighbours on any construction works that produce much noise.
- Maintain plant equipment in good condition (if present)
- Sensitize drivers of construction machinery on effects of noise.
- Provide all workers with appropriate noise protective gears.
- Use construction equipment/machinery that meet noise emission standards.
- Implement regular equipment maintenance to reduce any noisy malfunctions.
- Encourage the use of low-noise construction practices and tools.
- Implement noise monitoring programs to ensure they remain within the recommended limits as per the Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009.
- Promptly address noise complaints from nearby residents.
- Install solution based sound proofing and sound absorption products including Rockwool Insulation, fiber Glass

wool insulation, foam insulation, Green glue compound, acoustic panels, acoustic ceilings and related metal profiles to suite the proposed residential units during the operation phase.

Occupation phase:

- Encourage residents to report noise disturbances to building management.
- Recommend residents to choose quieter appliances (washing machines, etc.)
- Provide tips on noise reduction practices within apartments.

8.3.8 Changes in hydrology/drainage

Apartment building development and occupancy can have a big impact on drainage and hydrology, causing more runoff and other hydrological problems. Construction work has the potential to flatten soil, lessen its permeability, and promote soil erosion. Apartment buildings often contain substantial paved areas and parking lots, which, once occupied, increase incidences of surface runoff. This is exacerbated where the stormwater management systems built into the area are not able to handle the additional volume of runoff. The pavements will lead to increased volume and velocity of storm water or run-off flowing across the area covered by the units. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems in addition to increased erosion or water logging in the Neighbouring areas.

Proposed mitigation measures

Construction phase

- Apply an excavation procedure as per NCA guidelines for the area
- Construct cascades to lessen the force of storm-water flow.
- Ensure proper design of efficient and maintainable drainage structures
- Ensure proper installation of drainage structures
- Use/Install permeable pavements, bioswales and green roofs to reduce surface runoff.
- Implement erosion and sediment control measures
- Stabilize construction slopes with erosion control mats or soil nails.
- Design and implement a comprehensive storm-water management plan
- Install sediment basins/silt fences to capture sediment-laden runoffs from the site.
- Ensure that storm-water management systems are installed and functional.
- Ensure wastewater does not mix with storm water.
- Ensure no wastewater is discharged into the environment not unless it is in compliance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2024
- Conduct regular inspections and monitoring of storm-water controls.

Occupation phase

- Promote sustainable green spaces that minimize the need for irrigation.
- Ensure proper management of wastes to prevent storm-water contamination
- Ensure no wastewater is discharged into the environment, not unless it is in compliance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2024
- Encourage residents to maintain their vehicles to prevent oil/chemical leaks.
- Foster a sense of community responsibility for storm-water management.

8.3.9 Water resources

Apartment housing construction may have a variety of effects on water resources, including freshwater sources. These effects might be substantial and different depending on location, size, design, and the presence of water infrastructure. During the construction process, a sizeable volume of water will be needed, particularly for the mixing, curing, and moistening of the construction site to control dust and for worker use (washing, drinking, etc.). Water will be in great demand during occupation. The anticipated big population will necessitate a consistent supply of water.

Proposed mitigation measures

Construction phase:

- Implement sediment control measures to prevent pollution of water resources within the project area including Kangemi Dam
- Apply prudent water use management avoiding unnecessary wastage
- Undertake water demand analysis and plan consumption efficiency with strict monitoring.
- Sensitizing construction staff to avoid irresponsible water use.
- Recycling of water at the construction phase where possible

Occupation phase

- Encourage residents to use low-flow fixtures & promptly repair leaks. This shall include ultra-low-flush toilets, low-flow showerheads and water saving taps.
- Implement greywater recycling systems where feasible for reuse.
- Make use of roof catchments to provide water i.e. for general purpose.
- Promote sustainable green spaces that minimize the need for irrigation.

8.3.10 Energy resources

Apartment buildings can have significant impacts on energy resources during both the construction and occupation phases. The construction of apartment buildings requires energy for various processes, including on-site construction activities. The provision of temporary utilities, such as electricity and water, during construction contributes to increased energy use. Apartment buildings have a significant impact on energy resources during the occupation phase. The energy demand within apartment units for heating, cooling, lighting, appliances, and electronics can be substantial. Lighting in common areas and individual units can contribute to energy consumption.

Proposed mitigation measures

Construction phase:

- Consider integrating renewable energy sources like solar to generate on-site clean energy and reduce reliance on conventional grid electricity.
- Incorporate key elements of energy-efficient design for the apartment
- Proper planning of materials transportation will ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts.
- Implement waste reduction to minimize energy associated with waste disposal.
- Use energy efficient equipment during the construction works.
- Minimize as much as possible electric loads created by mechanical equipment.
- Train construction worker on energy-efficient construction practices e.g., switching off electrical equipment or appliances when they are not being used
- Monitor energy use during construction and set targets for reduction of energy use

Occupation phase:

- Install occupancy sensors and daylight harvesting systems to automatically control lighting.
- Use cool roofing materials and reflective surfaces to reduce heat absorption and lower cooling energy demand.
- Consider installing sub-metering systems that allow residents to monitor their energy consumption.
- Insulate hot water pipes and consider centralized or tank-less water heating systems for improved energy efficiency.
- Conduct energy audits or assessments to identify areas where energy savings can be achieved within individual units and common areas.
- Foster a sense of community responsibility for energy conservation by organizing energy-saving events and initiatives among residents.

8.3.11 Oil leaks and spills pollution

Although it might not happen often at the site, it is nevertheless a good idea to monitor and control what does happen, especially from machinery being used during construction. Oil pollution can have a significant detrimental impact on the environment and people's health during both the construction and occupancy phases of residential units. Heavy machinery and construction vehicles, such as excavators, bulldozers, and generators, typically require oils and lubricants. During the operation phase, it is likely that some of the residents may use car oil to maintain their vehicles. Leaks, spills, or improper disposal of these oils may pollute the land and potentially drain into the surface and ground water resources within Loresho-Mountain View area such as Kangemi Dam.

Proposed mitigation measures*Construction phase:*

- Develop and implement a spill prevention and response plan.
- Ensure ready availability and supply of spill response equipment.
- Train construction personnel on spill containment and clean-up processes.
- Immediate cleanup of any wastewater or chemical spills using approved spill response procedures.
- Proper management and storage of hazardous liquid materials such as paints, solvents, detergents, oils, and fuels to prevent accidental spills or leakage into the sewer system or environment.
- Machinery site repair will be discouraged and repair work restricted to only approved garages
- Undertake regular inspections of construction equipment for oil leaks.
- Conduct routine maintenance to repair or replace worn-out parts.
- Implement erosion control measures to prevent oil-contaminated runoff.
- Installation of oil-water separators or sediment basins in parking, equipment storage, and vehicle maintenance areas, kitchens to prevent oil, grease, and sediments from entering the sewer system or stormwater drains.
- Regularly monitor the construction site for signs of oil pollution, including sheens on water surfaces or stained soil.

Occupation phase

- Provide convenient and secure disposal options for used oil.
- Maintain a supply of spill clean-up materials and equipment.
- Conduct routine inspections to identify and address issues before they become major problems.
- Promote awareness among residents about the environmental impacts of oil pollution
- Comply with all NEMA guidelines and regulations related to oil storage and handling.
- Provide oil interceptors along the drains leading from car park and potentially oil risk areas during the landscaping

works.

8.3.12 Public health & safety and occupational health & safety

During the building and occupancy phases, residential apartment developments can have a substantial impact on public health, occupational health, and safety. Construction activities can produce dust and particle matter, which can lead to respiratory problems and air pollution. Increased traffic can result in accidents and injuries, while noise disturbances might induce stress and sleep difficulties. Health risks for construction workers include noise, toxins, dust, and physical stress. Workers in property management and building maintenance are responsible for ensuring the buildings' structural integrity and safety.

Proposed mitigation measures

Construction phase:

(i) Workers

- Develop a comprehensive site safety plan that outlines safety procedures
- Use of specially trained personnel to identify and selectively remove potential health & safety risks
- Conduct regular safety meetings and training sessions for construction workers.
- Require all construction workers to wear appropriate PPE
- Safety signages should be placed strategically at the worksites.
- Ensure proper training and supervision for workers engaged in elevated work.
- Identify and properly manage hazardous materials on the construction site.
- Implement electrical safety measures to prevent electrical accidents.
- Establish fire safety procedures (fire extinguishers, emergency exits, etc.)
- A fully equipped first aid kit should be provided at the site.
- Develop and communicate emergency response plans.
- Implement measures to control noise and dust levels to protect workers.
- Provide comprehensive training to construction workers on occupational health and safety practices.
- Ensure use of standard construction materials and to the specifications.
- Sensitize staff on social/health issues such as drugs.
- Prepare and strategically post a Health & Safety Policy Statement.
- The project site should be registered by the Ministry of Labour as a workplace.
- Post strategically the Occupational Safety and Health Act, 2007 Abstract.

(ii) Affected people and communities

- Implement strict safety protocols and procedures to minimize risks associated with construction activities
- Use of specially trained personnel to identify and selectively remove potential health & safety risks
- Restrict access to the project site through a combination of institutional and administrative controls, with a focus on high risk structures or areas depending on site-specific situations, including erection of construction hoarding.
- Safety signages should be placed strategically around the project site.
- Designate qualified personnel to oversee construction activities and enforce safety regulations
- Conduct regular safety inspections and audits to identify and address potential hazards promptly
- Establish open lines of communication with affected communities to address concerns
- The immediate neighbours and other stakeholders should be sensitized on the dangers and risk associated with the construction works for enhanced self-responsibility on personal safety.
- Implement measures to minimize disruptions to neighbouring communities, such as controlling noise, and dust.
- Provide barriers and fencing to protect pedestrians from construction hazards.

*Occupation phase:***(i) Residents/occupants**

- Regularly inspect and maintain building systems (plumbing, electrical, etc.).
- Address maintenance issues promptly to prevent accidents.
- Carry out the statutory annual health and safety audits
- Ensure that fire safety equipment is in working order.
- Conduct fire drills and educate residents about evacuation procedures.
- Maintain proper ventilation systems to ensure good indoor air quality.
- Educate residents about personal safety practices.
- Provide convenient waste disposal facilities for residents.
- Regularly test/maintain the water supply to ensure it meets quality standards.
- Address plumbing issues promptly to prevent waterborne contaminants.
- Sensitize residents on environmental management
- Provide fully equipped First Aid Kits & train staff on its use

(ii) Local communities

- Ensure that housing units comply with building codes and safety standards, including fire safety
- Conduct regular inspections and maintenance of building systems and safety equipment
- Develop and communicate emergency response plans to residents, including procedures
- Establish community safety programs to promote awareness of safety hazards

8.3.13 Fire safety and preparedness

Residential developments can have significant impacts on fire and security preparedness during both the construction and occupation phases. These impacts can vary based on factors such as project size, location, building design, and the level of planning and coordination involved. During construction, there is an increased risk of fires due to the presence of flammable materials, equipment, and hot work activities like welding and soldering. Defective cooking appliances, faulty electrical wiring and inadequate electrical insulation & earthing can increase the risk of fire hazards during the operational phase of the proposed green affordable housing project.

Proposed mitigation measures*Construction phase:*

- Training workers on firefighting, evacuation, and emergency response
- Sensitize the workers on fire risks i.e. conduct regular fire drills
- Adapt effective emergency response plans
- Maintain/service firefighting equipment regularly
- Provide emergency numbers at strategic points
- Designate a fire assembly point.
- Implement electrical safety measures to prevent electrical accidents.

Occupation phase:

- Regularly inspect and maintain building electrical systems.
- Ensure that fire safety equipment is provided, in working order and periodically serviced; including smoke detectors, fire alarms, fire sprinkler systems, and clearly marked exit routes.
- Provide emergency numbers at strategic points
- Designate a fire assembly point.
- Conduct fire drills and educate residents about evacuation procedures.

- Provide sufficient firefighting equipment & train staff on its use
- Ensure the fire water reserve tank is always filled with water
- Carry out the statutory annual fire safety audit

8.3.14 Wastewater & sanitation

Residential apartment developments can result to the discharge of significant amounts of wastewater during construction and occupation phases. Poor wastewater management can affect aquatic ecosystems and water pollution. Factors like project size, location, and wastewater infrastructure can influence these impacts. During the construction stage, it is expected that wastewater will arise from the construction activities. Lack of or inadequate provision of toilets for use by workers can lead to ad hoc defecation in secluded areas or structures on the site, thus creating unsanitary conditions and sources of fly infestation. This can threaten the health of neighbours and the workers themselves. Indiscriminate sewage disposal can also result in the contamination of surface water such as Kangemi Dam and ground water resources within Westlands Sub-county. Wastewater during the operational stage, if not properly managed, can cause contamination of water resources, land, and air pollution. Washing and/or cleaning activities at the residential units will be the main source.

Proposed mitigation measures

Construction phase:

- Provide adequate drainage systems
- Surround the wash-out area with a sediment fence that slows down the water flow. Filter or settle-out all water pumped off the site. The water must be clear and ensured it meets the set criteria under the Water Quality Regulations of 2024 before it enters the storm water system. Gypsum can be applied to muddy (turbid) water to help clay particles settle.
- Installation of oil-water separators or sediment basins in parking, equipment storage, and vehicle maintenance areas to prevent oil, grease, and sediments from entering the stormwater drains.
- Contaminated water must be stored in well labelled containers and on hardstanding
- Contaminated water storage facilities should have adequate secondary containment and must not be allowed to overflow and appropriate protection from rain and flooding must be implemented.
- No contaminated water that does not meet the water quality standards and criteria under the Third Schedule of the Environmental Management and Coordination (Water Quality Regulations of 2024) may be released into Kangemi Dam, the natural system, and whether it is to surface or groundwater.
- Contaminated water that is removed from site must be disposed of at a facility approved by NEMA.
- Mixer washing containing cement effluent and batching activities should be done off-site to prevent pollution of the environment.
- Proper management and storage of hazardous liquid materials such as paints, solvents, detergents, oils, and fuels to prevent accidental spills or leakage into the sewer system or environment.
- Provide adequate temporary sanitary facilities for construction workers. Portable sanitary conveniences are highly recommended. A ratio of approximately 15 workers per toilet should be used. Regularly service and maintain these facilities to ensure proper hygiene.
- Comply with the respective EMCA regulations for construction site wastewater management.
- Monitor quality of wastewater to ensure compliance with the Environmental Management & Coordination (Water Quality) Regulations, 2024 and other relevant Laws.
- Design a sewerage system able to accommodate cumulative discharges from the proposed residential development.

Occupation phase

- Connect the housing units to the developed septic tank and most preferably a wastewater treatment plant.
- Regular inspection and maintenance of internal sewer lines to prevent blockages, leakages, or overflows.
- Installation of oil-water separators or sediment basins in parking, equipment storage, and vehicle maintenance areas, kitchens to prevent oil, grease, and sediments from entering the wastewater system or stormwater drains.
- Properly manage hazardous liquid waste materials (paints, detergents, etc.).
- Encourage residents to conserve water to reduce the volume of wastewater produced.
- Promote the use of low-flow fixtures and appliances.
- Monitor quality of wastewater to ensure compliance with the Environmental Management & Coordination (Water Quality) Regulations, 2024 and other relevant Laws.

8.3.15 Solid wastes

Residential apartment developments significantly impact solid waste generation and management during the construction and occupation phases. A significant amount of solid waste will be generated in the construction phase through the site clearing process and construction activities, which will generate related solid wastes including cement bags, stones, wood, broken glasses, containers, rods of metal, sharp objects (nails), etc. The project is expected to generate enormous amounts of solid waste during its operation phase. The bulk of the solid waste generated during this phase will consist of paper, plastic, glass, metal, and organic waste. Such wastes can be injurious to the environment through blockage of drainage systems, choking of water bodies, and negative impacts on human health. Some of these waste materials, especially plastic and polythene, are not biodegradable and thus may have long-term injurious effects on the environment. Even the biodegradable ones, such as organic wastes, may be injurious to the environment because, as they decompose, they produce methane gas, a greenhouse gas known to contribute to global warming.

Proposed mitigation measures*Construction phase:*

- Carry out solid waste management awareness programme for the workers
- Soil and earth excavated wastes to be used for landscaping.
- The chips waste and fines should be reduced at source by sound design and operations
- Develop a comprehensive waste management plan that outlines procedures for sorting, recycling, and disposing of construction waste.
- Set up designated areas on the site for sorting solid wastes.
- Provide well labelled and covered colour coded containers for construction waste segregation.
- Regularly empty and clean waste containers to prevent overflows and littering.
- Dispose all solid wastes in accordance with the Sustainable Waste Management Act 2022 and the Environmental Management & Coordination (Waste Management) Regulations, 2024.
- Safely store and label hazardous construction materials.
- Encourage the reuse of materials that minimize waste generation.
- Promote on-site crushing and recycling of concrete and masonry waste.
- Regularly monitor waste management practices to ensure compliance.
- Designate an area for temporarily holding waste materials
- Segregation of wastes at the source for ease of handling and disposal
- Regular inspection and maintenance of the drainage system to avoid blockage
- Contract a NEMA licensed waste management transporter for disposal.

Operation phase:

- Educate residents about proper waste management including the reduction at source and waste segregation e.g., separation of recyclables.
- Provide well labelled and covered colour coded containers for waste segregation.
- Dispose all solid wastes in accordance with the Sustainable Waste Management Act 2022 and the Environmental Management & Coordination (Waste Management) Regulations, 2024.
- Educate residents about the proper handling and disposal of hazardous materials.
- Encourage residents to reduce waste generation through practices like bulk purchasing, using reusable containers, and avoiding single-use plastics.
- Organize community clean-up events or neighbourhood recycling drives to raise awareness and promote responsible waste disposal.
- Establish a regular waste collection schedule to prevent overflowing bins and littering.
- Regular inspection and maintenance of the drainage system to avoid blockage

8.3.16 Sustainable availability of natural resources

The construction of the green affordable housing project necessitates the extraction of raw materials like timber, stone, sand, and minerals. This process can lead to deforestation, soil erosion, and habitat loss. The processing and manufacturing of construction materials often require significant energy consumption, contributing to greenhouse gas emissions and climate change. Water is essential for various construction activities, including concrete mixing, cleaning equipment, and landscaping. Excessive water usage can strain local water resources. Water is also required for domestic purposes during the occupation phase such as drinking, cooking, and sanitation. Increased water demand from multi-family projects can exacerbate water scarcity issues.

Proposed mitigation measures*Construction phase:*

- The proponent and/or contractor should source construction materials such as sand, ballast and hard core from registered quarry and sand mining firms, whose projects have undergone satisfactory environmental impact assessment/audit and received NEMA approval. such firms are expected to apply acceptable environmental performance standards, the negative impacts of their activities at the extraction sites are considerably well mitigated.
- Implementing recycling and waste diversion programs during construction to minimize the amount of waste sent to landfills.
- Using sustainable building materials with low environmental impact, such as recycled or locally sourced materials, reduces resource extraction, energy used for extraction & transportation; and also reduces waste.
- The proponent and/or contractor should only order for what will be required through accurate budgeting and estimation of actual construction requirements. This will ensure that materials are not extracted or purchased in excessive quantities to minimise wastage.
- The proponent and/or contractor should ensure that wastage, damage or loss of materials at the construction site is kept minimal, as wastage would lead to additional demand for and extraction or purchase of materials.
- Implementing water-efficient fixtures, such as low-flow toilets and faucets, and utilizing drought-resistant landscaping techniques reduce water consumption.
- Incorporating passive design principles such as orientation, insulation, and natural ventilation minimizes the need for heating and cooling.

Occupation phase:

- Installing solar panels to provide on-site renewable energy generation, reducing reliance on fossil fuels.

- Selecting energy-efficient appliances and lighting fixtures lowers electricity consumption and utility bills for residents.
- Using native plant species in landscaping.

8.3.17 Security and social impacts

Residential apartment developments impact security and social factors during construction and occupation phases. Construction can attract criminal activity, while occupations can create job opportunities and contribute to economic growth. Additionally, insecurity may arise during the construction phase since intruders may try to steal the building materials deposited on the site. During the occupation phase, security should be given paramount priority, considering that the people occupying these units are from diverse cultures and do not generally know the surrounding community. The main anticipated security risk during the occupation phase is petty theft.

Proposed mitigation measures

Construction phase:

- Establish a secure perimeter around the construction site.
- Install surveillance cameras at key points around the construction site.
- Consider using security containers or secure storage units. Secure construction equipment/materials to prevent theft or vandalism.
- Construction work timings shall only be as per NEMA licensing conditions
- Develop and communicate an emergency response plan.
- Ensure compliance with local security regulations and permit requirements.
- Ensure security staff are trained in emergency response procedures.
- Hire security personnel to patrol the project site on a 24/7 basis.
- Implement access control systems to allow only authorized people to the site
- Mark tools and equipment with identification to discourage theft.
- Require all workers and visitors to sign in and wear identification badges.
- Use motion-activated lights for added security during night-time hours.
- Use signage to communicate restricted access to unauthorized personnel.
- Post emergency & security contacts at strategic locations at the workplace.

Occupation phase:

- Develop evacuation plans for emergencies educate residents on the same.
- Ensure that outdoor areas, pathways, and parking lots are well-lit.
- Establish community watch programs to encourage residents to look out for one another and report suspicious activities to the authorities.
- Implement access control systems for residents and visitors.
- Install emergency call boxes to allow residents to request assistance quickly.
- Install security cameras at entrances, common areas, and parking facilities to deter criminal activity and aid in investigations.
- Maintain landscaping to eliminate potential hiding spots for intruders.
- Maintain visitor logs or guest registration systems to track visitors and ensure they have legitimate reasons for access.

8.3.18 Traffic and movement patterns

The main mode of transportation in the project area is private vehicles, public transport options like matatus, motorcycles and taxi. An increase in traffic due to construction vehicles and heavy vehicles could

create short-term disruptions and safety hazards for the above-mentioned road users. The transportation of project components and equipment to the proposed site will be by vehicular trucking transport. The project site is accessible from a murram access road off Waiyaki Way service lane.

Increase in traffic due to construction vehicles could cause disruptions to road users and increase safety hazards especially to school-going children. There will also be an increase in the movement of people during the construction phase.

During the occupancy of the housing units, increased traffic will be particularly as a result of private vehicles leaving and entering the housing complex.

Proposed mitigation measures

- The Contractor will develop a Traffic management plan for both the construction and operations phase of the project
- Public awareness programs should be developed by the Contractor with the community to identify areas of particular risk and approaches to reduce risk. This is expected to include awareness programs along roads leading to the site to frequent users on traffic dangers.
- Prepare detailed plan for signage along the Construction Area to facilitate traffic movement, provide directions to various components of the Works, and provide safety advice and warnings. All signs will be in both English and Swahili language
- Traffic calming and speed control measures should be instigated in consultation with the relevant authorities.
- All vehicles used for the project must be road-worthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential dust, noise and safety issues.
- Heavy vehicles should be inspected regularly to ensure their road safety worthiness. Install speed reduction signs and ensure enforcement of a 20–30 km/h site speed limit.

Occupation phase:

- IHS and the contractor to ensure roads utilized are either maintained in the present condition or upgraded if disturbed due to project activities.

8.3.19 Gender-Based Violence-SEA and SH

Gender-based violence (GBV) is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (i.e., gender) differences between males and females. It includes acts that inflict physical, sexual or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. GBV in project may manifest in terms of sexual exploitation and abuse (SEA) and workplace sexual harassment (SH).

SEA is any actual or attempted abuse of a position of vulnerability, differential power, or trust, for sexual purposes, including but not limited to, profiting monetarily and socially from the sexual exploitation of another. Sexual abuse is further defined as “the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.” Women, girls, boys and men can experience SEA.

Workplace SH includes unwanted sexual advances, request for sexual favours and sexual physical contact.

SEA of community members by project workers and SH among project workers are forms of GBV that are a potential risk and impacts to this proposed project. GBV has serious and far-reaching negative effects

including physical injuries resulting in death or disfigurement, psychological trauma, infection with HIV/AIDS, unwanted pregnancies, social stigmatization and exclusion and economic deprivation among others. Consequently, it is incumbent that preventive measures be mooted to prevent occurrence of such cases.

Proposed mitigation measures

To manage GBV risks, the contractor should prepare a SEA/SH Prevention and Response Action Plan that will include a GRM that ensures confidentiality. The plan should have an Accountability and Response Framework. The plan will include the necessary measures for prevention and response. The contractor can make reference to World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2020) for further guidance.

It should be noted that the decision to report a GBV case lies with the survivor or the guardians if the survivor (in case of a minor) and such a decision must be respected. Therefore, the contractor or project will only refer the survivor or guardian to the established referral pathway, including the nearest police station with a gender desk for handling GBV cases. Also, should a survivor choose legal redress, the project will similarly facilitate him/her by referring him/her to the nearest established legal support facility that offers legal support to GBV survivors.

Key tasks will include:

- Creating awareness to workers on the need to refrain from SEA/SH incidences
- Mandatory awareness creation for workers on required lawful conduct in the community and legal consequences for failure to comply with laws
- Mandatory signing and implementation of code of conduct for the workers
- Creation of partnership or liaison with specialized actors in GBV who can respond appropriately in case of any incidence (provide contacts to community)
- Ensure a survivor centered approach in responding to SEA/SH incidences i.e., decision to report lies with the survivor or the guardian in case of a minor.
- Contractor to provide established referral pathway including police station with a gender desk for handling SEA/SH cases and also free toll numbers/hot lines for reporting GBV
- The contractor will also facilitate any survivor who decides to take legal action by referring them to the nearest established legal support facility that offers legal support to GBV survivors.
- Ensure Confidential reporting and responding to SEA/SH cases if reported;
- Encourage reporting of all SEA/SH incidences to the chief or the grievance redress committee members or community elders.

8.3.20 Risk of Exclusion of Vulnerable Individuals

A considerable risk is the potential for the exclusion of Vulnerable Groups (VMGs) such as the PWDs, the women, the unemployed youth and the elderly, etc . The vulnerable groups' participation and inclusion could be disadvantaged based on social identity which may be across dimensions of gender, age, disability, and socio-economic status.

During the baseline studies, the consultants, with the help of the community members, identified those considered vulnerable in the community include:

1. Persons Living with Disabilities (PWDs)
2. The Elderly
3. The Poor
4. The widows/ Female-Headed Households
5. Unemployed Youth

6. Low-Income Households
7. Domestic workers
8. Children (in single-parent households)

Proposed mitigation measures
• Consultations with the different vulnerable groups identified to ensure that; ✓ The vulnerable groups are aware of the project and its impacts ✓ The vulnerable groups can benefit from the project • Provide support to their (vulnerable groups) participation arrangements in the project • Commit to open and transparent communication and engagement from the beginning and have a considered approach in place • Regularly monitor performance in engagement • Ensure the vulnerable people are represented in the community-led committees i.e. Labour Recruitment Committee, CSR committee • Implement affirmative action in employment • Implement the existing grievance redress mechanism.

8.3.21 Cultural heritage

During the assessment there were no observed resources such as sacred shrines nor burial sites to be affected by the project. The Project infrastructure is generally sited on a moderately modified habitat, but due to the fact that the project will involve excavation, there is potential to come across locations or items of archaeological or cultural significance.

Mitigation measures
<i>Pre-construction phase:</i> • A detailed topographic survey has been conducted, meticulously mapping all natural features. This survey aims to inform the project's design and layout, prioritizing the preservation of existing indigenous trees as possible. • The proponent shall ensure that provisions for managing chance finds, defined as cultural heritage encountered unexpectedly during project implementation, are in place and included in contracts, as appropriate. <i>Construction phase:</i> The Contractor is responsible for familiarizing themselves with the following “Chance Finds Procedures”, in case culturally valuable materials are uncovered during excavation; and awareness training on chance find to the workers: • Stop work immediately following the discovery of any materials with possible archaeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities; • Protect artifacts as well as possible using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artifacts • Prevent and penalize any unauthorized access to the artifacts • Restart construction works only upon the authorization of the relevant authorities.

8.3.22 Social pathologies, including HIV/AIDS

HIV and AIDS remains a major challenge in Kenya as well as in Nairobi City County. The epidemic continues to adversely impact on all spheres of the County; economic, social and health sectors.

The project construction will improve the economic status of some of the people employed thus increasing the disposable income with the probability of indulgence in substance abuse and using the money to solicit for sex.

During site clearance, it is expected that a lot of dust will be generated from cutting down of the vegetation which will impact on the neighboring residents. Additionally, construction vehicles driving on the dirt road and mixing of concrete for construction will also generate dust. This could lead to exacerbating illnesses of the upper respiratory tract i.e. asthma. However, the site preparation which will likely generate the most dust, will be for a short period of time.

Vector breeds in all types of polluted domestic water such as drains, ponds and stagnant streams. Solid waste, human waste and wastewater will be generated from the construction site. In addition, there will be other wastes arising from construction activities of the project facilities. These wastes may contribute to the rise of vector borne diseases if proper disposal mechanisms are not put in place.

Proposed mitigation measures

- IHS shall provide special specifications in the contract documents stipulating the need for HIV/AIDS awareness and sensitization among the project staff.
- IHS and the Contractor should put in place an STI and HIV/AIDS awareness campaign and services for the construction crew to promote safe sex practices and other control measures in order to reduce this anticipated negative outcome;
- Employees contractors and subcontractors will be required to follow, and will be trained in, the Worker Code of Conduct which includes context specific guidelines on worker-community interactions, worker-worker interactions and alcohol and drug use.
- Provide access to free condoms at all worker sites and accommodation.
- Dust suppression measures should be implemented such as wetting on a regular basis.
- An Effluent Discharge Plan to be prepared for the construction phase. This shall include proper drainage channels in the design of the facility. Should there be effluent release to the environment, it shall meet the requirements under the water quality regulations (EMCA) and seek prior authorisation from NEMA ..

8.3.23 Social Cohesion and Integration

The unemployment rate in Westlands Sub-county was reported to be high during the engagements with the community members. The project is likely to contribute to high expectations of employment creation. During the public/stakeholder consultation process, the community highlighted the need to maximize employment opportunities for the youth.

The proposed project is expected to provide employment to workers living within the project area. There will be a variety of jobs for unskilled, semi-skilled or skilled workers. It is common to find that the available jobs for local communities are the unskilled type. This implies at the semi-skilled and skilled workers may come from other parts of the county or Kenya. The influx of such workers taking up the skilled jobs and getting paid more than those indigenous to the area could lead to poor social cohesion with the host communities.

Also, if it is perceived that preferential treatment is being given to outsiders both in terms of procurement and services this could potentially lead to discontent among the community members. Corruption and nepotism could also exacerbate this impact. The impacts of social divisions over limited jobs are predominantly expected during the construction phase.

Proposed mitigation measures

- To the greatest extent possible, measures to manage and enhance local employment opportunities should be integrated into the labour and human resources plan. Priority for skilled and semi-skilled labor positions should be given to individuals from the local community in Mountain View. This approach ensures that the project benefits the immediate community by creating job opportunities and fostering economic growth.
- The Contractor and IHS will prioritize procurement of goods and materials from small and medium enterprise (SME) in the local communities and surrounding regions
- The Contractor will provide the first opportunity for any skilled and semi-skilled jobs to workers living in the vicinity of the project site where construction works are required. This will be managed through the local administration office.

9 CHAPTER 9: CLIMATE CHANGE RISK AND VULNERABILITY ASSESSMENT

9.1 Introduction

This section provides an assessment of climate change vulnerability and risks pertinent to the project area, informed by national and county-scale climate data and projections. The analysis synthesizes observed trends, future projections, and sector-specific vulnerabilities to identify potential impacts on the proposed development and its surrounding environment. Primary data sources include the World Bank's Climate Change Knowledge Portal (CCKP) for Kenya and the Kenya County Climate Risk Profile Series: Nairobi County.

Nairobi City County experiences a subtropical highland climate moderated by its elevation of approximately 1,600–1,800 metres above sea level. The County is characterized by a bimodal rainfall regime, with the long rains typically occurring between March and May and the short rains between October and December. Data from the World Bank Climate Change Knowledge Portal (CCKP) indicate that Nairobi experiences mean annual temperatures generally ranging between 17°C and 20°C, while mean annual rainfall averages approximately 800–1,100 mm, although rainfall distribution varies across the County due to topography and urban influences.

Observed climatic trends indicate a gradual warming of the County over the last several decades. According to the Nairobi County Climate Risk Profile, mean annual temperatures have increased by approximately 1.0°C since 1960, with minimum temperatures increasing more rapidly than maximum temperatures. The profile further notes increasing climate variability, characterized by less predictable rainfall patterns, more frequent extreme rainfall events, localized urban flooding, and prolonged dry spells between rainy seasons. These changes have been compounded by rapid urbanization, land-use change, and the urban heat island effect, increasing the County's vulnerability to climate-related risks such as flooding, water scarcity, public health challenges, and pressure on urban infrastructure.

9.2 Historical Flood Events and Climate-Related Hazard Exposure in the Project Area

In early March 2026, Nairobi experienced a significant flood event following exceptionally heavy rainfall associated with the onset of the long rains season. On the evening of 6 March 2026, intense rainfall lasting several hours generated widespread flash flooding across the city. Rainfall totals recorded at meteorological stations within the Nairobi metropolitan area ranged from approximately 112 mm to 160 mm within a few hours, overwhelming existing drainage systems and causing surface runoff to accumulate rapidly in low-lying areas. Reports indicated that the flooding resulted in loss of life, displacement of residents, damage to homes and businesses, disruption of transport networks, and widespread traffic congestion across the city. Major roads became impassable in several locations, while numerous vehicles were stranded or swept away by floodwaters. Emergency response agencies, including the Kenya Red Cross and national security agencies, were deployed to support rescue and recovery operations.

The flood event highlighted Nairobi's vulnerability to extreme rainfall due to rapid urbanization, increasing surface impermeability, encroachment on drainage corridors, and inadequate stormwater infrastructure in some parts of the city. Low-lying areas adjacent to rivers, drainage channels, and wetlands experienced the most severe impacts, while disruptions to transportation and commercial activities were reported across much of the county. Flooding also affected critical infrastructure, including roads, bridges, utilities, and residential areas, resulting in considerable economic and social losses.

Within the western parts of Nairobi, including Loresho, Mountain View, Kangemi, and neighbouring areas, localized flooding and stormwater accumulation were reported during the event. The Kenya Red Cross identified Loresho among the areas affected by the March 2026 floods. The impacts in the locality were largely associated with runoff from surrounding higher ground, temporary overtopping of drainage channels, localized road flooding, and traffic disruptions along sections of Waiyaki Way and adjacent roads. The presence of Kangemi Dam, situated approximately 200 metres east-north-east of the proposed project site, likely contributed to the temporary retention and attenuation of stormwater runoff within the local catchment, although the increased volume of runoff entering the dam and associated drainage systems underscored the importance of protecting this hydrological feature and maintaining adequate drainage capacity within the area.

For the proposed residential development, the March 2026 flood event demonstrates the importance of incorporating effective stormwater management measures into the project design. Particular attention should be given to controlled runoff discharge, provision of adequate drainage infrastructure, erosion control, rainwater harvesting, and protection of downstream receptors such as Kangemi Dam. These measures will help reduce the risk of contributing to localized flooding and support climate resilience within the broader Loresho–Mountain View catchment.

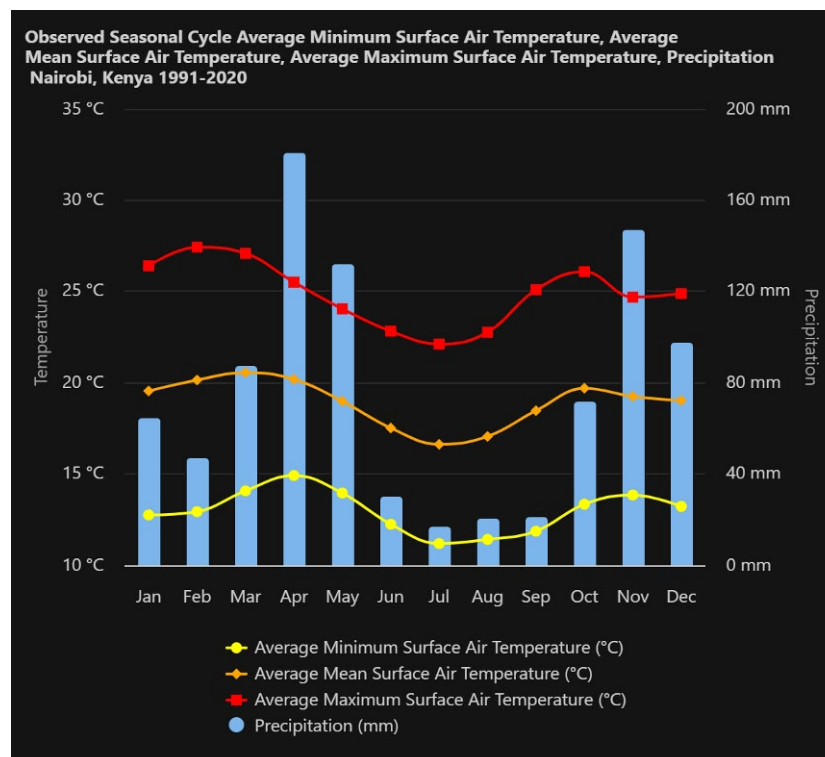


Figure 10: Observed Seasonal Cycle for Nairobi 1991-2020

Source: World Bank CCKP

9.3 Future Climate Projections

Future climate projections for the Nairobi region, based on ensemble models under medium (RCP 4.5) and high (RCP 8.5) emission scenarios, indicate a continued trajectory of warming and altered hydrology.

9.3.1 Temperature

Projections indicate a consistent increase in mean annual temperature. By the 2050s (2040-2059 period), the mean annual temperature is projected to increase by 1.4 to 2.0°C under RCP 4.5, and by 1.8 to 2.5°C under RCP 8.5 relative to the 1986-2005 baseline (World Bank Group, 2021). The number of hot days and heatwaves is expected to rise significantly.

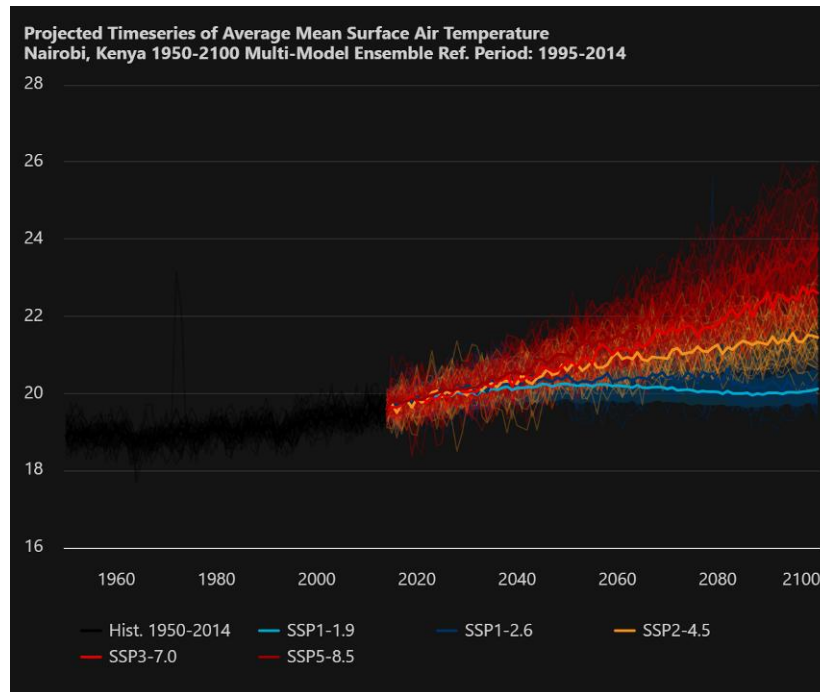


Figure 11: Projected Timeseries of Average Mean Surface Air Temperature: Nairobi 1950-2100
Source: World Bank CCKP

9.3.2 Precipitation

Projections for precipitation show greater model uncertainty but point towards changes in patterns rather than a stark change in total annual amount. There is a consensus on increased rainfall variability, with more intense and erratic rainfall events during the wet seasons and a potential increase in the length and severity of dry periods (MoALF, 2016). Some models project a modest increase in precipitation during the short rains (OND) season.

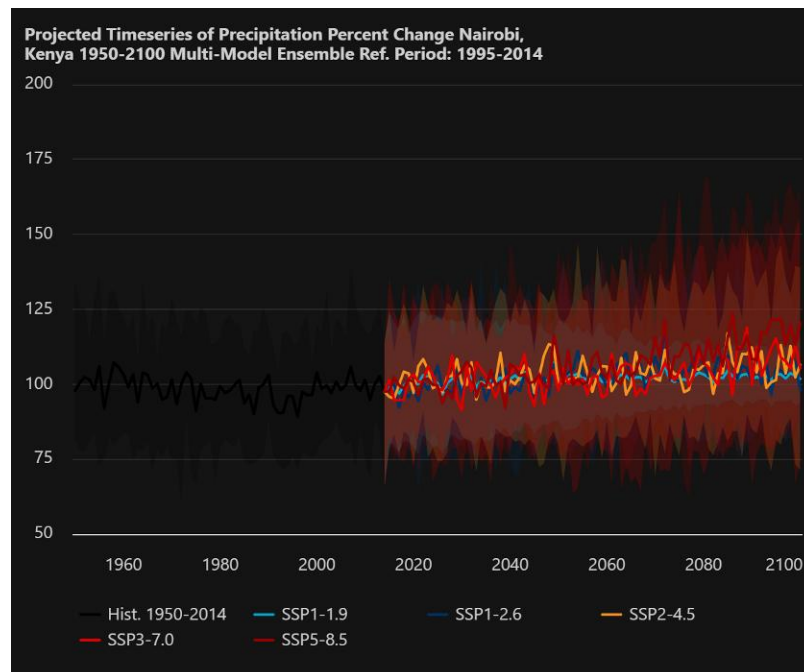


Figure 12: Projected Timeseries of Precipitation Percent Change: Nairobi 1950-2100

Source: World Bank CCKP

9.4 Key Climate Hazards and Vulnerabilities for Nairobi County

The synthesis of observed trends and future projections identifies the following key climate hazards as most relevant to the built environment in Nairobi County:

1. **Increased Intensity of Rainfall and Flooding:** More frequent high-intensity rainfall events overwhelm drainage infrastructure, leading to flash flooding, erosion, and siltation. Urban areas with impermeable surfaces are particularly vulnerable.
2. **Prolonged Droughts and Water Scarcity:** Extended dry spells stress water supply systems, which rely on surface water and groundwater recharge. Competition for water resources between urban and industrial users is likely to intensify.
3. **Heat Stress:** Rising temperatures, particularly urban heat island effects in developing areas, increase thermal discomfort, raise cooling energy demands, and may affect outdoor worker health and material degradation.

9.5 Risk Assessment for the Proposed Project

The project's vulnerability stems from its interaction with the identified climate hazards. The risk assessment evaluates the potential consequence, likelihood, and identifies targeted mitigation measures to ensure long-term sustainability and resilience as shown in the table below.

Table 22: Risk Assessment for the Proposed Project

Climate Hazard	Project Vulnerability/Exposure	Potential Impact on Project	Likelihood (Medium-Term)	Risk Rating	Recommended Mitigation & Adaptation Measures
Heavy Rainfall & Flooding	- Exposure of site drainage, access roads, and foundations to surface water runoff. - Increased silt load.	- Stormwater drainage overload; - localised flooding; - erosion of exposed soils; - construction delays; - damage to infrastructure.	Minor		- Implement a Sustainable Urban Drainage System (SUDS) featuring permeable pavements and bioswales to manage runoff at source, enhance infiltration, and reduce peak flow. - Design all drainage infrastructure to exceed current county standards, using future climate projections (e.g., for a 1-in-50-year storm event under RCP 8.5). - Establish and strictly enforce construction-phase erosion and sediment control plans. - Elevate critical electrical and mechanical services above projected flood levels.
Drought & Water Scarcity	- Dependence on NCWSC. - Projected increase in water demand.	- Water shortages affecting construction and occupancy; - increased operational costs; conflict with other users.	Moderate		- Install rainwater harvesting systems from all roof areas, with substantial storage capacity linked to projected rainfall variability. - Use water-efficient fixtures (low-flow taps, showers, WCs) throughout. - Specify drought-resistant native species for landscaping. - Plan for greywater recycling systems to further reduce demand on potable supply.

Climate Hazard	Project Vulnerability/Exposure	Potential Impact on Project	Likelihood (Medium-Term)	Risk Rating	Recommended Mitigation & Adaptation Measures
Heat Stress	- Exposure of workforce during construction and future residents/occupants. - Building materials.	- Reduced outdoor worker productivity and health risks; - increased energy demand for cooling; - accelerated ageing of some materials.	Moderate		- Employ passive cooling design such as optimize building orientation for cross-ventilation, use shading devices (louvers, overhangs), and specify high-albedo (reflective) materials for roofs and exteriors. - Enhance green infrastructure by incorporating green roofs, vertical greening, and preserve/maintain mature tree canopy to mitigate urban heat island effect. - Ensure thermal efficiency of building envelopes through high-performance glazing and adequate insulation to reduce cooling loads. - Develop and enforce a Heat Action Plan for construction, including adjusted work hours, shaded rest areas, and hydration protocols.

9.6 Conclusion

The climate change risk assessment identifies three primary hazards pertinent to the project site: intense rainfall, water scarcity, and heat stress. Upon detailed evaluation of site-specific conditions and existing infrastructure, the associated risks are refined as follows:

- The risk of flooding is assessed as minor. This rating is based on the project area's well-drained red soils, the gentle north-easterly slope towards Kangemi Dam that promotes natural runoff, and the incorporation of comprehensive, engineered drainage designs into the project's masterplan.
- The risk of water scarcity is assessed as moderate. This rating reflects a balanced outlook: while the project's design incorporates substantial on-site storage capacity to buffer against short-term disruptions and ensure a reliable internal supply, the risk is sustained at a moderate level due to the overarching threat of prolonged, county-wide droughts that could severely strain the broader municipal resource system.
- The projected increase in temperature presents a moderate risk, as projected temperature increases will directly influence building energy demand for cooling and occupant thermal comfort, necessitating deliberate design interventions.

Therefore, while the overarching climate hazards are confirmed, the project's integration with fit-for-purpose infrastructure and deliberate site-responsive design substantially mitigates the most severe impacts. The focus of subsequent adaptation measures will be to reinforce this inherent resilience, particularly through passive cooling architectural strategies, water efficiency maximisation, and the enhancement of green infrastructure to address the residual moderate risks and ensure long-term sustainability.

10 CHAPTER 10: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

10.1 Overview

The Environmental and Social Management Plan (ESMP) for the proposed residential project covers anticipated negative effects, mitigating actions, roles, expenses, and trackable indicators. This ESMP guarantees the efficacy of activities to improve environmental quality by considering all stages of development; construction, occupation and decommissioning. Environmental monitoring involves measurement of relevant parameters, at a level of details accurate enough, to distinguish the anticipated changes. Monitoring aims at determining the accurate parameter measurement is necessary for environmental monitoring in order to spot expected changes and assess how well environmental quality-improving initiatives are working.

The proponent acknowledges that the proposed project activities will have some impacts on the biophysical and social environment. Thus, the focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a continuous improvement programme. It is noteworthy that key factors and processes may change through the lifecycle of the proposed green affordable housing project and considerable provisions have been made for dynamism and flexibility of the ESMP. As such, the ESMP is a dynamic tool that is subject to a regular regime of periodic review and improvement.

10.2 ESMP for the construction phase

Table 23: ESMP during construction phase

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
Loss of vegetation & trees	- Minimize clearing by restricting vegetation removal to the exact building footprint and utility corridors. - Implement a Tree Replacement Plan at a minimum ratio of 1:2, with priority given to indigenous, drought-resistant species. - Clearly demarcate “no-go” vegetation zones to prevent accidental clearing. - Stabilize exposed soils immediately using mulch, ground cover, or fast-growing grasses to prevent erosion.	Proponent Contractor Workers	Routine inspection	200,000 (part of the project cost)
Invasive species	- Develop a site-specific invasive species management plan - Implement erosion control measures, such as mulching and revegetation with native plant - Clean construction equipment and vehicles before entering and leaving the construction site - Source construction materials from reputable suppliers to minimize the risk of introducing invasive species. - Raise awareness among workers about the importance of invasive species management.	Proponent Contractor Workers Drivers	Routine inspection	50,000
Carbon footprints	- Choose low-carbon building materials such as recycled steel, and low-impact concrete substitutes. - Select materials sourced from nearby suppliers to reduce transportation emissions. - Implement waste reduction strategies, such as salvaging and recycling construction materials - Establish composting facilities to manage organic waste generated by residents and landscaping activities - Create community gardens and green spaces to promote outdoor activities.	Proponent Contractor	Throughout the construction phase	Part of the project cost
E-waste	- Maintain an inventory of electronic equipment and devices used during construction to track usage and minimize surplus. - Consider leasing or renting electronic equipment instead of purchasing, especially for temporary needs, to reduce the volume of e-waste generated. - Prioritize the reuse of electronic equipment and devices from previous projects or	Proponent Contractor	Routine inspection	100,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
	<i>within the construction site whenever possible.</i> <i>Implement a waste management plan that includes separate collection and sorting of e-waste materials to facilitate recycling and prevent contamination.</i> <i>Provide training to construction teams on the importance of proper e-waste disposal practices and the benefits of recycling.</i> <i>Partner with certified e-waste recyclers to ensure proper disposal and recycling of electronic equipment and devices at the end of their lifecycle.</i>			
Air pollution	- Enclose the site with dust-proof net during construction - Undertake careful screening of construction site to contain and arrest dust. - Encourage construction workers to turn off engines when not in use. - Forbid idling automobiles at the construction site. - Undertake dust control measures such as using dust suppressants. - Cover construction materials to reduce airborne dust particles. - In dry situations, spray water in the excavated portions being constructed. - Maintain in good condition all the equipment and machinery. - Minimize the use of heavy machinery that generates dust. - Regulate the operation and speed of construction vehicles. - Store materials in covered areas to prevent off-gassing. - Use modern construction equipment compliant with low emission standards. - Undertake regular sprinkling of water on dusty areas and access roads - Using efficient machines with low emission technologies - Ensure compliance with EMCA (Air Quality) Regulations 2024.	Proponent Contractor Workers Drivers	Daily inspection Routine maintenance	600, 000 (part of the project cost)
Soil disturbance	- Undertake well-managed excavations and compact loose soils - Install adequate and proper storm water drainage structures - Undertake landscape works upon the completion of construction works - Provide adequate soil erosion control and conservation structures - Stabilize slopes and exposed soil with vegetation as part of restoration - Use construction techniques that minimize soil compaction - Designate specific areas for soil stockpiling and storage. - Cover stockpiled soil to prevent erosion and sediment runoff. - Develop and implement a siltation and erosion control plans. - Monitor and maintain all erosion control measures during construction	Proponent Contractor	Random inspection	135,000
Noise and excessive	- Erect suitable and adequate noise barriers during construction. - Inform neighbours on any construction works that produce much noise.	Proponent Contractor	Random inspection Routine	1,750,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
vibrations	• Maintain plant equipment in good condition (if present) • Sensitize drivers to construction machinery on effects of noise. • Provide all workers with appropriate noise protective gears. • Use construction equipment/machinery that meet noise emission standards. • Implement regular equipment maintenance to reduce any noisy malfunctions. • Encourage the use of low-noise construction practices and tools. • Implement noise monitoring programs to ensure they remain within the limits. • Promptly address noise complaints from nearby residents. • Install solution-based sound proofing and sound absorption products on the building walls • Comply with EMCA (Noise and excessive vibration) Regulations 2009	Workers Drivers	maintenance	
Changes in hydrology/ Impended drainage	• Apply an excavation procedure as per NCA guidelines for the area • Construct cascades to lessen the force of storm-water flow. • Ensure proper design of efficient and maintainable drainage structures • Ensure proper installation of drainage structures • Use permeable pavements and green roofs to reduce surface runoff. • Implement erosion and sediment control measures • Stabilize construction slopes with erosion control mats. • Design and implement a comprehensive storm-water management plan • Use sediment and oil separators to remove pollutants from site runoff. • Ensure wastewater does not mix with storm water. • Ensure no wastewater is discharged into the environment, not unless it is in compliance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2024 • Ensure that storm-water management systems are installed and functional. • Conduct regular inspections and monitoring of storm-water controls.	Proponent Contractor	Routine inspection & Maintenance	Part of the project cost
Water resources	• Implement sediment control measures to prevent downstream water pollution • Install sediment and oil separators to remove pollutants from site runoff • Ensure that stormwater management systems are installed and functional • Apply prudent water use management avoiding unnecessary wastage • Undertake water demand analysis. • Recycling of water at the construction phase where possible • Implement rainwater harvesting to supplement water requirements from NCWSC.	Contractor Workers	Daily inspection	75,000
Energy	• Calculate power supply requirements and monitor usage.	Contractor	Daily inspection	1,050,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
resources	• Incorporate key elements of energy-efficient design for the apartment • Implement waste reduction to minimize energy associated with waste disposal. • Consider integrating renewable energy sources like solar for lighting & heating. • Use energy efficient equipment during the construction works. • Train construction worker on energy-efficient construction practices.	Workers		
Oil pollution	• Maintenance of construction vehicles to be carried out at the contractor's yard (off the site) • Develop and implement a spill prevention and response plan. • Ensure ready availability and supply of spill response equipment. • Immediate cleanup of any wastewater or chemical spills using approved spill response procedures. • Train construction personnel on spill containment and clean-up processes. • Proper management and storage of hazardous liquid materials such as paints, solvents, detergents, oils, and fuels to prevent accidental spills or leakage into the sewer system or environment. • Undertake regular inspections of construction equipment for oil leaks. • Conduct routine maintenance to repair or replace worn-out parts. • Implement erosion control measures to prevent oil-contaminated runoff. • Installation of oil-water separators or sediment basins in parking, equipment storage, and vehicle maintenance areas to prevent oil, grease, and sediments from entering the stormwater drains. • Regularly monitor the construction site for signs of oil pollution.	Proponent Contractor	Routine inspection & maintenance	1,200,000
Public health, occupational health and safety	• Workers to be adequately insured against accidents. • Develop a comprehensive site safety plan that outlines safety procedures • Conduct regular safety meetings and training sessions for construction workers. • Require all construction workers to wear appropriate PPE • Ensure proper training and supervision for workers engaged in elevated work. • Identify and properly manage hazardous materials on the construction site. • Implement electrical safety measures to prevent electrical accidents. • Establish fire safety procedures (fire extinguishers, emergency exits, etc.) • Develop and communicate emergency response plans. • Implement measures to control noise and dust levels to protect workers. • Train staff/workers on occupational health and safety. • Ensure use of standard construction materials and to the specifications.	Proponent Contractor Workers	Weekly inspection	17,000,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
	- Sensitize staff on social/health issues such as drugs. - Post strategically the Occupational Safety and Health Act, 2007 Abstract. - Keep record of emergency service telephone Police, Fire brigade, Ambulance, etc. - Provide first aid kits at strategic places in the site			
Fire safety and preparedness	- Undertake training on firefighting, evacuation, and emergency response - Sensitize the residents on fire risks i.e. conduct regular fire drills - Adapt effective emergency response plans - Maintain/service firefighting machinery regularly - Provide emergency numbers at strategic points - Designate a fire assembly point. - The site will be registered by DOSHS as a workplace. - Implement electrical safety measures to prevent electrical accidents. - Establish fire safety procedures (fire extinguishers, emergency exits, etc.) - Train staff/workers on fire safety. - Post strategically the Occupational Safety and Health Act, 2007 Abstract. - Install firefighting facilities following County's Fire Masters requirements approval. - Develop and adapt a (fire) emergency response plan for the project - Ensure that all firefighting equipment are regularly maintained and serviced. - Provide fire hazard signs such as 'No Smoking' sign	Contractor Proponent Workers	Weekly inspection	Part of the project cost (HSE cost)
Wastewater	- Design a sewerage system able to accommodate cumulative discharges. - Provide adequate drainage systems - Ensure effluents are discharged responsibly to the sewerage system - Provide adequate temporary sanitary facilities for construction workers - Regularly service and maintain these facilities to ensure proper hygiene. - Install sediment basins to treat construction site runoff - Comply with NEMA regulations for construction site wastewater management. - Monitor wastewater to ensure compliance with the EMCA (Water Quality) Regulations, 2024.	Proponent Contractor	Routine inspection & maintenance	335,000
Solid waste	- Develop a comprehensive waste management plan and procedures. - Set up designated areas on the site for sorting solid wastes. - Contract a NEMA licensed waste management firm for disposal. - Provide containers for construction waste segregation. - Regularly empty and clean waste containers to prevent overflows and littering. - Safely store and label hazardous construction materials.	Proponent Contractor Workers	Weekly inspection	3,700,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
	- Encourage the reuse of materials that minimize waste generation. - Promote on-site crushing and recycling of concrete and masonry waste. - Regularly monitor waste management practices to ensure compliance. - Designate an area for temporarily holding waste materials - Segregation of wastes at the source for ease of handling and disposal - Regular inspection and maintenance of the drainage system to avoid blockage - Dispose all solid wastes in accordance with the EMCA (Waste Management) Regulations, 2024.			
Security and social impacts	- Establish a secure perimeter around the construction site. - Install lightings and surveillance cameras at key points around the construction site. - Consider using security containers or storage units. - Construction work timings shall only be as per NEMA licensing conditions - Develop and communicate an emergency response plan. - Install & display signage indicating the presence of surveillance cameras. - Ensure compliance with local security regulations and permit requirements. - Ensure security staff are trained in emergency response procedures. - Implement access control systems to allow only authorized people to the site - Mark tools and equipment with identification to discourage theft. - Require all workers and visitors to sign in and wear identification badges. - Secure construction equipment/materials to prevent theft or vandalism. - Store construction materials in locked and secure areas to prevent theft. - Use motion-activated lights for added security during night-time hours. - Use signage to communicate restricted access to unauthorized personnel. - Hire security guards to monitor movement in and out for both day and night time	Contractor Proponent	Daily inspection	2,000,000
Traffic management	- Prepare and implement a Traffic Management Plan. • Schedule delivery of materials during off-peak traffic hours where feasible. - Install appropriate traffic signage and warning notices around the site. - Use trained traffic marshals during delivery and offloading of materials where necessary. - Enforce low speed limits within and around the site. - Ensure construction vehicles are well maintained and covered during transportation of loose materials. - Provide safe entry and exit points to the site. - Provide adequate on-site parking during operation.	Proponent Contractor Drivers	Daily inspection	375,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
Conflict with neighbours	• Provide advance notice to neighbouring residents and business establishments regarding major construction milestones. • Limit high-noise activities and ensure machinery is well-maintained. • Install boundary hoarding to reduce noise, dust, and visual disturbance. • Maintain good housekeeping to avoid litter and scattered debris. • Establish a grievance redress mechanism (GRM) with a designated contact person. • Maintain uninterrupted access to neighbouring developments; if temporary diversions are needed, notify stakeholders in advance.	Proponent & contractor	Continuous communication	Part of the project cost
Social pathologies, including HIV/AIDS	• The contractor will undertake sensitization of the HIV /AIDs AND STD awareness e.g. by use of posters etc.; • - Encourage workers to go for HIV voluntary counselling, testing and referral services; • - Contractor to institute HIV/AIDS awareness program and implemented as part of the Health and Safety Management Plan targeting both workers and the local community; • - The Contractor shall institute HIV/AIDS awareness and prevention campaign amongst his workers for the duration of the contract.	Contractor	Throughout the construction period	250,000
Gender-Based Violence-SEA and SH	• Creating awareness to workers on the need to refrain from SEA/SH incidences • Mandatory awareness creation for workers on required lawful conduct in the community and legal consequences for failure to comply with laws • Mandatory signing and implementation of code of conduct for the workers • Creation of partnership or liaison with specialized actors in GBV who can respond appropriately in case of any incidence (provide contacts to community) • Ensure a survivor centered approach in responding to SEA/SH incidences i.e., decision to report lies with the survivor or the guardian in case of a minor. • Contractor to provide established referral pathway including police station with a gender desk for handling SEA/SH cases and also free toll numbers/hot lines for reporting GBV • The contractor will also facilitate any survivor who decides to take legal action by referring them to the nearest established legal support facility that offers legal support to GBV survivors. • Ensure Confidential reporting and responding to SEA/SH cases if reported; • Encourage reporting of all SEA/SH incidences to the chief or the grievance redress committee members	Contractor	Throughout the construction period	200,000
Risk of	Conduct engagement sessions with the identified vulnerable groups through focus	Proponent	Continuous	Company

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
Exclusion of Vulnerable Groups i.e. PLWDs elderly, poor, widows etc.	group discussions to ensure that; - The vulnerable groups are aware of the project and its impacts - The vulnerable groups can benefit from the project - Provide support to their (vulnerable groups) participation arrangements in the project - Commit to open and transparent communication and engagement from the beginning and have a considered approach in place - Regularly monitor performance in engagement - Ensure the vulnerable people are represented in the community-led committees i.e. Labour Recruitment Committee, - Implement affirmative action in employment. Ensure non-discriminatory recruitment practices during construction. - Implement the existing grievance redress mechanism - Incorporate universal access features such as ramps, accessible walkways and designated parking spaces for persons with disabilities. - Continue stakeholder engagement with affected and interested parties throughout project implementation.		communication	Stakeholder Engagement Budget
Cultural heritage	- Prioritizing the preservation of the Mugumo trees and as many other existing trees as possible. - Provisions for managing chance finds are in place and included in contracts, as appropriate. - Implement Chance Finds Procedures.	Proponent, Contractor	Throughout the construction period	73,500

10.3 ESMP for the operation phase

Table 24: ESMP during occupation phase

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
Biodiversity	- Utilize native plant species in landscaping to promote biodiversity - Implement waste management practices to minimize waste generation. - Engage with residents and community members to raise awareness about biodiversity.	Proponent Occupants	Periodic inspection	300,000
Invasive species	- Use native plant species in landscaping to reduce the risk of introducing invasive species - Implement invasive species monitoring and management programs - Incorporate green infrastructure practices, such as rain gardens and vegetated swales - Educate residents about the risks associated with invasive species. - Encourage residents to use native plants in their gardens and landscapes. - Implement regular monitoring programs to assess the presence of invasive species.	Proponent Occupants	Periodic inspection	50,000
Carbon footprints	- Enhance insulation, use energy-efficient windows, and seal air leaks to reduce heating and cooling loads. - Install ENERGY STAR-rated appliances and LED lighting to lower electricity consumption. - Install photovoltaic (PV) solar panels on rooftops to generate renewable electricity for the building. - Use solar thermal systems to heat water for domestic use, reducing the need for fossil fuel-based water heaters.	Proponent Occupants	Periodic inspection	Part of the project cost
E-waste	- Encourage residents to maintain and repair electronic appliances and devices instead of replacing them when minor issues arise. - Provide information to residents about upgrade options and opportunities for extending the lifespan of electronic products through software updates or component replacement. - Establish community exchange programs where residents can donate or exchange their unwanted electronic devices with others, promoting reuse and	Proponent Occupants	Periodic inspection	85,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
	reducing e-waste. - Partner with local charities or organizations that accept used electronic devices for refurbishment and redistribution to those in need. - Install convenient drop-off locations for residents to dispose of their electronic waste safely and responsibly. - Encourage residents to participate in manufacturer take-back programs, where electronic manufacturers accept their products for recycling or proper disposal at the end of their lifecycle.			
Air pollution	- Undertake regular cleaning of dust prone areas such as driveways and corridors - Design and construct apartments with proper ventilation systems. - Use low-VOC paints, finishes, and furnishings to minimize indoor air pollution. - Implement smoking restrictions or designate smoking areas. - Offer educational programs and resources to residents on indoor air quality. - Encourage residents to engage restoration environmental restoration activities. - Comply with EMCA (Air Quality regulations) 2024	Proponent Occupants	Routine maintenance	Part of the project cost
Noise and vibration Pollution	- Undertake annual noise monitoring to adhere to acceptable standards. - Sensitize occupants on minimal permissible noise levels - Encourage residents to report noise disturbances to building management. - Promote the use of carpeting to reduce impact noise between units. - Recommend residents choose quieter appliances (washing machines, etc.) - Provide tips on noise reduction practices within apartments. - Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	Proponent Occupants	Periodic inspection	200,000
Changes in hydrology/ Impended drainage	- Promote sustainable green spaces that minimize the need for irrigation. - Ensure proper management of wastes to prevent storm-water contamination - Ensure no wastewater is discharged into the environment, not unless it is in compliance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2024 - Foster a sense of community responsibility for storm-water management. - Ensure proper maintenance of drainage structures - Encourage residents to maintain their vehicles to prevent oil/chemical leaks. - Undertake regular inspection and maintenance of water harvesting facilities - Collect excess storm water into underground tanks for reuse e.g. car washing	Proponent	Routine inspection & maintenance	125,000
Water	Install water efficient appliances	Proponent	Periodic	1,500,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
resources	- Encourage residents to use low-flow fixtures & promptly repair leaks. - Implement greywater recycling systems where feasible for reuse. - Sensitize occupants to reduce water wastage e.g. by reusing where applicable - Implement rainwater harvesting to supplement water requirements from NCWSC. - Undertake regular maintenance of all water components	Occupants	Inspection Routine maintenance	
Energy resources	- Install occupancy sensors and daylight harvesting systems to automatically control lighting based on occupancy and natural light levels. - Use cool roofing materials and reflective surfaces to reduce heat absorption and lower cooling energy demand. - Consider installing sub-metering systems that allow residents to monitor their energy consumption. - Insulate hot water pipes and consider centralized or tank-less water heating systems for improved energy efficiency. - Conduct energy audits or assessments to identify areas where energy savings can be achieved within individual units and common areas. - Foster a sense of community responsibility for energy conservation by organizing energy-saving events and initiatives among residents. - Switch off electrical appliances when not in use. - Use energy efficient electrical appliances and fixtures such as LED bulbs and Energy Star appliances to ensure that the residential project meets stringent energy efficiency and sustainability standards. - Use of solar energy as alternative energy supply for the project	Proponent Occupants	Periodic inspection Routine maintenance	1,500,000
Public health, occupational health and safety	- Regularly inspect and maintain building systems (plumbing, electrical, etc.). - Address maintenance issues promptly to prevent accidents. - Ensure that fire safety equipment is in working order. - Conduct fire drills and educate residents about evacuation procedures. - Maintain proper ventilation systems to ensure good indoor air quality. - Educate residents about personal safety practices. - Provide convenient waste disposal facilities for residents. - Regularly test/maintain the water supply to ensure it meets quality standards. - Address plumbing issues promptly to prevent waterborne contaminants. - Sensitize residents on environmental management - Provide fully equipped First Aid Kits & train staff on its use	Proponent Occupants	Routine inspection	400,000
Fire safety	Regularly inspect and maintain building electrical systems.	Proponent	Routine	Part of the

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
and preparedness	- Ensure that fire safety equipment is in working order and periodically serviced. - Ensure the fire water reserve tank is always filled with water - Conduct fire drills and educate residents about evacuation procedures. - Provide fully equipped First Aid Kits & train staff on its use - Provide escape routes/emergency exits in the buildings - Provide emergency numbers at strategic points - Carry out the statutory annual fire safety audit	Occupants	inspection	project cost
Wastewater	- Ensure all units are connected to a septic tank and most preferably a wastewater treatment plant. - Regular inspection and maintenance of internal sewer lines to prevent blockages, leakages, or overflows. - Installation of oil-water separators or sediment basins in parking, equipment storage, and vehicle maintenance areas, kitchens to prevent oil, grease, and sediments from entering the sewer system or stormwater drains. - Properly manage hazardous liquid waste materials (paints, detergents, etc.). - Encourage residents to conserve water to reduce the volume of liquid waste produced. - Promote the use of low-flow fixtures and appliances. - Ensure compliance with the EMCA (Water Quality) Regulations, 2024.	Proponent Occupants	Periodic inspection Routine maintenance	1,340,000 annually
Solid wastes	- Educate residents about the proper handling and disposal of hazardous materials. - Encourage residents to reduce waste generation through practices like bulk purchasing. - Organize community clean-up events to promote responsible waste disposal. - Establish a regular waste collection schedule to prevent overflowing bins and littering. - Undertake regular inspection and maintenance of the drainage system to avoid blockage - Dispose all wastes in accordance with the Sustainable Waste Management Act 2022 and EMCA (Waste Management) Regulations, 2024.	Proponent Contractor Workers	Weekly inspection	2,400,000 annually
Security and social impacts	- Develop evacuation plans for emergencies educate residents on the same. - Ensure that outdoor areas, pathways, and parking lots are well-lit. - Establish community watch programs for residents (<i>Nyumba Kumi initiative</i>). - Implement access control systems for residents and visitors. - Install emergency call boxes to allow residents to request assistance quickly.	Proponent Occupants	Periodic inspection Routine maintenance	550,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated cost (Kshs)
	• Maintain landscaping to eliminate potential hiding spots for intruders. • Maintain visitor logs or guest registration systems to track visitors. • Engage services of security guards to man the premises day and night • Install CCTV cameras at strategic points for enhanced security. • Place alarms around the site and establishing emergency response procedures • Place hotline numbers on strategic places • Sensitize occupants on security precautions			
Traffic management	• Create well-defined drop-off and pickup areas for residents and visitors. • Establish and enforce parking policies to prevent unauthorized vehicles. • Provide designated visitor parking spaces. • Enforce speed limits within the complex and clearly post speed limit signs. • Ensure well-marked pedestrian pathways to encourage safe pedestrian movement. • Maintain clear access routes for emergency vehicles. • Foster a sense of community responsibility for traffic safety. • Provide traffic signs to reduce risk of accidents • Ensure regular maintenance of the parking bays • Provide separate entry and exit points for motorized and non-motorized traffic.	Proponent	Routine maintenance	220,000
Complaints from Tenants and community members	• Sensitize the tenants on the GRM and encourage them to make use of it • Ensure the community and tenants' GRMs are functional and accessible to all stakeholders • Ensure GRM provides for confidential reporting of particularly sensitive social aspects as well as anonymity for those who wish to report anonymously. • Provide communication channels between the development's administration, service providers and the tenants	Proponent	Continuous communication	85,000

10.4 ESMP for the decommissioning phase

Note: A decommissioning and rehabilitation plan 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 25: ESMP during Decommissioning phase

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated Cost (KShs)
Demolition of existing structures	- Apply for demolition permit from relevant authorities before commencing the demolition - Engage a registered private contractor to carry out the demolition - Provide workers with PPE - The demolition exercise to be limited to daytime only - Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	Proponent Contractor NEMA inspectors	Daily inspection	2,000,000
Air pollution	- Dust suppression with water sprays on dusty areas - Careful screening of construction site to contain and arrest construction related dust - Ensure demolition equipment are well maintained to reduce exhaust emission	Proponent Contractor NEMA inspectors	Daily inspection Routine maintenance	275,000
Noise and excessive vibrations	- Demolition activities to be restricted to daytime (8am to 5pm) - Use of Suppressors on noisy equipment during demolitions - Workers in the vicinity or involved in high level noise to wear PPEs. - Comply with EMCA (Noise and excessive vibration pollution control) Regulations 2009	Proponent Contractor Workers NEMA inspectors	Routine inspection & maintenance	157,000
Health and safety of workers	- All workers to wear PPEs e.g. helmets, safety boots and ear muffs - All workers be sensitized before demolition begins, on how to control accidents. - Accordingly, adherence to safety procedures will be enforced. - All workers will be adequately insured against accidents.	Contractor Workers Proponent NEMA inspectors	Daily monitoring	234,000
Solid and liquid waste	- Ensure proper solid waste disposal and collection facilities - Refuse collection vehicles will be covered to prevent scatter of wastes by the wind. - Demolition wastes to be collected by a licensed operator to avoid illegal final dumping. - All persons involved in refuse collection shall be in full protective attire. - Dismantling all fixtures and equipment of the internal sewer system	Contractor Proponent NEMA inspectors	Daily monitoring	528,000

Impact	Proposed mitigation measures	Responsibility	Frequency	Estimated Cost (KShs)
Re-vegetation and comprehensive landscaping	- Put in place an appropriate re-vegetation program to restore the site - During the re-vegetation period, ensure appropriate surface water runoff controls; - Monitoring and inspection of the area for indications of erosion will be conducted - Signs restricting access will be posted to minimize disturbance to newly-vegetated areas;	Contractor Proponent	Random inspection & monitoring	249,000
Conflict with neighbours & Workers	- Sensitize the workers on the GRM and encourage them to make use of it - Ensure the GRM is functional, culturally appropriate, and accessible to all stakeholders - Continuous communication between the developers and the stakeholders on the progress of the decommissioning works and its effects	Proponent	Continuous communication	63,500

10.5 Summary of pre-mitigation significance during construction phase

Impact	Pre-mitigation significance	Residual Impact significance (Based on mitigation)
Loss of vegetation & trees	Minor negative	Negligible
Invasive species	Moderate negative	Minor negative
Carbon footprints	Major negative	Minor negative
E-waste	Minor negative	Negligible
Air pollution	Major negative	Moderate negative
Soil disturbance	Moderate negative	Minor negative
Noise and excessive vibrations	Major negative	Moderate negative
Changes in hydrology/ impended drainage	Minor negative	Negligible
Water resources	Major negative	Minor negative
Energy resources	Major negative	Moderate negative
Oil pollution	Major negative	Negligible
Public health, occupational health and safety	Major negative	Minor negative
Fire safety and preparedness	Moderate negative	Minor negative
Wastewater	Major negative	Minor negative
Solid wastes	Major negative	Minor negative
Security and social impacts	Minor negative	Negligible
Traffic management	Moderate negative	Minor negative
Conflict with neighbours	Minor negative	Negligible
Social pathologies, including HIV/AIDS	Minor negative	Negligible
Gender-Based Violence-SEA and SH	Moderate negative	Negligible
Risk of Exclusion of Vulnerable Groups	Minor negative	Negligible
Cultural heritage	Negligible	Negligible

The major mitigation/enhancement measures to address the more significant impacts for the construction phase include the following (for a comprehensive list of mitigation measures please refer to the ESIA report and Environmental and Social Management Plan, ESMP). The proponent and the contractor will:

- Adhere to the existing planning policies, and obtaining necessary physical planning approvals.
- Undertake appropriate measures to comply with the EMCA (Air Quality) Regulations, 2024
- Undertake well-managed excavation and ensure proposer storm water management.
- Undertake measures to ensure compliance with EMCA (noise and vibrations) regulations 2009
- Implement measures to ensure adherence to the NCA guidelines for housing construction works
- Implement measures to ensure oil spill prevention during construction works
- Ensure all construction works are limited to daytime, with workers insured against accidents.
- Design a sewerage system that can handle cumulative discharges at the construction site.
- Develop and implement a comprehensive waste management plan.
- Secure the construction site with a perimeter, lighting, and surveillance cameras for enhance security.
- Implement a comprehensive traffic management plan.

- Ensure full implementation of the already developed IHS grievance redress mechanism.

All negative impacts associated with the Project have been mitigated to a level which is deemed appropriate for the construction phase to proceed.

10.6 Summary of pre-mitigation significance during operational phase

Impact	Pre-mitigation significance	Residual Impact significance (Based on mitigation)
Invasive species	Minor negative	Negligible
Carbon footprints	Minor negative	Negligible
E-waste	Major negative	Minor negative
Air pollution	Minor negative	Negligible
Noise and excessive vibrations	Minor negative	Negligible
Changes in hydrology/ impended drainage	Moderate negative	Minor negative
Water resources	Major negative	Minor negative
Energy resources	Moderate negative	Negligible
Public health, occupational health and safety	Moderate negative	Negligible
Fire safety and preparedness	Major negative	Minor negative
Wastewater	Major negative	Minor negative
Solid wastes	Major negative	Minor negative
Security and social impacts	Minor negative	Negligible
Traffic management	Moderate negative	Minor negative
Complaints from tenants & community	Minor negative	Negligible

The major mitigation/enhancement measures to address the more significant impacts for the operational phase include the following (for a comprehensive list of mitigation measures please refer to the ESIA Report and ESMP. The proponent and the occupants will:

- Comply with EMCA (Air Quality) Regulations 2024
- Develop and implement a comprehensive environmental restoration activity.
- Comply EMCA (noise and vibrations) Regulations 2009
- Maintain proper drainage systems and ensure prudent storm water management
- Promote sustainable water use and management, including the use of water-efficient appliances.
- Implementing energy-efficient measures in a construction project, including HVAC systems
- Implement strict oil storage protocols and provide secure disposal options.
- Regular inspect and maintain electrical systems, and ensure fire safety during the construction.
- Ensure proper wastewater management in compliance with EMCA (water quality) regulations
- Ensures proper waste management, and compliance with EMCA (Waste Management) Regulations 2024
- Enforce speed limits, and promote traffic safety during construction works.

All negative impacts associated with the Project have been mitigated to a level which is deemed appropriate for the occupational phase of the proposed housing project to be sustainable.

11 CHAPTER 11: CONCLUSION AND RECOMMENDATIONS

11.1 Conclusion

According to the findings of this ESIA, the proposed development will have many positive effects, such as increasing the number of housing units in the area, creating jobs, improving businesses in the project area, particularly for different suppliers, and increasing revenue for the county and national governments. Mitigation measures have been proposed to address the identified negative environmental and social impacts anticipated from the project. Some of the impacts identified include increased generation of various types of wastes, higher water consumption, air and noise pollution, amongst others.

In order to lessen the detrimental effects that the planned development would have on the environment, public health, safety, and society, the proponent has pledged to implement a number of mitigation strategies. Along with this commitment, it is advised that the proponent concentrate on the ESMP's recommended measures into action and follow all applicable national and international environmental, health, and safety standards, policies, and regulations that control the establishment and operations of housing projects. It is also advised to optimize the beneficial effects that result from these kind of activities. It is anticipated that these actions will significantly contribute to guaranteeing the highest levels of environmental performance and compliance.

11.2 Recommendations

Centric Africa is confident that every effort will be made by IHS to accommodate the mitigation measures recommended during the ESIA process to the extent that is practically possible, without compromising the economic viability of the Project. The implementation of the mitigation measures as detailed in Chapters 8 and listed in the ESMP will provide a basis for ensuring that the potential positive and negative impacts associated with the establishment of the development are enhanced and mitigated to a level which is deemed adequate for the development to proceed. In summary, based on the findings of this assessment, Centric Africa Limited finds no reason why the proposed green affordable housing units by IHS should not be authorized, contingent on the mitigations and monitoring for potential environmental and socio-economic impacts as outlined in the ESMP.

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ANNEXURE

- Annex i: Firm of Experts NEMA License
- Annex ii: Land Ownership document
- Annex iii: Proposed site layout and drawings
- Annex iv: Bill of Quantities
- Annex v: Water Quality Analysis Results for Kangemi Dam
- Annex vi: Baseline Ambient Air Quality, Noise Levels & Vibrations Measurement report
- Annex vii: Public Participation Records