

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED
HIGH-RISE RESIDENTIAL DEVELOPMENT PLUS OTHER ASSOCIATED AMENITIES
LOCATED ON PLOT L.R NO. NAIROBI/BLOCK 7/338, OFF WAIYAKI WAY ROAD,
ALONG MPAKA ROAD, WESTLANDS SUB-COUNTY, NAIROBI COUNTY.**



(Latitude -1.265591° and Longitude 36.803689°) 1°15'56.1"S 36°48'13.3"E

PROPONENT

STELLAR BAY LIMITED

P.O BOX 68120-00100 NAIROBI.

NEMA FIRM OF EXPERTS

GREENOBET CONSULTANCY LIMITED

REG. NO. F0159

This ESIA Report is submitted to NEMA, in conformity with the requirements of the Environmental Management and Coordination Act, CAP 387 and Environmental (Impact Assessment and Audit) regulation 2003.



AUGUST, 2026

CERTIFICATION

We, the undersigned certify and submit this Environmental and Social Impact Assessment (ESIA) report for the proposed Residential Development Plus Associated Amenities Located on Plot L.R No. Nairobi/ Block7/338, off Waiyaki Way, along Mpaka road, Westlands Sub-county, Nairobi County. The Environmental Impact Assessment report has been carried out as per the Environmental Management and Coordination EMCA Act, CAP 387 (*Amendment 2015*) legal notice No.8 and Environmental (Impact Assessment and Audit) Regulations, 2003 Legal Notice No. 101, (*Amendment 2019*), for submission to the National Environment Management Authority (NEMA) for Review.

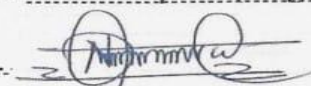
To the best of my knowledge, all information contained in this report is an accurate and truthful representation of all findings concerning this proposed project.

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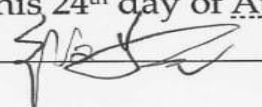
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PROPONENT

I Ji Wengeng on behalf of Stellar Bay Limited for the proposed residential development plus associated amenities, submit this ESIA Report to NEMA for review. All information contained in this report is, to the best of my knowledge, an accurate and truthful representation of all findings concerning this Environmental Impact Assessment.

Signed on this 24th day of August 2026

Signature: 

Designation: Director



EXECUTIVE SUMMARY

Project overview

The proposed project by Stellar Bay Limited entails the development of a landmark high-rise residential development; Tower A comprising 363 residential units and Tower B comprising of 334 residential units. The development will integrate retail outlets, office spaces, a swimming pool, banquet ball component totalling to 697 residential units covering an area of 62,000 square metre supported by 255 parking slots and other associated amenities high-rise structure above ground level supported by basement level and will integrate retail, office, hospitality, and residential components within a single vertically planned development on a 0.2907 hectare piece of land.

The project will comprise 697 residential units plus parking slots. In addition, the lower floors will accommodate retail outlets and modern office spaces, while the basement levels will provide parking facilities and essential building services infrastructure. The development will also feature supporting amenities including a swimming pool, gymnasium, landscaped recreational areas, and other shared facilities designed to enhance functionality and user experience.

Strategically the proposed site can be accessed either via Off Waiyaki Way road the site is within a rapidly urbanizing commercial and residential corridor, the project aims to optimize land use through vertical integration, contribute to Nairobi's urban skyline and respond to the growing demand for quality accommodation, commercial space, and hospitality services. The project is expected to generate employment opportunities during construction and operation, stimulate economic activity, and enhance service delivery within the Westlands area, Nairobi City County.

Given the scale, nature, and location of the proposed development, the project requires a comprehensive Environmental and Social Impact Assessment (ESIA) in accordance with applicable environmental and planning regulations. This Environmental Social Impact Assessment (ESIA) report outlines the scope and methodology for undertaking the ESIA to ensure that potential environmental and social impacts are properly identified, evaluated, and managed throughout the project lifecycle. **The following are the team of experts;** Richard Kabuga Miano; Registered Architect and Bernard Murimi Kiara; Registered Quantity Surveyor, Lewis Muthure; Bachelor of science (BA) Moi University; Department of sociology.

EIA process summary

The Environmental Impact Assessment (EIA) process for the proposed high-rise residential development; Tower A comprising 363 residential units and Tower B comprising of 334 residential units. The development will integrate retail outlets, office spaces, a swimming pool, banquet ball component totalling to 697 residential units covering an area of 62,000 square metre supported by 255 parking slots and other associated amenities as per the approved drawings by Nairobi City County Government by Stellar Bay Limited will be undertaken in accordance with the Environmental Management and Coordination Act (EMCA), 1999 the Environmental (Impact Assessment and Audit) regulations 2003 and legal notice 31 & 32 of 2019 and its relevant subsidiary regulations.

The process is designed to ensure that environmental and social considerations are systematically integrated into project planning, design, approval, and implementation. The EIA process will commence with the approval of this Terms of Reference (ToR), which defines the scope, methodology, and key issues to be investigated during the Environmental and Social Impact Assessment (ESIA) study.

Upon approval, a comprehensive baseline study will be conducted to document the existing environmental and socio-economic conditions of the project area, including land use patterns, traffic conditions, air quality, noise levels, drainage systems, infrastructure capacity, and community characteristics within the Westlands corridor Off Waiyaki Way road. The study will involve stakeholder engagement and public consultation to ensure that the views, concerns and expectations of interested and affected parties are adequately captured and incorporated into the assessment. Potential impacts associated with the pre- construction, construction, operation and decommissioning phases of the 30-storey high-rise residential development will be identified, analyzed, and evaluated using established assessment methodologies.

Particular attention will be given to traffic and transport implications, waste management, water supply and wastewater disposal, stormwater management, noise and vibration, occupational health and safety, visual impacts, and cumulative urban development effects.

Following impact evaluation, appropriate mitigation measures will be proposed and
ESIA for Stellar Bay

consolidated into a comprehensive Environmental and Social Management Plan (ESMP), detailing monitoring parameters, institutional responsibilities, reporting mechanisms, and budgetary provisions. The findings of the ESIA study will then be compiled into an EIA Study Report for submission to the relevant environmental regulatory authority for review, decision-making, and licensing.

The EIA process will provide a structured and transparent framework to ensure that the proposed development is implemented in an environmentally sustainable and socially responsible manner, in compliance with applicable legal and regulatory requirements within Nairobi City County.

Public Participation

Public participation forms a critical component of the Environmental and Social Impact Assessment (ESIA) process for the proposed high-rise residential development; retail shop, office, hotel, parking slot and swimming pool by Stellar Bay Limited Off Waiyaki Way road, Westlands Sub-county, Nairobi City County.

The process is designed to ensure that the views, concerns, and expectations of all interested and affected parties are actively sought, documented, and incorporated into project planning, design, and mitigation measures.

Stakeholder engagement will target a broad range of participants, including local community members, neighboring property owners, business operators, regulatory agencies, Nairobi City County officials, civil society organizations, and other relevant institutions.

Engagement methods will include public meetings, focus group discussions, one-on-one interviews and written submissions to accommodate diverse stakeholder groups and promote inclusivity. The approach will ensure that feedback is gathered in a transparent, participatory, and culturally appropriate manner.

The public participation process aims to identify potential environmental, social, and economic concerns, as well as opportunities for enhancing local benefits and mitigating adverse impacts. Key issues raised will be documented and integrated into the Environmental and Social Management Plan (ESMP), providing a mechanism for addressing stakeholder concerns throughout the project lifecycle.

Public participation ensures that the proposed development aligns with community needs, regulatory requirements and sustainable urban development principles. It promotes stakeholder ownership, fosters social acceptance and enhances the effectiveness of environmental and social management measures, thereby supporting responsible and inclusive implementation of the project.

Summary of environmental and social impacts with mitigation measures

The proposed high-rise residential development; Tower A comprising 363 residential units and Tower B comprising of 334 residential units. The development will integrate retail outlets, office spaces, a swimming pool, banquet hall component totalling to 697 residential units covering an area of 62,000 square metre supported by 255 parking slots and other associated amenities as per the approved drawings by NCCG to be established by Stellar Bay Limited, has associated environmental and social impacts which require effective mitigation measures if the project is to be environmentally feasible. The table below shows summary of the impacts and their corresponding mitigation measures.

Project Phase	Impact Category	Potential Impact	Impact Significance
Construction	Air Quality	Dust emissions from excavation and material handling	High
Construction	Noise & Vibration	Noise from machinery, piling, and trucks	High
Construction	Traffic	Increased traffic and temporary congestion	Moderate
Construction	Waste Management	Generation of construction debris and spoil	Moderate
Construction	Water Resources	Surface runoff contamination and sedimentation	Moderate
Construction	Occupational Health & Safety	Worker accidents and safety risks	High
Construction	Socio-Economic	Temporary employment opportunities	Positive (Moderate)
Operation	Air Quality	Emissions from backup generators and vehicles	Moderate
Operation	Noise	Operational noise from HVAC and traffic	Low

Operation	Traffic	Increased vehicular movement to/from site	Moderate
Operation	Waste Management	Solid and liquid waste generation	Moderate
Operation	Infrastructure Demand	Increased demand on water and electricity	Moderate
Operation	Socio-Economic	Long-term employment and economic growth	Positive (High)
Operation	Public Health & Safety	Fire and emergency risks	Low

Conclusion and Recommendation

The environmental and social impact assessment (ESIA) for the proposed 30-storey high-rise residential development on Plot

L.R No. NAIROBI/BLOCK 7/338, Off Waiyaki Way road, Along Mpaka road, in Westlands sub-county, Nairobi City County, establishes a comprehensive framework for undertaking the Environmental Impact Assessment (EIA) study in accordance with the Environmental Management and Coordination Act (EMCA), 1999 (as amended), and relevant subsidiary regulations administered by the National Environment Management Authority.

Based on the preliminary baseline review and stakeholder consultations, the project is considered environmentally and socially feasible, provided that identified potential impacts are effectively assessed and managed. The development aligns with the prevailing mixed-use land use pattern of the Westlands area and supports Nairobi City County's objectives of vertical urban growth, optimized land utilization, and economic development. However, potential impacts related to traffic congestion, noise and air emissions, waste generation, increased demand for utilities, occupational health and safety, and community disturbance during construction require careful evaluation and mitigation.

It is therefore recommended that the subsequent EIA Study:

- Undertake detailed baseline assessments to validate environmental and socio-economic conditions of the project area;
- Conduct a comprehensive impact analysis covering construction, operation, and decommissioning phases;
- Develop a robust Environmental and Social Management Plan (ESMP) with clear

mitigation measures, monitoring indicators, responsibilities, timelines, and cost estimates;

- Strengthen traffic impact assessment and infrastructure capacity analysis to address projected increases in vehicular movement and service demand;
- Incorporate sustainable design principles, including energy efficiency, water conservation, stormwater management, and solid waste minimization;
- Ensure continuous stakeholder engagement and transparent communication throughout project implementation; and
- Comply fully with all applicable national and county regulatory requirements prior to commencement of construction.

In conclusion, this ESIA report is being done in accordance to the approved TOR license No.; **NEMA/ENVIS/EIA/TOR/Approval_0254**. Therefore, implementation of the recommended mitigation and management measures, the proposed high-rise residential development plus associated amenities which are expected to contribute positively to local economic growth, employment creation, and sustainable urban development, while maintaining environmental integrity and social acceptability within the Westlands area.

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The key personnel that will carry out the EIA study are the ones indicated below;.. Error! Bookmark not defined.		

ABBREVIATIONS AND ACRONYMS

ADP	Area Development Program
CBD	Conservation of Biological Diversity
CPP	Consultation, Public involvement and Participation
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Monitoring Act
EMMP	Environmental Management and Monitoring Plans
ESIAs	Environmental and Social Impact Assessments
ESIAS	Environmental and Social Impact Assessment Study
IAPs	Interested and Affected Parties
ISTA	International Seed Testing Association
NCWASCO	Nairobi City Water and Sanitation Company
NEAP	National Environmental Action Plan
NEMA	National Environment Management Authority
OSHA	Occupational Safety and Health Act
OSH	Occupational Safety and Health
ToR	Terms of Reference

CHAPTER ONE

INTRODUCTION

1.1 Background of the project

The proposed residential development plus associated amenities by Stellar Bay Limited is conceived in response to the increasing demand for integrated commercial, hospitality, and residential spaces within Nairobi City County, particularly in the Westlands growth corridor Off Waiyaki Way road, along Mpaka road.

The project will be undertaken on Plot L.R. No. NAIROBI/BLOCK 7/338, and will comprise a 30-storey high-rise structure above ground level with basement floor, studio, one-bedroom and two-bedroom layout across two high-rise tower, Tower A comprising 363 residential units and Tower B comprising of 334 residential units. The development will integrate retail outlets, office spaces, a swimming pool, banquet ball component totalling to 697 residential units covering an area of 62,000 square metre supported by 255 parking slots and other associated amenities as per the approved drawings.

Westlands and its environs have evolved into one of Nairobi's premier commercial and mixed-use districts, characterized by high-rise developments, corporate headquarters, hospitality establishments, and high-density residential apartments. The strategic location of the site Off Waiyaki Way road offers accessibility to major transport corridors and proximity to the central business district, making it suitable for a high-density, mixed- use development that optimizes land utilization in line with current urban planning trends.

The project is therefore aligned with national and county development objectives aimed at promoting sustainable urban growth, economic diversification and infrastructure optimization.

Given the scale, height and multi-functional nature of the proposed development, it is categorized as a project requiring a comprehensive Environmental and Social Impact Assessment (ESIA) under the Environmental Management and Coordination Act (EMCA), 1999 (as amended). The preparation of this Terms of Reference (ToR) Report marks the initial step in defining the scope and methodology for undertaking the ESIA study.

The ToR outlines the key environmental and social issues to be investigated, establishes the baseline parameters to be assessed, and provides a structured framework for stakeholder engagement, impact analysis, and formulation of mitigation measures.

This background therefore provides the contextual basis for the ESIA process, highlighting the project rationale, location attributes, regulatory requirements and the need to ensure that potential environmental and social impacts are identified, evaluated and effectively managed to promote sustainable development within the rapidly urbanizing Westlands area of Nairobi City County.

1.2 Purpose of the ToR report

The primary purpose of this Terms of Reference (ToR) Report is to establish a structured framework for conducting the Environmental Impact Assessment (EIA) Study for the proposed 30-storey residential development comprising retail outlets, office suites, hotel facilities, conference room with basement level, a swimming pool and associated amenities Off Waiyaki Way road in Westlands sub-county, Nairobi City County.

Prepared on behalf of Stellar Bay Limited, the report is intended to guide the systematic identification, evaluation, and management of potential environmental and social impacts that may arise during both the construction and operational phases of the project.

The ToR defines the scope of the EIA Study, outlines the key issues to be investigated, and specifies the methodology, data collection techniques, and assessment procedures to be employed. It serves to ensure compliance with the Environmental Management and Coordination Act (EMCA) and the regulations administered by the National Environment Management Authority (NEMA). In addition, the report establishes the basis for stakeholder engagement and public participation, ensuring that concerns from neighboring communities, regulatory authorities, and other key stakeholders are incorporated into the assessment.

The purpose of this report is to provide a clear, detailed, and regulatory-compliant framework that will guide the preparation of a comprehensive EIA Study Report.

This framework will enable informed decision-making regarding the proposed development, promote sustainable land use, minimize negative environmental and social impacts and optimize the economic and social benefits of the project to the local community and Nairobi city county at large.

1.3 Objectives of study

The objectives of this study are to provide a clear and structured framework for assessing the potential environmental and social impacts of the proposed 30-storey Off Waiyaki Way road, Westlands sub-county, Nairobi City County, undertaken by Stellar Bay Limited.

The study aims to ensure that the project is planned and implemented in a manner that is environmentally sustainable, socially responsible, and in compliance with the Environmental Management and Coordination Act (EMCA) and other relevant legislation administered by the National Environment Management Authority (NEMA). Specifically, the study seeks to:

- Identify and assess potential environmental and social impacts associated with both the construction and operational phases of the development, including impacts on air quality, noise, traffic, water resources, waste management, occupational health and safety, and visual aesthetics.
- Evaluate cumulative and indirect effects arising from the integration of retail, office, hotel, and residential components within a densely urbanized area.
- Provide baseline information on the existing physical, biological, and socio-economic environment surrounding the project site to inform impact prediction and evaluation.
- Develop mitigation measures to avoid, reduce, or manage adverse impacts, and enhance positive outcomes of the project.
- Formulate an Environmental and Social Management Plan (ESMP) that outlines monitoring programs, institutional responsibilities, and implementation schedules to ensure sustainable project operations.
- Guide stakeholder engagement and public participation, ensuring that concerns from local communities, regulatory authorities, and other interested parties are

documented and integrated into project planning and decision-making. Through these objectives, the study aims to facilitate informed, evidence-based decision-making that balances economic development with environmental protection and social well-being, thereby supporting the successful implementation of the proposed residential high-rise development.

1.4 Scope of the study

The scope of this study defines the boundaries, focus, and extent of the Environmental Impact Assessment (EIA) to be conducted for the proposed 30-storey residential development comprising retail outlets, office suites, hotel facilities, and residential apartments with basement levels, a swimming pool, and associated amenities Off Waiyaki Way road in Westlands sub-county, Nairobi City County.

The study, prepared on behalf of Stellar Bay Limited, aims to comprehensively evaluate the environmental and social implications of the project throughout its life cycle, from pre-construction and construction through to operational phases.

The study will cover the following key aspects:

- ***Project Description and Design Assessment*** – including land use, architectural and structural design, construction methodology, utilities, and supporting infrastructure.
- ***Baseline Environmental Assessment*** – documenting the existing physical, biological, and socio-economic conditions of the project site and surrounding areas, including air quality, noise levels, hydrology, soil conditions, urban ecology, land use, traffic, and social infrastructure.
- ***Impact Identification and Evaluation*** – examining potential positive and negative impacts of the project during construction and operation, including effects on air quality, noise, water resources, waste generation, traffic and transport, occupational health and safety, fire safety, and urban aesthetics.
- ***Mitigation Measures and Management Framework*** – proposing strategies to prevent, minimize, or manage adverse impacts and enhance environmental, social, and economic benefits.
- ***Stakeholder Engagement and Public Participation*** – ensuring that input from local

communities, neighboring businesses, regulatory authorities, and other relevant stakeholders is collected, documented, and incorporated into project planning.

- *Environmental and Social Management Plan (ESMP)* – outlining monitoring programs, institutional responsibilities, reporting structures, and compliance mechanisms to ensure sustainable implementation of the project.
- *Assessment of project alternatives* – including site, design, technological, and no-project alternatives to ensure the most environmentally and socially appropriate option is selected.

1.5 Methodology overview

The methodology overview for the Terms of Reference (ToR) Report of the proposed 30-storey development Off Waiyaki Way road in Westlands sub- county, Nairobi City County, outlines the systematic approach that will be employed to conduct the Environmental Impact Assessment (EIA) Study for Stellar Bay Limited. The methodology is designed to ensure a comprehensive, scientifically sound, and participatory assessment of the potential environmental and social impacts of the project throughout its lifecycle, from pre- construction and construction to operational phases.

The study will employ a combination of desk-based review, field investigations, and stakeholder engagement. The desk-based review will involve analysis of existing literature, project plans, maps, regulatory requirements, and previous studies relevant to the project area. Field investigations will be conducted to collect baseline data on the physical environment (air quality, noise, soil, drainage, and hydrology), biological environment (urban flora and fauna), and socio-economic environment (land use, traffic, population dynamics, and public infrastructure). Sampling and monitoring will be carried out where necessary, using standard procedures and equipment to ensure accurate data collection.

Impact assessment will follow a structured process of identification, prediction and evaluation of potential environmental and social impacts associated with construction, operation and decommissioning of the project. Both positive and negative impacts will be assessed, including cumulative and indirect effects.

Mitigation measures will be developed for all significant adverse impacts, and an Environmental and Social Management Plan (ESMP) will be prepared to guide monitoring, compliance, and reporting.

Stakeholder engagement and public participation are integral components of the methodology. Key stakeholders including neighboring residents, businesses, regulatory authorities and local community representatives, will be identified and consulted through meetings, interviews and questionnaires. Their concerns, suggestions, and recommendations will be documented and incorporated into the assessment and mitigation planning.

The methodology will also include the evaluation of project alternatives, including site alternatives, design options, technology choices, and the no-project alternative, to ensure that the selected development approach minimizes environmental and social risks while maximizing benefits.

The methodology ensures a robust, transparent, and participatory EIA process that supports informed decision-making, regulatory compliance with National Environment Management Authority (NEMA) requirements, and sustainable implementation of the proposed residential high-rise development.

CHAPTER TWO

BASELINE INFORMATION OF THE PROJECT AREA

2.1 Location of the project

The proposed high-rise residential development; retail shops, office, conference room, banquet hall and swimming pool will be located on Plot L.R. No. NAIROBI/BLOCK 7/338, Off Waiyaki Way road, along Mpaka road within the Westlands sub- county, Nairobi City County. The site lies within one of Nairobi's rapidly developing commercial and high-density mixed-use zones, characterized by high-rise office blocks, hospitality facilities, institutional developments and modern residential apartments.

Its strategic position Off Waiyaki Way road provides direct connectivity to the Central Business District (CBD), commercial hub, Westlands area residential zone, and other key arterial roads linking to major parts of the city.

The project site is situated within an urbanized setting served by established infrastructure including paved road networks, electricity supply, water distribution systems, sewer lines, stormwater drainage channels and telecommunication networks. The surrounding land uses are predominantly commercial and mixed residential developments, making the location compatible with the proposed high-rise, mixed-use concept.

The area experiences high traffic volumes, especially during peak hours, due to its proximity to major business establishments and transport corridors, a factor that will be considered during the detailed Environmental and Social Impact Assessment (ESIA) study.

Topographically, the site is generally characterized by relatively gentle urban terrain typical of the Westlands zone, with existing drainage patterns connecting to the broader Nairobi stormwater management system. The site's location within Westlands sub-county places it under the planning and development control jurisdiction of Nairobi City County, and it falls within areas designated for high-density commercial and mixed-use development under current urban planning frameworks.

The location offers significant strategic advantages in terms of accessibility, infrastructure

availability and compatibility with surrounding land uses, thereby supporting the viability of the proposed 30-storey development while necessitating careful assessment of environmental and social considerations associated with high-density urban development.

2.2 Project proponent

The Project Proponent for the proposed 30-storey high-rise residential development plus associated amenities on Plot L.R No. NAIROBI/BLOCK 7/338 located Off Waiyaki Way road in Westlands sub-county, Nairobi City County, is Stellar Bay Limited. The company is a duly registered and the certificate of incorporation and the companies' search CR12 has been annexed.

Stellar Bay Limited is responsible for the conceptualization, financing, planning, design coordination, regulatory compliance and overall implementation of the proposed development. The proponent is committed to ensuring that the project is executed in accordance with applicable national and county laws, including the Environmental Management and Coordination Act (EMCA), building regulations, and other statutory requirements governing land use, construction, environmental protection, occupational health and safety, and public health.

In undertaking this project, the proponent has engaged qualified professionals, including registered environmental experts, planners, architects, engineers and other consultants, to ensure technical soundness, environmental sustainability, and structural integrity of the development. The proponent also commits to incorporating stakeholder feedback, implementing mitigation measures identified in the Environmental Impact Assessment (EIA), and adhering to the Environmental and Social Management Plan (ESMP) throughout the project lifecycle.

The overarching objective of Stellar Bay Limited is to deliver a high-quality mixed-use development that optimizes land use, contributes to Nairobi's urban growth strategy, creates employment opportunities and enhances the economic and social value of the Westlands area, while upholding principles of environmental stewardship and corporate responsibility.

2.3 Project rationale/justification

The proposed high-rise residential development offering studio, one bedroom and two bedroom retail shops, office, banquet hall and conference room by Stellar Bay Limited is driven by the growing demand for integrated urban developments within Nairobi City County, particularly in the Westlands corridor Off Waiyaki Way road along Mpaka Road. This area has progressively transformed into a high-density commercial and residential hub, characterized by corporate offices, hospitality establishments, and modern apartment complexes.

The project seeks to optimize the use of prime urban land through vertical development, thereby supporting sustainable land utilization in line with contemporary urban planning principles and county development objectives.

The rationale for the project is anchored on the increasing demand for quality accommodation facilities, serviced apartments, modern office spaces, and convenient retail outlets within proximity to Nairobi's Central Business District and Westlands commercial zone.

The inclusion of conference rooms responds to the continued growth of business tourism, conferences, and regional trade activities, while the 697 residential units aim to meet the housing needs of professionals and middle- to upper-income urban residents seeking secure and conveniently located housing. The retail and office components further enhance the project's viability by promoting a live-work-shop environment within a single integrated complex.

The development is also expected to contribute positively to the socio-economic growth of the area by generating employment opportunities during construction and operational phases, increasing revenue streams to the County and National Government through taxes and levies, and stimulating complementary business activities in the surrounding area.

The project also aligns with national and county development strategies that encourage private sector participation in infrastructure expansion, housing provision, and commercial development.

Given the scale and mixed-use nature of the project, undertaking a comprehensive Environmental and Social Impact Assessment (ESIA) is necessary to ensure that potential environmental and social impacts are identified and effectively managed.

The project justification therefore not only reflects its economic and urban development significance but also underscores the proponent's commitment to responsible development, regulatory compliance, and integration of environmental sustainability measures throughout the project lifecycle.

2.4 Project components

The proposed high-rise residential development plus associated amenities by Stellar Bay Limited will comprise an integrated high-rise complex consisting of thirty (30) floors above ground level and basement levels, designed to accommodate retail, office, hospitality and residential functions within a single development.

The basement level will primarily house parking facilities for residents, hotel guests, office users, retail customers and visitors, in addition to building services infrastructure such as water storage tanks, fire-fighting systems, standby generators, electrical switch rooms, mechanical plant rooms, storage areas and refuse holding facilities.

The ground floor and part of the podium levels will be dedicated to retail spaces, including shops, restaurants, cafés and other convenience outlets intended to provide commercial services to building occupants and the surrounding neighborhood. Dedicated office spaces will occupy selected lower and middle floors, offering modern, flexible commercial accommodation supported by high-speed lifts, centralized air conditioning systems, and integrated information and communication technology infrastructure.

The development component will consist of approximately rooms, complemented by a reception lobby, conference and meeting facilities, restaurants, kitchens, administrative offices, housekeeping areas, and wellness amenities. The residential component will comprise a total of 697 residential units. These residential units will be supported by secure access systems, dedicated lift cores, shared corridors, balconies, and essential building services to ensure comfort and safety for occupants.

Additional amenities within the development will include a swimming pool, gymnasium, landscaped recreational spaces, and communal areas designed to enhance the quality of living and user experience.

Supporting infrastructure will incorporate internal access roads, pedestrian walkways, stormwater drainage systems, connection to the existing sewer network, water supply systems (including possible borehole supplementation), solid waste management facilities, energy supply systems with standby power backup, and fire detection and suppression installations.

Collectively, these components form a comprehensive, vertically integrated mixed-use development designed to maximize land use efficiency while providing modern urban living, working, and hospitality facilities within the Westlands area of Nairobi City County.

2.5 Project design & layout

The proposed development by Stellar Bay Limited entails the construction of an iconic residential development complex comprising retail, office, hotel, swimming pool, banquet hall and conference room, plus other associated components as per the approved drawings on Plot L.R. No. NAIROBI/BLOCK 7/338 Off Waiyaki Way road, within the Westlands sub-county, Nairobi City County.

The project is envisioned as a high-rise, 30-floor development above ground level, supported by basement level. The basements will primarily accommodate parking facilities, building services infrastructure, storage areas, fire-fighting water tanks, electrical and mechanical plant rooms, and other back-of-house functions. Adequate vehicular ingress and egress points will be provided from Waiyaki road, with internal circulation designed to ensure efficient traffic flow, pedestrian safety, and compliance with Nairobi City County planning and traffic management requirements.

The ground floor and select podium levels will host retail outlets, restaurants, convenience shops and customer service facilities designed to activate the street frontage and enhance commercial vibrancy within the Westlands corridor. Dedicated office spaces will be incorporated within part of the lower and middle floors, providing office accommodation with modern amenities, lifts, energy-efficient glazing, centralized air conditioning systems, and integrated ICT infrastructure.

The development will comprise approximately supported by reception and lobby areas, conference and meeting facilities, restaurants, fitness and wellness amenities, housekeeping areas, and administrative offices, thereby positioning the development as a premier hospitality destination within Nairobi's commercial hub.

The residential component will consist of a total of 697 residential units distributed across the upper floors, The apartments will be designed to offer contemporary urban living with quality finishes, adequate natural lighting and ventilation, balconies and access to shared amenities.

Residents will benefit from dedicated lift cores, secure access control systems, refuse handling facilities, standby power supply, borehole and municipal water connections, and sustainable building features where feasible.

Additional amenities within the development will include a swimming pool, gymnasium, landscaped recreational areas, communal spaces, and sufficient parking for residents, hotel guests, office users, retail customers and visitors. The project will integrate essential infrastructure such as stormwater drainage systems, wastewater connection to the existing sewer network, solid waste management areas, fire detection and suppression systems and renewable energy supplementation to enhance environmental sustainability and operational efficiency.

The proposed high-rise residential development is designed to optimize land use within the rapidly growing Westlands area, contribute to Nairobi's urban skyline, generate employment opportunities, and support socio-economic growth while adhering to applicable planning, environmental, and building regulations.

The proposed development project will cost Kenyan Shillings Two Billion, Two Hundred and Seventy Two Million, Six Hundred and Twenty Eight Thousand, Five Hundred and Ninety Five Only (Ksh.2,272,628,595). In accordance to the fifth schedule of Environmental (Impact Assessment and Audit) Regulations, 2003, as reviewed vide Gazette Notice No.13211 of 2013 provides for an EIA processing and monitoring fee of 0.1% of the total project cost to a minimum of Ksh.10,000.

2.6 Construction activities

The construction of the proposed 30-storey high-rise residential development plus associated amenities Off Waiyaki Way road, will involve a sequence of carefully planned activities

aimed at ensuring structural integrity, safety, and environmental compliance. Construction will be executed in phases, starting with site preparation, followed by foundation works, vertical construction, and the installation of building services and finishes.

Initial activities will include site clearance, demolition of any existing structures, and excavation for the basement level, which will accommodate parking, utility rooms, and mechanical installations. Excavation works will be carried out with consideration for soil stability, stormwater management, and minimal disruption to neighboring properties. Temporary shoring and retaining structures will be installed to ensure worker safety and protect adjacent developments.

The foundation and structural works will involve reinforced concrete piling and raft foundations, followed by the erection of the superstructure using reinforced concrete frames. Floor slabs, columns, beams, and core walls will be constructed progressively, with strict adherence to design specifications and quality control measures.

The installation of building services will run concurrently with structural works. This includes mechanical, electrical, and plumbing systems, fire safety installations, water supply and drainage networks, standby power generators, elevators, HVAC systems, and telecommunications infrastructure.

Sustainable features such as rainwater harvesting systems, energy-efficient lighting, and water-saving fixtures will also be integrated during this stage.

Exterior and interior finishes will follow structural completion, including façade glazing, aluminum cladding, painting, flooring, partitioning, and installation of fixtures and fittings for retail, office, hotel, and residential areas. Landscaping, swimming pool construction, and podium terraces will be completed toward the final stages to enhance the aesthetic and recreational quality of the development.

Construction activities will be carefully managed to minimize impacts on air quality, noise levels, traffic, and public safety. Waste management procedures, occupational health and safety measures, and environmental monitoring protocols will be

implemented throughout the construction phase. The phased and systematic approach ensures that the development is delivered safely, efficiently, and in accordance with Nairobi City County regulations and international best practices.

2.7 Operation activities

The operational phase of the proposed 30-storey high-rise residential development plus associated amenities by Stellar Bay Limited, will involve the coordinated management of retail outlets, office suites, hotel facilities, swimming pool, conference room, banquet hall, and associated amenities. Operation activities are designed to ensure efficient functionality, safety, and sustainability while maximizing economic, social, and environmental benefits.

The retail component will operate as a commercial hub, hosting shops, boutiques, banking services, and food outlets. Operational activities will include daily business transactions, supply chain management, waste handling, security, and maintenance of facilities to ensure uninterrupted service to customers. Loading and unloading will be managed within designated service areas to avoid congestion Off Waiyaki Way road.

The office suites will be managed to provide professional work environments, including maintenance of common areas, elevators, air-conditioning systems, internet connectivity, security, and cleaning services. Office operations will include tenant management, facility scheduling, and adherence to health and safety protocols.

The hotel facilities will operate with front-of-house services such as reception, housekeeping, room service, restaurant and conference management, and recreational amenities management. Operational activities also include monitoring of energy and water consumption, waste management, emergency preparedness, and customer service to meet international hospitality standards.

The residential apartments will be managed to provide secure and comfortable urban living. Activities will include access control, routine maintenance of common areas, landscaping, waste collection, water supply management, security surveillance, and communal facility management, including the swimming pool and recreational spaces.

Support services for all components will include utilities management (water, electricity, sewage, and telecommunications), fire and safety systems monitoring, solid and liquid waste handling, and routine maintenance of building systems and infrastructure. Environmental management practices, including energy and water conservation,

pollution control, and adherence to Nairobi City County and national regulations, will be integral to operation activities.

The operational framework is designed to ensure the mixed-use development functions efficiently, safely, and sustainably, providing high-quality commercial, residential, and hospitality services while contributing to economic growth and enhancing the quality of urban life within the Westlands corridor.

2.8 Decommissioning

Decommissioning of the proposed 30-storey high-rise residential development on Plot L.R No. NAIROBI/BLOCK 7/338, will be undertaken at the end of the project's economic life or in the event of redevelopment. Although the project is designed for long-term operation, provision for eventual decommissioning is an important component of sustainable project planning and environmental management.

The decommissioning phase will involve systematic dismantling of building structures, removal of mechanical and electrical installations, demolition of superstructures and substructures, and site clearance. Activities will include disconnection from public utilities such as water, sewer, electricity, and telecommunications, as well as safe removal of internal fixtures, fittings, and equipment. All demolition works will be conducted in accordance with applicable building regulations, occupational health and safety standards, and environmental requirements.

Potential impacts during decommissioning may include noise and dust emissions, generation of demolition waste, traffic disruptions, occupational safety risks, and possible contamination from hazardous materials such as oils, fuels or electronic waste. To mitigate these impacts, a decommissioning environmental management plan will be prepared prior to commencement of demolition works.

The plan will outline waste segregation, recycling and reuse strategies, safe handling and disposal of hazardous materials, dust suppression measures, noise control, traffic management, and worker safety procedures.

Where feasible, materials such as steel, concrete debris, glass, and timber will be salvaged or recycled to minimize waste sent to landfills and promote circular economy principles.

The site will be restored to a safe and stable condition, either for future redevelopment or alternative land use consistent with prevailing zoning regulations.

Decommissioning will be carefully planned and executed to ensure environmental protection, public safety, regulatory compliance under the Environmental Management and Coordination Act (EMCA), and minimal disruption to the surrounding Westlands area community.

CHAPTER THREE

BASELINE INFORMATION OF THE PROJECT AREA

3.0 Introduction

This chapter provides the main features of the baseline biophysical and socio-economic information of the project area. Environmental description, also known as baseline studies, is intended to establish the present state of the environment, taking into account changes resulting from natural events and from other human activities (Glasson, 1994; Canning et al., 2003). If an environmental description is flawed, this will reduce the accuracy of subsequent predictions and mitigation measures (Canning et al., 2003).

3.1 Identification of the Project Site

The site for the proposed project by Stellar Bay Limited is located on Plot L.R No. NAIROBI/BLOCK 7/338 located adjacent to Oilcom Petrol Station Westlands, Next to Mpaka House, Off Waiyaki Way road, Along Mpaka road in Westlands sub-county, Nairobi City County.

The proposed site is within a commercial area. The proposed project has associated developments including a good road network, electricity supply and other infrastructure making it of character.

Photos showing the project site location.





(Latitude -1.265591° and Longitude 36.803689°)
1°15'56.1"S 36°48'13.3"E

3.2 Climate and Weather patterns

The proposed 30-storey high-rise residential development plus associated amenities on Plot L.R No. NAIROBI/BLOCK 7/338 Off Waiyaki Way road in Westlands sub-county, Nairobi, is situated within a subtropical highland climate characterized by moderate temperatures and bimodal rainfall patterns. The area experiences relatively stable climatic conditions throughout the year due to its elevation of approximately 1,600–1,800 meters above sea level.

The region exhibits two main rainy seasons i.e., the long rains' normally occurring between March and May, and the 'short rains' between October and December. Annual rainfall averages range between approximately 800 mm and 1,000 mm, although variability may occur due to broader climatic fluctuations. Periods of intense rainfall may contribute to localized surface runoff and urban flooding, particularly in areas with high levels of impervious surfaces. These rainfall characteristics are important for stormwater management planning and drainage design for the proposed development.

Temperatures in the project area are generally moderate, with mean annual temperatures averaging between 18°C and 22°C. Daytime temperatures typically range between 23°C and 28°C during warmer months (January to March), while cooler months (June to August) may experience temperatures dropping to approximately 10°C–12°C at night. The relatively mild temperature regime supports comfortable living and commercial activities but may contribute to increased demand for ventilation, heating, or cooling systems depending on seasonal variations.

Prevailing wind patterns are generally influenced by seasonal monsoon systems, with moderate wind speeds that can affect dust dispersion during construction activities and influence building orientation in high-rise developments. Wind speed and direction are also critical considerations in structural design, particularly for tall buildings where wind loading and turbulence effects must be addressed.

Climate change considerations, including increasing frequency of extreme rainfall events, prolonged dry spells and urban heat island effects, are relevant to the project's long-term sustainability. These factors necessitate integration of climate-resilient design measures

such as efficient stormwater systems, water conservation strategies, energy-efficient building materials and landscaping to enhance microclimate regulation.

The climate and weather patterns of the project area provide generally favorable conditions for high-rise mixed-use development; however, careful design and environmental management measures are required to address rainfall intensity, stormwater runoff, wind effects, and long-term climate variability within the Kilimani urban environment.

3.3 Topography and landform

The proposed 30-storey residential development, is located within a generally elevated plateau characterized by gently undulating terrain typical of the Nairobi highlands. The area lies at an average elevation of approximately 1,600–1,800 meters above sea level, contributing to its moderate climate and relatively stable ground conditions.

The immediate project site exhibits predominantly gentle to moderate slopes, with localized variations influenced by prior development and grading activities. The terrain is largely urbanized, with much of the natural landform altered through construction of buildings, roads, drainage channels, and other infrastructure. As such, the natural topography has been partially modified, resulting in leveled building platforms and engineered surfaces within and around the site.

Natural surface drainage generally follows the prevailing slope direction toward existing stormwater channels and road drainage systems Off Waiyaki Way road. However, increased impervious surfaces associated with urban development may alter runoff characteristics, potentially increasing surface flow velocities and localized ponding during heavy rainfall events. Understanding the site's topography is essential for foundation design, excavation planning, basement construction and stormwater management.

From a geotechnical perspective, the relatively stable plateau landform supports high-rise development, subject to detailed soil investigation and structural analysis. The slope characteristics must be carefully considered during excavation works to prevent soil instability, erosion, and sediment transport to adjacent properties or drainage systems. Temporary erosion control measures and appropriate retaining structures may be

required during the construction phase.

3.4 Geology and soils

The proposed 30-storey residential development Off Waiyaki Way road, is situated within the Nairobi volcanic geological formation, which is predominantly characterized by volcanic rocks, including basalts, tuffs and phonolites overlain by weathered residual soils. These formations are typical of the Nairobi highlands and generally provide stable ground conditions suitable for medium- to high-rise developments, subject to detailed geotechnical investigations.

The soils within the project area commonly consist of red to dark brown clayey soils derived from volcanic parent materials. These soils may exhibit moderate to high plasticity, variable bearing capacity and potential shrink-swell characteristics depending on moisture content. In some locations, weathered rock layers may be encountered at shallow to moderate depths, which may influence excavation methods, foundation design, and basement construction works.

Given the scale and height of the proposed development, comprehensive geotechnical investigations including borehole drilling, soil sampling, laboratory testing, and groundwater assessment will be required to determine soil stratification, bearing capacity, settlement potential and appropriate foundation systems. Particular attention will be given to slope stability, excavation support requirements and the design of retaining structures where deep basements are proposed.

The potential for soil erosion during construction, especially during the rainy seasons, must be addressed through erosion control measures such as sediment traps, temporary drainage channels, and stabilization of exposed surfaces. Assessment of any previous land use activities is also necessary to identify possible soil contamination from construction debris, fuel storage or other urban sources.

3.5 Hydrology

The proposed 30-storey residential development, is located within an urban catchment characterized by modified natural drainage systems and predominantly impervious surfaces. The hydrological aspect of the area is influenced by seasonal rainfall patterns, topography and existing urban infrastructure, including roads, stormwater drains and sewer networks.

There are no major rivers, wetlands or permanent surface water bodies within the immediate project area. However, the broader area falls within the Nairobi River Basin catchment, where surface runoff from developed areas is conveyed through engineered drainage systems into downstream watercourses. The hydrological behavior of the site is primarily defined by surface runoff dynamics, infiltration capacity of soils and connectivity to municipal drainage infrastructure.

During rainfall events, particularly the long rains and short rains, increased surface runoff may occur due to the high proportion of paved and built-up areas in the Westlands corridor. The proposed development, which includes basement levels and expanded impervious surfaces, has the potential to alter local runoff patterns, increase discharge rates and place additional pressure on existing stormwater systems if not properly managed.

Groundwater conditions in the area are generally associated with volcanic formations, with water tables occurring at variable depths depending on local geology and recharge conditions. Detailed geotechnical and hydrogeological investigations will be required to determine groundwater levels, seasonal fluctuations and implications for deep excavation and foundation design.

Mitigation measures such as on-site stormwater detention tanks, controlled discharge systems, permeable landscaping and sediment control during construction will be incorporated to ensure that the project does not adversely affect the surrounding hydrological regime.

3.6 Air Quality

The proposed project Off Waiyaki Way road, is situated within a densely developed urban corridor characterized by moderate to high vehicular traffic, commercial activities and ongoing construction projects. As such, the baseline air quality in the area is primarily influenced by motor vehicle emissions, road dust suspension, construction-related activities and emissions from nearby commercial establishments.

Key ambient air pollutants likely present in the project area include particulate matter (PM₁₀ and PM_{2.5}), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), and volatile organic compounds (VOCs). Traffic congestion Off Waiyaki Way road, particularly during peak hours, contributes significantly to localized air pollutant concentrations. Dust generation from unpaved surfaces, roadside activities and nearby construction sites may also intermittently elevate particulate levels.

Meteorological conditions such as wind speed and direction, temperature and seasonal rainfall patterns influence pollutant dispersion and concentration levels. During dry seasons, increased dust levels may be experienced, while rainfall events generally suppress particulate concentrations through atmospheric washout. The relatively open urban landscape of Westlands area allows for moderate air circulation, which aids in pollutant dispersion under normal weather conditions.

Although no major industrial emission sources are located within the immediate vicinity, cumulative impacts from urban traffic and commercial energy use contribute to the overall ambient air quality profile. The baseline air quality reflects typical urban conditions, with manageable levels subject to effective environmental management practices.

3.7 Noise and vibration levels

The proposed 30-storey high-rise residential development, is located within a high-density urban setting characterized by significant commercial, institutional and residential activities. The baseline noise environment in the project area is primarily influenced by vehicular traffic Off Waiyaki Way road, nearby commercial establishments, construction activities within the vicinity and general urban movement.

Ambient noise levels in the area typically fluctuate throughout the day, with elevated levels recorded during morning and evening peak traffic hours. Intermittent noise sources include vehicle horns, engine acceleration, public service vehicles, delivery trucks and occasional construction equipment from adjacent developments. Nighttime noise levels are generally lower but may still be influenced by late-hour commercial operations and traffic flow.

Vibration levels in the baseline environment are generally low to moderate and are mainly associated with heavy vehicle movement and ongoing construction works in the surrounding urban area. Given the developed nature of Westlands area, vibration impacts are typically localized and short-term, although they may affect nearby structures or sensitive receptors during intensive construction activities.

Sensitive receptors within and around the project area may include residential apartments, offices, educational institutions and healthcare facilities, which require consideration in relation to compliance with national noise and vibration regulations. Baseline noise monitoring, will be undertaken to establish existing daytime and nighttime noise levels and compare them against the Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations.

The ToR will therefore address potential noise and vibration impacts during both construction (e.g., excavation, piling, heavy machinery operation) and operation (e.g., traffic generation, standby generators, mechanical systems) and outline mitigation measures such as scheduling of noisy activities, installation of acoustic enclosures, use of vibration-dampening technologies, and adherence to prescribed working hours.

3.8 Flora

The proposed 30-storey residential development Off Waiyaki Way road, is situated within a highly urbanized environment with limited natural vegetation. The site predominantly comprises built-up surfaces, paved areas, landscaped plots and scattered ornamental vegetation.

Existing flora is mainly composed of urban-tolerant and introduced species, including trees, shrubs and groundcover plants planted for aesthetic or functional purposes such as shade provision, erosion control and landscaping.

No significant indigenous or protected plant species have been identified within the immediate project area. The majority of trees and shrubs are non-native species commonly found in urban settings, including flowering ornamental trees, hedges and small shrubs along property boundaries and road reserves. Vegetation cover is fragmented due to previous construction activities, grading and land leveling.

Despite the limited natural flora, existing vegetation contributes to microclimate regulation, dust suppression, aesthetic enhancement and limited habitat provision for urban-adapted animals such as birds and insects. Any removal of vegetation during construction may lead to temporary loss of these ecosystem services, necessitating mitigation measures such as replanting, incorporation of indigenous species in landscaping and creation of green spaces within the development design.

The baseline assessment of flora will inform planning for sustainable landscaping, including the selection of drought-tolerant and low-maintenance species, preservation of existing trees where feasible, and integration of green infrastructure.

3.9 Fauna

The proposed project, is located in a densely urbanized environment, where natural habitats have been largely replaced by built-up areas, roads and landscaped plots. As a result, the baseline fauna in the project area is primarily composed of urban-adapted species that can survive and thrive in modified environments.

Common fauna within and around the site includes small birds such as pigeons, small mammals (e.g., rodents), reptiles (e.g., lizards) and various insect species, including pollinators such as bees and butterflies. These species utilize scattered trees, shrubs and landscaped areas for feeding, nesting and shelter. No evidence of protected, endangered, or sensitive wildlife species has been recorded within the immediate project area.

Despite the limited species diversity, the existing fauna contributes to essential urban ecosystem services, including pollination, seed dispersal and insect control. Potential impacts during construction may include habitat disturbance, noise and vibration disruption and temporary displacement of urban-adapted species.

Operational impacts may arise from increased human activity, lighting and changes in

vegetation structure.

Mitigation measures will focus on minimizing disruption to existing fauna, preserving vegetation where possible, implementing landscaping with indigenous and pollinator-friendly species and incorporating green spaces such as terraces, gardens and rooftop vegetation to provide supplementary habitat. Monitoring during construction and early operation phases will ensure that urban wildlife impacts are effectively managed.

3.10 Biodiversity status

The proposed project is situated within a highly urbanized landscape where natural habitats have been extensively modified by built-up areas, roads and landscaped spaces. As a result, the overall biodiversity within the immediate project site is low to moderate and primarily consists of urban-adapted species of flora and fauna.

Flora comprises predominantly ornamental and non-native plant species, including trees, shrubs and groundcover used for landscaping and aesthetic purposes. Native or indigenous species are scarce due to previous land development activities. Fauna in the area consists mainly of birds, small mammals and insects that have adapted to urban conditions. No protected, endangered or ecologically sensitive species have been observed within the project area.

Despite limited species diversity, the existing urban biodiversity provides essential ecological services including microclimate regulation, air purification, pollination, seed dispersal and aesthetic/recreational benefits to residents and workers. The proposed development has the potential to affect this urban biodiversity through vegetation removal, habitat modification, noise and human activity during construction and operation.

To maintain and enhance biodiversity, the project will integrate mitigation and enhancement measures such as the preservation of existing trees and shrubs where possible, use of indigenous and pollinator-friendly species in landscaping, incorporation of green roofs, terraces and establishment of continuous monitoring during construction and early operational phases.

3.11 Sensitive or protected areas

The proposed 30-storey high-rise residential development, is located within a fully urbanized environment where natural habitats have largely been replaced by built infrastructure. A preliminary review of the surrounding area indicates that there are no designated national parks, conservation areas, wetlands or other formally protected ecological zones within or immediately adjacent to the project site.

The nearest sensitive areas include urban green spaces, landscaped public areas and road reserve vegetation that support urban-adapted flora and fauna. These areas, while not formally protected, provide ecological and aesthetic value and may host small populations of birds, insects.

Despite the absence of officially protected areas, the project's construction and operational activities may still affect sensitive receptors, including nearby residential and institutional developments, roadside trees and small patches of urban greenery. Measures to minimize disturbance include careful site planning, preservation of existing vegetation where possible, incorporation of landscaped buffers and adherence to noise, dust and vibration control standards.

3.12 Population

The proposed project, is located within a densely urbanized area characterized by a mixed population of residents, employees, and transient commercial users. The population in the Westlands area corridor is largely influenced by high-density commercial and residential developments, corporate offices, hospitality establishments and informal service providers.

Demographically, the area supports a diverse population, including working professionals, business operators and lower-income service providers. Population density is high, particularly during daytime hours due to commuting and business activities, while residential occupancy contributes to sustained nighttime population. The area also experiences transient populations related to offices, retail outlets and hospitality services, which can place variable demands on infrastructure and social services.

This demographic diversity has implications for service provision, traffic management, utility demand and social infrastructure planning. Vulnerable groups, including low-

income residents, informal traders, persons with disabilities and elderly populations, are present and may be affected by construction and operational activities.

The baseline assessment of population will inform the anticipated impacts of the proposed development on local demographics, housing demand, service requirements, traffic and community interactions. Mitigation and planning measures will ensure that construction and operational activities minimize disruption to local residents and provide equitable benefits such as employment opportunities, enhanced social amenities and improved urban infrastructure.

3.13 Settlement Patterns

The proposed project, is situated within a highly urbanized corridor characterized by a mix of commercial, residential, institutional and hospitality developments. Settlement in the area reflects the typical urban morphology of Nairobi's area and Westlands neighborhoods, with high-density structures interspersed with medium-rise buildings, road networks and limited green spaces.

The surrounding land use exhibits a combination of high-rise office towers, apartment complexes, hotels, retail shops, and public institutions. Residential settlements are mainly in the form of apartment blocks catering to both middle- and high-income populations. Commercial and institutional establishments dominate along major roads such as Waiyaki road, while smaller retail and service outlets occupy side streets. Informal settlements or low-density structures are largely absent in the immediate project vicinity due to the commercialized nature of the Westlands area corridor.

Transportation networks, including major roads, feeder streets and pedestrian pathways, influence the distribution and accessibility of settlements. The pattern of development is largely linear along main roads with high plot coverage and minimal open spaces, reflecting urban densification trends. The settlement pattern also affects access to utilities, social amenities, and emergency services, which is a critical consideration for large-scale developments such as the proposed project.

3.14 Local economy and livelihoods

The proposed 30-storey high-rise residential development, is located within one of Nairobi's key commercial and business districts. The local economy is primarily driven by corporate offices, hospitality services, retail businesses, financial institutions and small-to-medium enterprises. The area also supports a significant informal economy, including street vendors, matatu operators and service providers catering to the working population.

Employment opportunities in Westlands area are largely concentrated in the formal sector, with office-based jobs, hotel and restaurant services and retail operations dominating the labor market. Construction activities also contribute to temporary employment, particularly for skilled and unskilled laborers. Income levels vary considerably, ranging from high-income professionals employed in offices and financial institutions to lower-income individuals engaged in informal trade and support services.

The livelihoods of local residents and workers are closely tied to urban commercial activities, transportation access, and the availability of social services. The proposed development is expected to generate additional employment opportunities during both construction and operational phases, including jobs in construction, property management, hospitality, retail, and facility maintenance. These opportunities may enhance local economic growth and support household incomes.

The baseline assessment of the local economy and livelihoods will inform the evaluation of potential project impacts, including economic displacement, job creation, business disruption and changes in demand for goods and services. Mitigation measures and opportunities for positive socio-economic outcomes, such as prioritizing local hiring, supporting informal sector operators and integrating small-scale commercial spaces within the project, will be recommended.

3.15 Cultural heritage and archeology

The proposed project, is located within a highly urbanized setting where natural and built landscapes have been extensively modified. Preliminary reviews of national and local cultural heritage registers indicate that the immediate project site does not contain any formally designated monuments, heritage sites or known archaeological features.

Despite the absence of officially protected cultural heritage within the project area, the surrounding area includes historical structures, urban artifacts and community landmarks that reflect Nairobi's colonial and post-independence development. The potential for unrecorded or chance archaeological finds during excavation, particularly in areas of deep basement construction, cannot be entirely ruled out.

The baseline assessment will therefore focus on identifying any tangible or intangible cultural resources in the project vicinity, evaluating their historical, architectural, or social significance and assessing the likelihood of disturbance during construction and operational activities. Special attention will be given to chance finds procedures, ensuring that any discoveries of historically significant materials are managed in accordance with the National Museums of Kenya guidelines and relevant heritage legislation.

Mitigation measures will include site sensitization, training of construction personnel on heritage awareness, immediate reporting of discoveries and preservation or documentation of any archaeological finds.

The integration of heritage-sensitive planning may also include maintaining visual or physical access to nearby culturally significant structures, where feasible. During community engagement we came to realize there is a Mugumo tree nearby that the community recommended to be protected.

3.16 Transportation Infrastructure

The proposed project development, is located within a major urban corridor that serves as a key commercial and transit route in Nairobi. The transportation infrastructure in the area comprises a mix of major roads, secondary streets, pedestrian pathways and public transport facilities, all of which facilitate the movement of residents, employees, and visitors within the dense urban environment.

Waiyaki road, which runs adjacent to the site, is a primary road with high vehicular

traffic volumes, including public service vehicles, private cars and heavy trucks.

The

surrounding road network connects the project area to the CBD, neighboring residential areas, and other commercial hubs off Waiyaki Way. Traffic congestion is common during peak hours, and intersection bottlenecks have been observed at key junctions.

Public transportation in the area includes matatus, buses, and uber providing access for commuters from various parts of the city. Pedestrian movement is significant, particularly along sidewalks, footpaths, and crossing points near commercial and retail establishments. Parking availability is limited, reflecting high demand from offices, hotels, retail shops and other urban facilities.

The baseline assessment of transportation infrastructure will focus on road capacity, traffic flow patterns, accessibility, public transport provision, pedestrian safety, and parking facilities. It will also evaluate the existing infrastructure's ability to accommodate additional vehicular and pedestrian demand generated by the proposed development. Potential impacts include increased congestion, higher demand for parking, and temporary disruptions during construction activities.

Mitigation measures will include traffic management plans during construction, provision of adequate on-site parking, pedestrian safety enhancements, and coordination with county government, to ensure seamless integration with the existing urban transport network.

3.17 Water supply system

The proposed 30-storey high-rise residential development, Off Waiyaki Way road in Westlands area, will rely on the municipal water supply network managed by the Nairobi City Water and Sewerage Company (NCWSC). The baseline assessment indicates that water infrastructure in the area includes high-capacity mains Off Waiyaki Way road and adjacent streets, providing adequate service to surrounding commercial, residential and institutional developments.

Water demand in the project area is high due to the dense mixed-use environment, with consumption driven by offices, retail outlets, hospitality services and residential apartments. Peak water usage typically occurs during business hours, with additional demand from residential and conference facilities in the evenings.

Existing connections demonstrate adequate supply under normal conditions, but intermittent pressures or shortages may occur during periods of high demand or pipeline maintenance.

For the proposed development, water requirements will include potable water for domestic use, commercial operations and landscaping. Additional considerations include fire-fighting requirements, cooling systems and potential back-up water storage to ensure uninterrupted supply. The design will integrate on-site storage tanks, pumping systems and pressure management to supplement municipal supply and maintain operational efficiency.

The baseline evaluation of water supply systems also considers the sustainability of the network, potential impacts of increased consumption on surrounding users, and the need for water conservation measures such as low-flow fixtures, rainwater harvesting, and efficient landscaping irrigation systems. Proper planning will ensure that the development's water demand is met without overburdening the municipal system or impacting neighboring properties.

3.18 Sewerage and wastewater management

The proposed project will connect to the municipal sewerage system managed by the Nairobi City Water and Sewerage Company. The baseline assessment indicates that the area is served by a network of sewer lines designed to handle domestic, commercial and institutional wastewater from surrounding high-density developments.

Existing wastewater infrastructure accommodates a combination of residential effluent, office and retail wastewater. While the system generally functions effectively, localized capacity constraints and maintenance issues may occasionally result in sewer backups or slow drainage, particularly during periods of heavy rainfall when stormwater inflow may mix with the sewer network.

For the proposed development, wastewater generation will arise from residential apartments, retail outlets, hotel and restaurant facilities, and associated services such as swimming pools, kitchens, and laundry operations.

Special consideration will be given to the management of greywater, blackwater and potential commercial effluents to prevent pollution of municipal systems and downstream watercourses.

The baseline assessment also includes the evaluation of potential impacts during construction, such as temporary sanitation facilities and accidental spills, which require appropriate mitigation measures including sediment traps, portable toilets and containment strategies. During operation, continuous monitoring, maintenance and adherence to effluent discharge standards will ensure sustainable wastewater management.

The existing sewerage and wastewater infrastructure in Westlands area is adequate for supporting additional demand from the proposed high-rise mixed-use development, provided that the project integrates on-site management systems, efficient connections, and compliance with environmental regulations to safeguard both municipal infrastructure and surrounding environmental quality.

3.19 Social infrastructure

The proposed 30-storey high-rise residential development Off Waiyaki Way road in Westlands sub-county, is located within a well-established urban environment with access to a range of social infrastructure and public services. The area is served by educational institutions, healthcare facilities, recreational amenities, religious centers that support the existing area population.

Educational facilities in the vicinity include primary and secondary schools and vocational training centers, catering to diverse age groups and contributing to the overall human capital development of the area. Healthcare services encompass public and private hospitals, clinics and specialized medical centers, providing essential care for both routine and emergency medical needs. Recreational and cultural amenities, offer opportunities for leisure, social interaction and cultural engagement.

The urban social infrastructure is complemented by emergency services such as police stations, fire stations and ambulance services, ensuring public safety and rapid response in case of incidents. Utilities such as street lighting, sanitation services and waste collection also form part of the broader social infrastructure supporting urban living.

The baseline assessment will evaluate the capacity, accessibility and quality of these social services in relation to the anticipated population and workforce associated with the proposed development. Potential impacts include increased demand on healthcare, education, recreational facilities and emergency services, which may necessitate coordination with local authorities and planning for enhanced facilities within or adjacent to the development.

CHAPTER FOUR

POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

There are several pertinent laws in Kenya relating to environmental protection that apply to development projects and that a developer/proponent will need to take into consideration when embarking on a particular type of development. Several statutory agencies have the power to control and regulate development activities that have the potential to affect the environment. They also protect the environment and natural resources and aim to promote sound environmental management.

Environmental impact assessment is a tool for environmental conservation and has been identified as a key component in new project implementation. According to the Environmental Management and Coordination Act (EMCA) of 1999 and Environmental Management and Coordination (Amendment), Act 2015 legal notice No.8 and Environmental (Impact Assessment and Audit). According to the EIA/EA Regulations, construction works require an Environmental Impact Assessment project report prepared and submitted to the NEMA for review and eventual licensing before the development commences.

This was necessary as many forms of unregulated development activities cause damage to the environment and hence the greatest challenge today is to maintain sustainable development without interfering with the environment.

4.2 Legal and Legislative Framework

The key national laws that govern the management of environment resources in the country have been briefly discussed in the following paragraphs.

4.2.1 Environment Management and Co-ordination (Amendment) Act, 2015

This project report has been undertaken in accordance with the Environment (Impact Assessment and Audit) Regulations, 2003, which operationalizes the Environment Management and Co-ordination (Amendment) Act, 2015. The report is prepared in conformity with the requirements stipulated in the Environment Management and Co-ordination (Amendment) Act, 2015 and the Environmental Impact Assessment and

audit Regulations 2003, Regulation 7 (1), and the Second Schedule (Legal Notice 31).

Part II of the said act states that every person is entitled to a clean and healthy environment and must safeguard the same. In order to achieve the goal of a clean environment for all, new projects listed under the second schedule of the Environment Management and Coordination (Amendment) Act, 2015 shall undergo an Environmental Impact Assessment. The Environment Management and Coordination (Amendment) Act, 2015 provides for the establishment of an umbrella legal and institutional framework under which the environment in general is to be managed.

In addition, the law is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the High Court if this right has been, is likely to be, or is being contravened.

According to section 25 (4) of NEMA, the National Environment Management Authority (NEMA) is required to restore degraded environmental sites using the National Environmental Restoration Fund. Currently, the restoration fund consists of 0.1 % levied from industries and other project proponents through the EIA process. Section 58 of the Act makes it mandatory for an Environmental Impact Assessment study to be carried out by proponents intending to implement projects specified in the second schedule of the Act which are likely to have a significant impact on the environment. Similarly, section 68 of the same Act requires operators of existing projects or undertakings to carry out environmental audits to determine the level of conformance with statements made during the EIA study. The proponent is required to submit the EIA and environmental audit reports to NEMA for review and necessary action.

Section 72 of the Act prohibits discharging or applying poisonous, toxic, noxious or obstructing matter, radioactive or any other pollutants into aquatic environment. According to section 73 of the act, operators of projects, which discharge effluent or other pollutants into the aquatic environment, are required to submit to NEMA accurate information on the quantity and quality of the effluent. Section 76 provides that all effluent generated from point sources are to be discharged only into the existing sewerage system upon issuance of prescribed permit from the local authorities. The

proponent is ready to seek for the prescribed permit when the trunk sewer will be in place. Section 87 (1) makes it an offence for any person to 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.

4.2.2 The Environmental Management and co-ordination (Strategic and Integrated Environmental Assessments and Environmental Audits) (No.2) Regulations 2025 Legal Notice No.71 of 2025.

In order to provide an updated and thorough framework for the conduct of Strategic Environmental Assessments, Integrated Environmental Impact Assessments and Environmental Audits in Kenya, the Environmental Management and Co-ordination (Strategic and Integrated Environmental Assessments and Environmental Audits) (No. 2) Regulations, 2025 were enacted as Legal Notice No. 71 of 2025 under the Environmental Management and Co-ordination Act (EMCA).

By incorporating environmental, social and climate change considerations into policies, plans and projects, and improving the institutional and procedural mechanisms for environmental assessment and compliance, the Regulations aimed to strengthen environmental governance.

The regulations offer comprehensive guidelines for conducting environmental impact assessments and audits, including screening, scoping, report preparation, public involvement, expert accreditation and NEMA approval. The regulations placed a strong emphasis on increased stakeholder participation, accountability and openness as well as the incorporation of social and environmental protections and climate change considerations into evaluation procedures.

These regulations are important to the proposed mixed-use retail, office, hotel and residential development in Westlands sub-county, since they specify the steps needed to conduct the project's environmental impact assessment.

Stakeholder participation, study report production, and the execution of environmental management and monitoring strategies are some of the environmental assessment procedures that Stellar Bay Limited must adhere to. All things considered, the Regulations emphasize how crucial it is to incorporate environmental factors into development planning and offer a crucial framework for guaranteeing that the planned

project is carried out in a sustainable and ecologically responsible manner.

4.2.3 Waste Water Management: Legal Notice No. 120; Part II – Protection of Sources of Water for Domestic Use.

The legal notice has the following provisions:

- Every person shall 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 these Regulations.
- No person shall throw or cause to flow into or near a water resource any liquid, solid, or gaseous substance or deposit any such substance in or near it, as to cause pollution.

All sources of water for domestic uses shall comply with the standards set out in the First Schedule of these Regulations. The proponent and project Architect will ensure that drainage channels are well-designed.

4.2.4 The Environmental Management and Co-ordination (Waste Management) Regulations: Legal Notice No. 178 of 2024:

A legal framework for the sustainable management of waste in Kenya is provided by the Environmental Management and Co-ordination (Waste Management) Regulations, 2024, which were issued as Legal Notice No. 178 of 2024 under the Environmental Management and Co-ordination Act (EMCA).

By encouraging the concepts of waste minimization, resource recovery, reuse, recycling, and environmentally sound disposal in accordance with circular economy approach, the regulations seek to avoid environmental contamination and protect general public health. They impose a duty of care on all waste generators to guarantee appropriate management, segregation, storage, transportation and disposal of trash in an environmentally acceptable way. They apply to all categories of waste, including home, commercial, industrial, hazardous and e-waste.

Stronger rules on waste segregation at the source are introduced by the regulations, which mandate that generators segregate trash into specific streams, such as organic, recyclable and hazardous waste, and that they only work with NEMA-licensed waste service providers for collection, transportation, and disposal.

The regulations also provide an improved licensing and compliance system under the

NEMA that covers recyclers, waste transporters, treatment facilities and disposal sites. They forbid uncontrolled waste disposal, illegal dumping and open burning of waste. To increase accountability throughout the waste management chain, the regulations call for the implementation of extended producer responsibility (EPR), greener production practices and waste tracking systems.

These regulations directly apply to the proposed mixed-use retail, office, hotel, and residential development, since the project will produce a variety of waste streams during construction, operation and decommissioning phases. In addition to ensuring the safe handling of any hazardous waste, Stellar Bay Limited (proponent) must create and execute an integrated waste management plan that includes waste minimization, segregation, on-site storage and the involvement of NEMA-licensed solid waste handlers.

4.2.5 The Environmental Management and co-ordination (Management and Control of Plastic Packaging Materials) Regulations Legal Notice No. 181 of 2024.

A comprehensive legal framework for the control, reduction and management of plastic packaging materials in Kenya is provided by the Environmental Management and Co-ordination (Management and Control of Plastic Packaging Materials) Regulations, 2024, which were issued as Legal Notice No. 181 of 2024.

The regulations were passed in order to combat detrimental effects on the environment and public health that result from the careless manufacture, use, disposal and littering of plastic packaging materials, especially the single-use plastics. They impose an obligation to guarantee that plastic materials are managed in an environmentally sound and sustainable manner. They apply to all individuals and organizations engaged in the production, importation, distribution, sale and use of plastic packaging as well as facilities producing plastic trash.

The regulations set forth precise guidelines for the reduction, reuse, recycling, and safe disposal of plastic packaging materials. They forbid the use, sale or distribution of some non-biodegradable single-use plastics while establishing a structure for licensing and permission for producers, importers, distributors and recyclers of plastic products.

In order to guarantee compliance, the regulations mandate that producers and distributors conduct environmental audits, keep records of the use of plastic materials and waste management, and submit reports to NEMA on a regular basis. Inspections and fines for noncompliance are examples of enforcement provisions.

These regulations are important to the proposed high-rise residential development plus associated amenities and facilities in the Westlands area of Westlands sub-county, because of the possible production of plastic waste during construction and operation phases. The plastic waste will result from packaging at the commercial establishments, hotel/cafe operations and conference room.

Stellar Bay Limited will have to put in place an integrated plastic waste management strategy that includes trash reduction, segregation, recycling and appropriate disposal techniques.

4.2.6 The Environmental Management and Coordination (Air Quality) Regulations, Legal Notice 180 of 2024.

A comprehensive framework for the prevention, control and mitigation of air pollution in Kenya is established by the Environmental Management and Co-ordination (Air Quality) Regulations, 2024, which were issued as Legal Notice No. 180 of 2024 under the Environmental Management and Co-ordination Act (EMCA) with the aim of guaranteeing clean and healthy ambient air.

The regulations are a major improvement over the previous 2014 Air Quality Regulations since they include more comprehensive coverage of emission sources, revised standards, and better compliance procedures.

They impose an obligation on project proponents/developers to prevent emissions that may negatively impact human health and the environment. They apply to all sources of air pollution including stationary sources like buildings, industrial facilities and construction sites as well as mobile sources like motor vehicles.

The regulations set ambient air quality limitations and emission requirements for pollutants such as particulate matter and greenhouse gases, and mandate that facilities

adhere to specified thresholds as specified in the schedules.

They also establish a structure for licensing emission sources, mandating that operators of certain facilities get emission licenses from NEMA and conduct routine emission monitoring and reporting. The regulations restrict activities that lead to excessive or uncontrolled air pollution and regulate fugitive emissions.

These regulations are relevant to the projected residential development plus associated amenities, especially during the project's construction and operation phases. During operation phase emissions may come from backup generators, HVAC systems, parking lots and increased vehicle traffic. Construction activities during construction phase may produce dust, particulate matter and exhaust fumes from construction machinery. As a result, Stellar Bay Limited will have to put in place suitable air pollution control measures such as dust suppression, equipment maintenance, cleaner fuel consumption and adherence to emission limits and monitoring requirements.

4.2.7 The Environmental and Co-ordination (Water Quality) Regulations (Legal Notice No.177 of 2024).

Environmental Management and Co-ordination (Water Quality) Regulations 2024, offers a legal framework for the management, conservation and protection of Kenya's water resources. By defining enforceable criteria for water quality, wastewater management, and effluent discharge, the regulations aim to prevent and control water pollution, guaranteeing a clean, healthy and sustainable water resources for a variety of applications.

They put a general obligation on all individuals and entities to refrain from actions that could directly or indirectly cause water pollution. The regulation does apply generally to all kinds of water including household, industrial, agricultural, recreational and ecological uses.

The regulations impose strict provisions on protection of water sources, such as limitations on development and activities within designated buffer zones/riparian areas along rivers, streams and other water bodies.

In order to uphold the "polluter pays" principle and encourage responsible wastewater management, the regulation mandates that any effluent discharge into the

environment be subject to prior licensing by NEMA and adherence to specified discharge standards. The regulations also provide a strong framework for monitoring, inspection and reporting, mandating that project proponents and regulators conduct routine water quality evaluations and keep records to guarantee compliance.

These regulations are very important and relevant to the proposed project, since they control important elements like wastewater generation, drainage design, effluent discharge and the preservation of nearby water resources.

Throughout the course of the project, Stellar Bay Limited who is the proponent, will have to secure the necessary licenses, put in place suitable stormwater management and wastewater treatment systems, and guarantee ongoing adherence to set water quality requirements.

4.2.8 The Environmental Management and co-ordination (Management of Toxic and Hazardous Chemicals and Materials) Regulations, Legal Notice No. 182 of 2024.

A legal framework for the safe handling, use, storage, transportation & disposal of toxic and hazardous chemicals and materials, is established by the Environmental Management and Co-ordination (Management of Toxic and Hazardous Chemicals and Materials) Regulations, 2024, which were issued as Legal Notice No. 182 of 2024.

These regulations were created to ensure adherence to chemical safety standards and reduce dangers to the environment and public health that come with exposure to dangerous compounds. They cover all individuals and organizations including commercial, institutional, and industrial facilities involved in the manufacture, importation, exportation, handling, use, storage, transportation and disposal of hazardous and toxic substances.

Toxic and hazardous material categorization, labelling, packing, storage, transportation and disposal are all outlined in the regulations. In order to handle chemical spills, leaks or unintentional releases, facilities must create and execute chemical management plans, keep hazardous material registries, carry out risk assessments and set up emergency response systems.

The regulations create a system for licensing and permitting under the National Environment Management Authority (NEMA), requiring users and handlers of dangerous chemicals to comply with monitoring, reporting and inspection requirements as well as obtain the required permits. To guarantee adherence to safe chemical management procedures, strict enforcement measures are offered which include penalties for non-compliance.

These regulations are important for the construction and operation of the proposed mixed-use retail, office, hotel, and residential development, since the project is likely to use hazardous materials like paints, solvents, cleaning agents, fuels and other chemical products.

All dangerous and hazardous chemicals must be purchased, stored, used and disposed of safely. Stellar Bay Limited must also put in place the proper safety and emergency response procedures and make sure that NEMA licensing and reporting regulations are followed.

4.2.9 The Environmental Management and Co-ordination (Sand Harvesting) Regulations, Legal Notice No. 179 of 2024.

A legal framework for the sustainable management and use of sand resources in Kenya is established by the Environmental Management and Co-ordination (Sand Harvesting) Regulations, 2024, which were passed as Legal Notice No. 179 of 2024 under the Environmental Management and Co-ordination Act (EMCA).

By encouraging ecologically sound methods, resource conservation and sustainable exploitation of sand as a natural resource, the regulations are intended to alleviate the environmental damage linked to unregulated sand extraction. They apply to all sand harvesting-related operations such as extraction, transportation and storage. They also impose an obligation on all parties involved in the sand value chain to adhere to established environmental standards and license requirements.

By creating County Environment Committees and Ward Sand Harvesting Committees, the regulations establish a decentralized governance structure. These committees are tasked with supervising, regulating and coordinating sand harvesting operations at the

local level, including designating authorized harvesting sites, keeping track of licensed sand dealers' registrations and enforcing adherence to environmental standards.

They also stipulate minimum setback distances from infrastructure, including roads & bridges, and limitations on sand mining in ecologically sensitive areas, as well as the designation and gazettment of authorized sand harvesting locations. In order to improve accountability and traceability in the industry, the regulations mandate licensing for sand harvesters, dealers, and transporters, including necessary licenses for sand transportation.

The regulations place a strong emphasis on environmental protection measures, such as using best practices to stop habitat destruction, riverbank erosion, land degradation and hydrological system disruption. They also encourage stakeholder participation, public involvement and interagency coordination in the management of sand resources.

These regulations are vital to the proposed 30-storey residential development retail, office, hotel, and conference room project, as substantial amounts of sand will be needed for construction. Construction materials sourced by Stellar Bay Limited must be purchased from suppliers and sand harvesting locations that have been licensed and approved.

All materials must be collected in accordance with the regulations and backed by legitimate permits. This will guarantee that the proposed project complies with national environmental regulations. This will also avoid indirect environmental effects linked to illegal and unsustainable sand extraction.

4.2.10 The Environmental Management and Co-ordination Act (Deposit Bonds) Regulations, 2025: Legal Notice No:20 of 2025.

A robust regulatory framework for the use of environmental deposit bonds as a financial assurance mechanism to ensure environmental restoration and compliance is established by the Environmental Management and Co-ordination (Deposit Bonds) (No. 2) Regulations, 2025, which were issued as Legal Notice No. 67 of 2025 under the Environmental Management and Co-ordination Act (EMCA), Cap. 387.

As part of the environmental approval process, the regulations do mandate that project proponents/developers and operators of specific activities create and submit a Deposit Bond Assessment Report, which must be completed by qualified experts.

Based on the possible environmental risk, the size of activities and the expected cost of cleanup, the authority i.e., NEMA uses this report to calculate the proper deposit bond amount payable into a designated Restoration Fund. The regulations also call for the creation and upkeep of a Deposit Bonds Register to keep track of all facilities that are required, as well as a systematic procedure for reviewing, approving, and periodically reevaluating bond amounts to account for modifications in project scope or environmental risk.

The deposit bond is returned to the proponent once a bond discharge certificate is issued, provided that project activities are satisfactorily completed and approved remediation, restoration and post-care actions are implemented. In accordance with the "polluter pays" principle, NEMA has the authority to seize the deposit bond and use the money for environmental repair if the proponent disregards environmental duties. In the event that decisions regarding bond assessment, refunds or confiscation are contested, the regulations also offer appeals and dispute settlement procedures.

These regulations are important to the proposed mixed-use retail, office, hotel, and residential project, because they add a level of financial and environmental accountability for projects that may pose environmental risks. In order to cover any environmental liabilities related to construction and operation, such as site restoration and pollution cleanup, Stellar Bay Limited may need to conduct a Deposit Bond Assessment and give financial assurance.

4.2.11 The Environmental Management and Co-ordination (Controlled Substances) Regulations, 2025: Legal Notice No.53 of 2025.

A framework for the regulation, control and phase-out of substances detrimental to the ozone layer and climate system is established by the Environmental Management and

Co-ordination (Controlled Substances) Regulations, 2025. The regulations are primarily intended to protect the ozone layer and regulate practices involving controlled substances. They are in line with Kenya's responsibilities under international environmental agreements such as the Montreal Protocol.

They impose a comprehensive duty of care on all participants in the value chain and cover all operations involving prohibited drugs and equipment containing them, including their production, importation, exportation, storage, handling, transit, use and disposal.

Chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons and other ozone-depleting substances, as well as equipment containing such substances, especially air conditioning and refrigeration systems, are classified into specific categories under the regulations.

The regulation has established a licensing system that requires anyone planning to manufacture, import or export, controlled substances or related equipment to get permission from NEMA. The regulations also specify specific requirements for packaging, labelling, storage, and transportation, including the need for hazard communication and the provision of material safety data sheets.

In order to guarantee adherence to specified standards and license conditions, the regulations have also established strong monitoring, reporting and enforcement mechanisms, such as the upkeep of registers of licensed entities and controlled substances, regular reporting by licensees, and oversight by NEMA.

The regulations also reinforce the "polluter pays" idea and accountability in environmental management by outlawing illegal actions such venting regulated substances and imposing penalties for non-compliance.

These regulations are important to the proposed mixed-use retail, office, hotel, and residential development, because of the expected use of air conditioning and refrigeration systems, fire suppression systems and other equipment that might contain controlled substances.

Stellar Bay Limited will have to make sure that every piece of equipment and material

used in the development complies with the regulations. This includes hiring certified technicians, sourcing from licensed suppliers and following safe handling, storage, and disposal procedures.

4.2.12 Environmental Management and Co-ordination (Noise and Excessive Vibrations Pollution) (Control) Regulations, 2009.

These regulations were published as Legal Notice No. 61 being a subsidiary legislation to the Environment Management and Co-ordination (Amendment) Act, 2015. The regulations provide information on the following:

- i) Prohibition of excessive noise and vibration.
- ii) Provisions relating to noise from certain sources.
- iii) Provisions relating to licensing procedures for certain activities with a potential of emitting excessive noise and/or vibrations; and
- iv) Noise and excessive vibrations mapping.

According to Environmental Management and Co-ordination (Amendment) Act 2015, Section 101 was repealed so that the Cabinet Secretary, on the recommendation of the Authority:

- Recommend minimum standards for emission of noise and vibration pollution into the environment as are necessary to preserve and maintain public health and environment.
- Determine criteria and procedures for the measurement of noise and vibration pollution into the environment.
- Determine criteria and procedures for the measurement of sub-tonic vibrations;
- Determine the standards for the emission of sub-tonic vibrations referred to above from existing and future sources.
- Determine noise level and noise emission standards applicable to construction sites, plants, machinery, motor vehicles aircraft, including sonic bonus, industrial and commercial activities.
- Determine measures necessary to ensure the abatement and control of noise from sources referred to above; and
- Issue guidelines for the abatement of unreasonable noise and vibration pollution emitted.

The project proponent is prepared to adhere to all the requirements as stipulated in

Section 101 of the Environmental Management and Co-ordination (Amendment) Act, 2015. That notwithstanding, to minimize the impacts of noise and vibrations from the proposed activities, the activities will be limited to working hours between, 8.00 AM and 5.00 PM.

Contractor has to ensure that all machinery are properly greased and oiled to reduce friction and possible noise pollution.

4.2.13 Physical and Land use Planning Act, 2019

This is the principle Act governing land use planning in Kenya. The Physical Planning Act (Cap. 286), aimed at developing a sound spatial framework for coexistence, through plan proposals that enhance and promote integrated spatial/ physical development of socio-economic activities. Because building/construction of commercial units constitutes making of material change to land, the activity constitutes development, hence need to be controlled by relevant authorities. From the foregoing, the Physical Planning Act (Cap. 286) has made specific provisions in respect to the mandate of relevant authorities in the need for physical planning. The project proponent is required to acquire a Certificate of Compliance or approval letter from the relevant institutions as set out in the Act. The sole objective of the Act is to harmonize development.

The said Act section 29 empowers the local Authorities (Now County Governments) to reserve and maintain all land planned for open spaces, parks, urban forests and green belts. The same section allows for prohibition or control of the use and development of an area. Section 30 state that any person who carries out development without development permission will be required to restore the land to its original condition. It also states that no other licensing authority shall grant license for commercial or industrial use or occupation of any building without a development permission granted by the respective local Authority.

The proponent has already acquired the necessary approval from the department of Physical Planning.

4.2.14 Building Code 2000

A person who erects a building or develops land or changes the use of a building or land, or who owns or occupies a building or land shall comply with the requirements of these by-laws. For the purpose of this by-laws and the following operations shall be deemed to be the erection of a building: -

- i) The alteration or extension of a building.
- ii) The changing of the use or uses to which land or building is put.
- iii) The formation or lying out of an access to a plot.

Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the relevant authority for permit to connect to the sewer line and all the wastewater must be discharged in to sewers. The proponent will seek for the prescribed permit for the commercial development. The code also prohibits construction of structures or building on sewer lines.

4.2.15 Water Act 2016

The water Act, 2016 provides for the management, conservation, use and control of water resources and for acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services. Section 18 of this Act provides for national monitoring and information systems on water resources. Following on this, sub-Section 3 mandates the Water Resources Management Authority (WRMA) to demand from any person or institution, specified information, documents, samples or materials on water resources.

Under these rules, specific records may be required to be kept by a site operator and the information thereof furnished to the Authority. Section 73 of the Act provides that a person who is licensed to supply water has a responsibility to safeguard the water sources against degradation. According to section 75 (1) such a person is required to construct and maintain drains, sewers and other works for intercepting, treating or disposing off any foul water arising or flowing upon land for preventing pollution of water sources within his/her jurisdiction.

4.2.16 Public Health Act Cap 242

Part IX Section 115 of the Act states that no person or institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires that local Authorities take all lawful necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable to injuries or dangerous to human health.

Environmental degradation may cause health hazard to the general public. Both solid and liquid waste should be handled professionally by approved exhausters and licensed garbage collectors.

All employees will be expected to have personal protective gear during the entire process of construction. Solid and wastewater will be handled as stipulated by provisions of the law as discussed in Section 4.2, Section 4.3 and Section 4.4.3.

4.2.17 Prevention Act Cap 246

Section 5 – Drainage System-No operations shall obstruct flow of water into or out of any drainage. The management shall be required to maintain the drainage system within the area of the project for removal of water from any land around the project to prevent larvae breeding.

4.2.18 The Penal Code Cap. 63

Section 191 – Fouling water-The proponent shall ensure that no water or any public spring or reservoir is rendered unfit for the purpose for which the community ordinarily used it for.

Section 192 – Dwellings and Neighborhood-The operation phases of the project shall ensure that health of persons in general dwellings or carrying on business in the neighborhood or passing along a public facility are protected.

Section 193 - Offensive Trade-The proponent shall control loud noises or offensive smells so as not to interfere with the common rights of the people within the surrounding. This offence is punishable for common nuisance.

4.2.19 Land Act, 2012

The proposed project will be carried out on private land. It is worth noting that the Government can compulsorily acquire private land for public interest.

4.2.20 Occupational Safety and Health Act, 2007

This Act provides for the safety, health and welfare of workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The key areas addressed by the Act include:

- i) General duties e.g. duties of occupiers, self-employed persons and employees.
- ii) Enforcement of the Act e.g. powers of an occupational safety and health officer.
- iii) Registration of workplaces.
- iv) Health general provisions e.g. cleanliness, ventilation, lighting and sanitary

conveniences, safe storage of dangerous liquids, fire safety, evacuation procedures, and precautions with respect to explosives or inflammable dust or gas.

v) Machinery safety e.g. safe handling of transmission machinery, hand held and portable power tools, self-acting machines, hoists and lifts, chains, ropes and lifting tackle, cranes and other lifting machines, steam boilers, air receivers, refrigeration plants and compressed air receivers.

vi) Chemical safety e.g. the use of material safety data sheets, control of air pollution, noise and vibration, the handling, transportation and disposal of chemicals and other hazardous substances materials.

vii) Welfare general provisions including supply of drinking water, washing facilities and first aid.

viii) Offences, penalties and legal proceedings.

Under Section 6 and Section 7 of this Act, every occupier is obliged to ensure safety, health and welfare of all persons working in his workplace. The occupier shall achieve this objective by preparing and as often, as may be appropriate, revising a written statement of his general policy concerning the safety and health at work of his employees and the organization and arrangements for the time being in force for carrying out that policy.

All workers must be in personal protective gear at all times. First Aid kits must be availed at site at all times. Injured workers must be given first aid at the site and if further medication attention the person should be taken to nearby dispensaries and if need arises, referred to appropriate locations for further treatment.

4.2.21 The occupiers Liability Act (Cap.34)

Section 3 requires that an occupier of premises owe the 'common duty care' to all visitors and workers. Rules of common law regulates the duty which occupier of the premises owes to his/her visitors in respect of danger and risk due to the state of the premises or to things omitted or attributes an affliction on his/her health to a toxic material in the premises.

4.2.22 Chiefs' Authority Act, Cap 128

Section 10 parts (f), (g), (h), (i) and (o) of "The Chiefs' Act Cap 128" states that; any Chief may from time to time, issue orders to be obeyed by the persons residing or being

within the local limits of his jurisdiction for any of the following purposes;

- Preventing the pollution of the water in any stream, watercourse or water-hole, and preventing the obstruction of any stream or watercourse.
- Preventing the spread of disease, whether of human beings or animals.
- Prohibiting any act or thing that may cause damage to any public road or to any work constructed or maintained for the benefit of the community and
- Regulating the use of artificial water supplies constructed from public funds.

4.3 Institutional Framework

At present, there are over twenty (20) institutions and departments, which deal with environmental issues in Kenya. Some of the key institutions include the National Environmental Council (NEC), National Environment Management Authority (NEMA), the Forestry Department, Kenya Wildlife Services (KWS) and others.

There are also local and international NGOs involved in environmental activities that impact on the environment in one way or the other in the country.

4.3.1 National Environment Management Authority (NEMA)

The object and purpose for which NEMA is established is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. A Director General appointed by the president heads NEMA. The Authority shall, among others:

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programs and projects with a view to ensuring the proper management and rational utilization of the natural resources environment on a sustainable yield basis for the improvement of the quality of human life in Kenya.
- Take stock of the natural resources in Kenya and their utilization and consultation, with the relevant lead agencies, and develop land use guidelines.
- Examine land use patterns to determine their impact on the quality and quantity of the natural resources among others.

4.3.2 County Government Act 2012

The Act requires that every County council and every urban city shall have powers-

- To establish and maintain sanitary services for the removal and destruction of, or otherwise dealing with, all kinds of refuse and effluent and, where any such service is established, to compel the use of such service by persons to whom the service is available.
- To establish and maintain one or more fire brigades and to take all necessary steps for the prevention and extinguishing of fires and to compensate the owners of property demolished or damaged for the purpose of preventing or extinguishing fires.

Section 171 of the Act provides that a municipal council may establish and maintain any such sewage forms or sewage disposal works either within or without its area. It is on the basis of this Act that the proponent is determined to ensure conservation of the project site by adhering to the above act while maintaining environmental and public health safety.

4.3.3 National Construction Authority (2011)

The National Construction Authority Act, Number 41 of 2011 streamlines, overhauls and regulates the construction industry in Kenya. The industry has for many years suffered poor legislative framework and has been dominated by quacks and unqualified persons. All contractors must be registered with the Authority meaning that shoddy contractors and quacks will be locked out of the industry. It is an offence to carry out any construction work without first having been registered with the Authority.

The Act contains provisions on quality and safety standards of any construction work. The Authority is also charged with passing regulations from time to time on the quality of construction offered by contractors. The Act will also play a big role in streamlining the quality of construction work within the country. The Authority has wide ranging powers including accrediting training institutions that offer courses related to construction.

CHAPTER FIVE

ANALYSIS OF PROJECT ALTERNATIVES

5.0 Introduction

This chapter analyses the project alternative in terms of site and non-implementation. The purpose of including alternatives in the ESIAS is to identify and evaluate alternate actions that accomplish similar goals and promote sustainable development (Anderson et al., 2003). Alternatives should be economically feasible with minimal adverse environmental impacts and time delays.

Diverse alternatives to the proposed action must be included in the ESIA. Alternatives may include both design and location options (Steinneman, 2000). In most case, the ESIA process often occurs too late in the decision-making process to consider a full range of alternatives. This can undermine ESIA goals to encourage more environmentally sound and publicly acceptable solutions. Allowing new alternatives and objectives to evolve in relation to environmental conditions and public preferences may be a solution to most of the environmental and socio-economic problems associated with the implementation of new projects (Anderson et al., 2003).

5.1 No-project Alternative

The "No-Project" alternative for the proposed 30-storey high-rise residential development on Plot L.R No. NAIROBI/BLOCK 7/338 Off Waiyaki Way road in Westlands sub-county, Nairobi, considers the scenario in which the development does not proceed. This alternative serves as a baseline for evaluating potential environmental, social and economic impacts associated with the project.

Under the No-Project scenario, the site would remain in its current state, characterized by existing urban infrastructure, limited landscaping and underutilized land parcels. While this option would avoid potential construction-related disturbances such as dust, noise, soil erosion, increased traffic and temporary disruption to local services, it would also forgo significant socio-economic and urban development benefits. These benefits include job creation during construction and operation, improved commercial and residential facilities, enhanced urban aesthetics, increased property value and improved local infrastructure.

From an environmental perspective, the No-Project alternative would preserve the limited existing flora and fauna and avoid immediate changes in water demand, wastewater generation and energy consumption. However, the absence of planned sustainable design interventions such as energy-efficient systems, water recycling, green spaces, and stormwater management would mean that the site continues to contribute to the status quo of urban underutilization without enhancing environmental management practices.

While the No-Project alternative minimizes direct environmental impacts, it represents a missed opportunity for economic growth, urban densification, and the provision of modern mixed-use facilities in Westlands area. This analysis underscores that proceeding with the proposed project, with appropriate mitigation measures, offers a balanced approach that maximizes socio-economic and urban development benefits while managing environmental risks.

5.2 Site alternatives

The assessment of site alternatives for the proposed project, forms a critical component of the project's environmental and social review. The site selection process evaluated multiple potential locations based on accessibility, urban context, land ownership, infrastructure availability, environmental sensitivity and socio-economic considerations.

The chosen site offers strategic advantages, including proximity to major commercial centers, major roads, public transport networks and existing utilities such as water, sewer and electricity. Its urbanized nature minimizes the need for clearing natural habitats, reduces potential impacts on biodiversity, and aligns with the city's spatial planning and land-use policies. The site is also suitable for vertical development, supporting the proposed 30-storey structure with basement level and allows for integration of amenities such as parking, swimming pools and landscaped areas.

Alternative sites within the Nairobi metropolitan area were considered but were found to have limitations such as inadequate infrastructure, higher environmental sensitivity, conflicts with existing land use and challenges in land acquisition. These alternatives were evaluated against the project objectives and the selected site emerged as the most feasible in terms of technical, economic, environmental and social criteria.

The site alternatives analysis provides a framework to justify the chosen location while demonstrating compliance with sustainable development principles.

It ensures that the development maximizes accessibility and functionality, minimizes negative environmental and social impacts, and contributes positively to the urban fabric of Westlands area. The selected site represents the optimal balance between project feasibility, environmental stewardship and socio-economic benefits.

5.3 Design Alternatives

The assessment of design alternatives for the proposed 30-storey high-rise residential development, Off Waiyaki Way road in Westlands area, evaluates various architectural and engineering configurations to optimize functionality, aesthetics, environmental performance, and socio-economic benefits. The analysis considered different building layouts, floor configurations, structural systems and provision of amenities such as parking, swimming pools, green spaces and recreational facilities.

Alternative design options focused on maximizing land use efficiency while minimizing negative environmental impacts, including energy consumption, water use, stormwater runoff and waste generation. High-rise configurations with differing numbers of floors and floor plate sizes were assessed for their feasibility in accommodating retail, office, residential and hotel components while ensuring structural stability and safety.

The design alternatives also considered vertical versus horizontal expansion, potential building orientations for optimal natural lighting and ventilation, and strategies for noise and privacy management in a dense urban environment.

Sustainable design features were incorporated into alternative options, including green roofs, energy-efficient building materials, water recycling systems and landscape integration, to enhance environmental performance and align with national building regulations and international best practices. Each design alternative was evaluated for cost-effectiveness, constructability, operational efficiency and integration with surrounding infrastructure and urban context.

The design alternatives analysis ultimately supports the selection of an optimal configuration that balances architectural quality, functionality, environmental

sustainability and socio-economic benefits. It ensures that the proposed development delivers a high-quality urban landmark while mitigating potential negative impacts and promoting long-term operational efficiency and occupant well-being.

5.4 Technology Alternatives

The assessment of technology alternatives for the proposed 30-storey high-rise residential development, evaluates different construction, building services and operational technologies to optimize efficiency, sustainability, and safety. The analysis considered various structural systems, construction methods, energy and water management technologies, and mechanical, electrical and plumbing systems suitable for high-rise mixed-use buildings.

Structural technology alternatives assessed included reinforced concrete frame systems, composite steel-concrete systems and pre-fabricated modular elements, with evaluation criteria focusing on cost, durability, constructability and wind resistance. Construction methodology alternatives, such as conventional in-situ construction versus prefabrication, were considered to reduce construction time, minimize waste and limit environmental disturbance.

Building services technology alternatives focused on energy efficiency, water conservation, and occupant comfort. Options included solar photovoltaic systems, high-efficiency HVAC systems, rainwater harvesting, greywater recycling, LED lighting and smart building management systems. These technologies were evaluated for their potential to reduce operational costs, carbon footprint and resource consumption while ensuring reliable performance.

The analysis also considered waste management technologies for both construction and operational phases, including on-site waste segregation, recycling, and safe disposal systems. Fire safety and security technology alternatives, including sprinkler systems, fire alarms, CCTV and access control systems, were reviewed for compliance with safety standards and operational effectiveness.

The selection of the most suitable technological options aims to ensure that the proposed development is structurally robust, environmentally sustainable, cost-effective and operationally efficient.

Incorporating advanced technologies will enhance the building's long-term performance, reduce environmental impacts and provide a safe & comfortable environment for occupants, visitors and the surrounding community.

6.0 Introduction

The study was guided by the Climate Change Act, 2016 and its amendment of 2023. This act guides the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for sustainable development in Kenya.

The purpose of this assessment is to evaluate potential climate risks and vulnerabilities of the proposed high rise development project and inform adaptation and mitigation strategies for a climate resilient, sustainable development. This assessment is also used to understand how climate change might impact people, environments & systems and to identify who or what is most at risk. The Climate Change Risks may be physical, economic or social.

The physical climate change risks may include floods, droughts, heatwaves and rising sea levels. Economic climate change risks include damage to infrastructure and crop losses. Climate Change Risks may also be social where people are at the risk of being displaced as a result of extreme weather patterns such as floods. Public health issues may also arise as a result of climate change.

The proposed high-rise residential development project aims to address the aforementioned challenges through the implementation of effective mitigation and adaptive measures that will result in a climate resilient project. The key objectives of the study drawn from the Act are to:

- a. Mainstream climate change responses into development planning, decision making and implementation.
- b. Build resilience and enhance adaptive capacity to the impacts of climate change.
- c. Formulate programs and plans to enhance the resilience and adaptive capacity of human and ecological systems to the impacts of climate change.
- d. Mainstream and reinforce climate change disaster risk reduction into strategies and actions of the proposed residential development.
- e. Mainstream inter-generational and gender equity in all aspects of climate change responses.
- f. Promote low carbon technologies, improve efficiency and reduce emission

intensity by facilitating approaches and uptake of technologies that support low carbon and climate resilient development.

- g. Provide guidance in the development and implementation of carbon markets and non-market approaches in compliance with international obligations
- h. Integrating the principle of sustainable development into the planning for and decision making on climate change response.

This assessment will evaluate how the proposed high-rise residential project's operations may be adversely affected by environmental stressors and climate related hazards such as floods, drought and heatwaves.

The assessment will be used to help shape the adaptation and mitigation measures that will be instrumental in climate proofing the residential project, so that the residents will be insulated from future climate change impacts. The assessment not only improves climate resilience of the project but has other co-benefits which include but are not limited to;

- Enhances property value and marketability due to future-proofing.
- Reduced liability for the proponent (Stellar Bay Limited) by proactively identifying and addressing risks.
- Reduces long-term operational and maintenance costs by minimizing damage from climate events.
- Improves health and comfort for residents.
- Appeals to eco-conscious tenants.
- Ensures that the residential project is compliant with green building standards (e.g., LEED, EDGE and GRIHA).

6.1 Climate Change Risk and Vulnerability Assessment Methodology

Though the project area is quite small to cause any significant microclimate change, it bears the potential of adding to the cumulative effects of other infrastructural development that emit Greenhouse Gases (GHGs). Change in land surface from natural vegetation to man-made built landscape will have an effect on the area's microclimate by reducing the amount of evapotranspiration from the vegetation in the area which are also a GHG sink.

The microclimate will also be modified by the project's heat producing activities, equipment and machinery including vehicles, electronics, generators, water pumps and air conditioning equipment.

The EIA/EA expert assessed the influence of the proposed project on climate change, the impacts of climate change and vulnerability within and around the proposed project area of influence and highlighted the possible adaptation and mitigation actions. The focus was on the flora and fauna, population, biodiversity and water resources. Stakeholder engagement and consultation with the local business people in the initial stages to understand specific climate-related concerns were undertaken.

Climate data involved the review of historical and projected climate data for Westlands sub-county, Nairobi County (precipitation, temperature, sea level rise e.t.c.). Vulnerability assessment baselines were determined by observation and feedback from stakeholders on which parts of the environment and society are most vulnerable to climate change.

With regards to climate change impact assessment, both direct and indirect impacts were determined by both literature review and stakeholders view on how climate change may directly or indirectly affect the project, and how the proposed high-rise residential project may exacerbate or mitigate local vulnerabilities. Analysis was done to ascertain the effect of climate change scenarios and understand how they might interact with the project.

6.2 Analysis of Contribution of the Project to Green-House Gas Emissions

United Nations Framework Convention on Climate Change (UNFCCC) which is operationalized by the Kyoto Protocol indicate that GHGs include; carbon dioxide, methane, nitrous oxide, hydro fluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphury hexafluoride oxide (SF6).

The calculation of GHG emissions is considered to be a good index of the total effect of energy usage on the environment. Conventional construction methods are environmentally unfriendly due to the large resource consumption, waste production and GHG emissions. The carbon emissions attributed to buildings are considered a leading factor in global warming. The emergence of the concept of sustainable construction and development has made the construction industry to limit its greenhouse gas (GHG) emissions, since it is the leading contributor that produces the global GHG emissions.

GHGs come from all life-cycle phases of a building. GHG emissions sources in the construction stages range from construction supplies, fabrication and transportation, construction equipment, energy usage, workers transportation and waste emissions from the construction works. The production and use of materials such as cement, steel and aluminium have a significant carbon footprint.

The real estate sector plays a significant role in the global carbon footprint, contributing to environmental challenges such as greenhouse gas emissions, energy consumption and water waste. Cooling systems, lighting and water heating are the three major energy consuming factors in residential projects during the operational phase. However, there is a growing awareness and demand for sustainable practices within the industry.

During the construction phase of the proposed residential project, greenhouse gases are likely to be emitted from the use of equipment such as earth-moving equipment, compacting equipment, conveying equipment and excavation equipment.

The proposed high-rise residential project in Westlands area, will also have a 2x550kVA Prime rated Diesel Generator to supplement power supply during blackouts in the operational phase. Diesel generators produce: Particulate Matter (PM), Volatile Organic Compound (VOCs), Nitrous Oxide (NOx) among other harmful pollutants that create smog and exacerbate respiratory conditions. However, technologies like Selective Catalytic Reduction (SRCs) and Diesel Particulate Filters (DPFs) are recommended to help reduce their emissions.

6.3 Integration of Climate Change Vulnerability, Adaptation and Mitigation into the ESIA Studies

The direct impacts of climate change include water unavailability, which is manifested through drought, floods and water temperature. Climate change can increase the frequency and severity of droughts, which can affect the availability of water resources.

Increased frequency of extreme precipitation events can lead to flooding, which might affect the construction timeline and the safety of the infrastructure. More frequent and severe storms can affect the infrastructure and safety protocols, necessitating robust and resilient construction strategies.

The indirect impacts of climate change include supply chain disruptions by disrupting transportation networks, affecting the supply chains and potentially increasing the cost and time required for construction.

6.4 Assessment of Energy Conservation Measures for the Project Cycle

The EIA/EA expert carried out this assessment mainly by evaluating the energy needs across the project life cycle, possible sources of the required energy, possible measures and appropriate technologies to lower or minimize energy consumption.

The construction of the project will be a net generator of greenhouse gas. Construction vehicles and equipment will generate greenhouse gases due to the burning of fossil fuels and clearing of vegetation which will result in the loss of sequestering capacity for carbon dioxide.

Adaptation Technologies Employed by the proponent to reduce Energy Consumption

The developer will put in place the following measures in a bid to reduce energy consumption:

- Solar panels and variable refrigerant flow systems with heat recovery will be used for domestic hot water production.
- LED lighting and lighting controls will be installed thus saving up to 50% of energy on lighting.
- HVAC systems will be of inverter type and utilization of Variable Refrigerant Technology thus consuming less energy.
- A Building Management System (BMS) for Mechanical, Electrical and Plumbing (MEP) systems monitoring and operation optimization will be installed.

Mitigation Measures To Reduce Energy Consumption

Construction Phase

- Integrate the use of natural lighting and ventilation in the project design.
- Ensure the use of clean fuels in vehicles and machinery.
- Switch off engines for vehicles and machinery when not in use.

- Revegetate all areas safe from any development works at the site with local vegetation to increase local sequestering capacity for greenhouse gases.
- All construction machinery should be regularly serviced and in accordance with the manufacturer's specifications to minimize the generation of hazardous gases.
- Fueled construction equipment to be used where possible with environmentally friendly fuels such as low-sulfur diesel.
- All raw materials where possible, must be sourced as close as possible to the construction site thus reducing emissions from vehicular traffic.
- Use of low-carbon construction materials.
- Embrace modern construction technology that suppresses hydrocarbon emissions.
- Regularly monitor air quality levels to ensure compliance with Environmental Management and Coordination (Air Quality) Regulations, 2014. The measurements should be done at different weather and seasons to ensure that all the weather patterns are taken into consideration during the monitoring process.

Operational Phase

- Maximize the use of natural lighting in the facility.
- Consider the use of sensors to monitor HVAC systems to save on time and reduce maintenance requirements.
- Automate the adjustment of room temperatures and switching off lights when occupants leave their residential units.
- Use of unleaded premium petroleum products that release less harmful substances into the atmosphere.
- Use of generators with low emissions and ensure regular servicing of generators to reduce emissions.
- The developer to also conduct Annual Stack emission monitoring and testing for the generators.
- The developer to apply for and obtain Air Quality License.
- Adhere to all the provisions of EMCA (Air Quality) Regulations, 2014, regarding management of air emissions such as limiting emissions to permissible levels and

standards.

6.5 Assessment of Water Conservation Measures for the Project Cycle

The EIA/EA expert carried out this assessment mainly by evaluating the water needs across the project life cycle, water sources, possible measures and appropriate technologies to lower or minimize water consumption.

The construction phase of the project will involve large water consumption. The operational phase will require consumption of even larger amounts of water usage in cleaning, cooking, flushing toilets, swimming pool and watering the rooftop garden.

The proponent intends to source water from Nairobi City Water and Sewerage Company (NCWSC). In order to supplement the water that is channeled by the city county, the proponent will utilize groundwater by drilling a borehole.

Adaptation Measures Employed by the Proponent to conserve Water during construction phase

- Use of technologies and methods that reduce water usage (e.g., dust suppression alternatives, precast elements).
- Treatment and reuse greywater or stormwater for concrete mixing, curing and cleaning.
- Storage of rainwater or delivered water to ensure supply during water shortage.
- Planning of water-intensive activities (e.g., concrete pours) during wetter seasons or off-peak water demand times.

Adaptation Measures To conserve Water during operational phase

- Capturing and storing rainwater for non-potable uses (toilet flushing and cleaning).
- Treatment of wastewater from showers, sinks and laundry for reuse. Treated water from the plant will be used to flush toilets and to water the rooftop garden.
- Monitoring consumption and catch leaks early so as to reduce water waste.
- Installation of water efficient fittings and equipment such as shower heads, faucets and washing machines.

Mitigation Measures To conserve water during operational phase

- The proponent to aim for a closed-loop water system where water inputs equal

reused or harvested sources.

- Incorporate adequate water storage tanks for a sustainable and consistent supply of water within its premises.
- Incentivize the use of washing machines and dishwashers with high water efficiency ratings.
- Sensitization of occupants on efficient water use and adopt water-saving habits.

6.6 Assessment of Waste Management Measures for the Project Cycle

During the construction phase of the proposed high-rise residential project, enormous amount of solid waste will be generated from the construction activities. The expected solid waste during the construction phase include; cement bags, construction debris, broken glasses, containers, metal, organic waste, plastics and sharp objects such as nails.

The high-rise residential development is also expected to generate enormous amounts of solid waste during its operation phase. These will include; waste papers, plastics, broken glass, kitchen waste e.t.c., The waste may accumulate to undesirable volumes if not segregated and disposed of regularly, thereby becoming a nuisance.

Mitigation Measures to reduce waste generation during the construction phase

- Usage of modular and prefabricated construction to minimize material wastage.
- Use of standardized dimensions to reduce cut-off waste.
- Accurate quantity estimates during procurement to avoid over-ordering.
- Partnering with recycling facilities that handle construction waste.

Mitigation Measures to reduce waste generation during operational phase

- Use of an integrated solid waste management system (i.e. through a hierarchy of options which are reduce, reuse, recycle and dispose.
- Raise awareness to the occupants of the residential apartments on the importance of waste reduction and recycling practices.
- Proponent to install sensor-based pins to optimize collection and reduce overflow issues.
- Perform regular waste audits to identify gaps in waste management and implement more efficient and cost-saving practices.
- Manage all waste in line with the requirements of the Environmental Management

6.7 Flooding Risk

As drainage areas become increasingly impervious due to urban development, storm water runoff volumes, flows and velocities increase, while base groundwater flows decrease. Rainwater that would otherwise be “soaked” by the plants and soils is instead directed to drainage systems and nearby streams. Human activities in the city also generate increased pollutant loads, ranging from heavy automobile traffic to the use of various chemicals. These pollutants into the city’s drainage channels, streams and rivers

Excavation of soils to construct foundations may loosens soil which may be washed alongside any poorly disposed waste on site into storm drains, clogging them. The loose soil is also likely to increase sediment load in storm water. Together with the loss in flora, changing the characteristics of the project site from its present state to a more built state and changing the soil’s characteristics, will lead to a change in the regime at and around the project site. This is because the built areas will increase run-off while reducing the percolation of water into the ground and thereby also changing the sub-surface hydrology.

By overloading the capacity of storm sewers, un-managed storm water runoff is responsible for increased combined sewer overflow events and adverse downstream impacts such as flash flooding, channel erosion, surface and groundwater pollution, and habitat degradation.

The proposed high-rise residential project will however not have any impact on surface runoff compared to the existing condition as the ground coverage allows for sufficient percolation of groundwater. The project site is also not at risk of flooding as it is not near any water body.

Mitigation measures to reduce the risk of flooding

The architectural design of the proposed high-rise residential project allows for water to seep back into the aquifer. The proposed project will also have lots of green spaces that will be created during landscaping by the developer. These green spaces will greatly reduce surface runoff.

Below are additional mitigation measures are recommended to reduce surface runoff:

- The drainage system should ensure that surface flow is directed suitably into the public drains provided to control flooding within the site.

- Installing cascades to break the impact of water flowing into the drains.
- Controlling earthworks and ensuring the management of excavation activities.
- Capturing and storing rainwater to reduce runoff.
- Incorporate bioswales, rain gardens and vegetated roofs to absorb rainwater and reduce runoff.
- Drainage channels should be installed in all areas that generate or receive surface water such as car parking, driveways and along the building block edges of the roofs.
- The channels should be covered with gratings or other suitable and approved materials to prevent the occurrence of accidents and entry of dirt that would compromise the flow of runoff.
- The channels should be designed with regard to the peak volumes such as periods or seasons when there is high rainfall intensity.
- The drainage channels should ensure the safe final disposal of runoff/surface water and should be self-cleaning which means it should have a suitable gradient.
- The trees at the periphery of the project site can be preserved and other new trees planted to reduce storm water runoff and erosion. Through the processes of evapotranspiration and nutrient uptake, trees located on a development site have the capacity to reduce storm water runoff volumes and improve water quality. Further, through root growth, trees can improve the infiltration capacity of the soils in which they grow. Both tree planting and tree preservation can contribute immensely to storm water management on a site.

6.8 Heatwaves Risk

Heatwaves are a rising threat in urban residential developments. The proposed high-rise residential development can integrate both adaptation and mitigation measures to climate-proof against heatwaves that may make the stay of occupants in the residential units uncomfortable. These should be embedded across the planning, design, construction and operational phases of the project.

Adaptation and mitigation measures to reduce heatwaves during construction phase

- The developer should optimize the building orientation to minimize direct sun exposure on longer facades.

- Minimization of asphalt and dark, heat absorbing surfaces.
- Maximization of natural ventilation through smart layout.
- Incorporation of rooftop gardens to cool down buildings naturally.
- Usage of high solar reflectance materials for pavements, walls and rooftops.

Adaptation and mitigation measures to reduce heatwaves during operational phase

- The tenants should install passive cooling systems before relying on energy-intensive ACs.
- Usage of LED lighting and energy efficient HVAC systems to reduce excess heat production and electricity use.
- Preserving the trees at the periphery of the project site to generate cooling effect in events of high temperatures.
- Tenants should be educated about hydration, ventilation and indoor heat management.

Monitoring and Management

A system for climate monitoring is recommended to monitor climate parameters and their changes overtime. Based on monitoring results, the project strategies should address unforeseen climate change impacts. Regular updates and engagements with local business communities and other stakeholders about the findings and changes made in response to climate change have been recommended.

Additionally, regular reviews have been recommended to assess the latest climate change data to ensure that the project can withstand the challenges of climate change and contribute positively to the resilience of both the environment and society.

Conclusion

With regards to climate change mitigation and based on project activities, measures have been proposed on how to reduce the project's greenhouse gas emissions. Similarly, different adaptation strategies have been proposed to climate change proof the project and that the ecosystem/communities are resilient to future climate change impacts (e.g. designing infrastructure to cope with floods, drought or erratic rainfall).

CHAPTER SEVEN

IMPACT IDENTIFICATION AND MITIGATION MEASURES

7.0 Positive Impacts During Construction Phase

The construction phase of the proposed 30-storey high-rise residential development, presents several positive socio-economic and urban development impacts despite the temporary nature of construction activities. One of the most immediate benefits is the creation of employment opportunities for skilled, semi-skilled and unskilled labor.

The project will engage construction workers, engineers, architects, project managers, and technical specialists, contributing to income generation for local workers and service providers. Local businesses, suppliers and contractors involved in the supply of construction materials, equipment, food, and accommodation are expected to experience increased economic activity.

The construction phase also promotes the development of local skills and capacity building, as workers are trained and exposed to modern construction techniques, safety protocols and project management practices. This transfer of knowledge enhances the long-term employability of the workforce and supports broader skill development within the Westlands area.

Economic stimulation extends to the informal sector, with local vendors, transport operators and service providers benefiting from increased demand generated by construction personnel and related project activities. The project also contributes to government revenue through the payment of taxes, permits and compliance fees associated with construction operations.

From an urban development perspective, construction of the project signals investment confidence in Westlands area, potentially attracting further commercial and residential developments in the vicinity. The development is expected to enhance the urban environment progressively, as construction activities lead to improved access, site

landscaping and infrastructure integration.

Construction activities may also facilitate temporary improvements in local infrastructure such as roads, drainage and utilities, as project requirements necessitate upgrades or connections to municipal services. These enhancements, though initiated for the project, can benefit surrounding properties and the broader urban community.

The construction phase generates substantial positive impacts, including employment creation, local business stimulation, skill development, revenue generation and urban infrastructure improvements. These benefits contribute to the socio-economic upliftment of the Westlands area while laying the groundwork for the long-term operational advantages of the completed mixed-use development.

7.0. Construction phase negative impacts

The construction phase of the proposed 30-storey high-rise residential development, is expected to generate a range of negative environmental, social and economic impacts due to the scale, complexity, and urban context of the project. The site's dense commercial and residential surroundings, coupled with the planned basement level and high-rise structure, contribute to the potential for significant temporary disturbances during construction.

Air Quality and Dust Emissions: Construction activities such as excavation, material handling, demolition of any existing structures and heavy vehicle movement are likely to generate dust and particulate matter. These emissions may affect air quality in the immediate vicinity, impacting nearby residents, office workers and pedestrians. Increased vehicular traffic from delivery trucks and construction machinery may contribute to localized air pollution, including carbon monoxide, nitrogen oxides, and other exhaust emissions.

Noise and Vibration: The operation of heavy machinery, pile driving, concrete mixing, and transportation of construction materials is expected to elevate ambient noise levels significantly. These activities may cause temporary disturbances to nearby residential, commercial and institutional facilities.

Vibrations from excavation, piling, and other mechanical operations may also affect adjacent structures, particularly older buildings and can be a source of discomfort to nearby occupants.

Traffic and Transportation Disruptions: Construction will involve the mobilization of heavy machinery, delivery of construction materials and movement of workers, which may increase traffic congestion Off Waiyaki Way road and surrounding access streets. Temporary lane closures, loading and unloading zones and construction-related parking can reduce road capacity, impact public transport operations and increase travel times for commuters.

Soil Disturbance and Erosion: Excavation for the basement level, foundation works, and grading of the site may disturb existing soils, leading to erosion, sediment runoff, and potential destabilization of adjacent areas. Disturbances can also result in localized compaction and alteration of natural drainage patterns, affecting the immediate landscape.

Water Resources and Wastewater: Construction activities may impact water quality through accidental spills of fuel, lubricants, or concrete washout entering stormwater systems. Increased water consumption for construction processes may place additional demand on the municipal supply, while wastewater from temporary facilities and site operations may affect local drainage and sanitation systems if not adequately managed.

Solid Waste Generation: The construction process is expected to produce large volumes of solid waste, including debris from excavation, packaging materials, concrete offcuts, metal scraps and general refuse from workers. Improper handling and disposal of these wastes can contribute to site pollution and may impact nearby communities and drainage networks.

Socio-Economic Impacts: While construction will generate employment and local business opportunities, it may also temporarily disrupt the daily activities of nearby residents, businesses and institutions. Noise, dust and traffic disturbances may affect productivity and reduce accessibility to commercial establishments.

The influx of construction workers may also increase demand for social services, housing, and local amenities.

Occupational Health and Safety: Construction activities present potential hazards to workers, including falls from heights, exposure to dust and noise, handling of heavy machinery and risk of accidents during excavation and material transport. The urban setting amplifies the need for site safety measures to protect both workers and the public.

Visual and Aesthetic Impacts: The construction phase may temporarily alter the visual character of the area, with large machinery, scaffolding, temporary structures and stockpiles affecting the streetscape and views from surrounding offices, residences and public spaces.

Biodiversity and Vegetation: Although the site is highly urbanized, the removal of any existing trees, shrubs, or landscaped areas during construction may reduce limited habitat for urban-adapted birds and insects. Temporary disruption to these minor ecological elements is expected during site clearance and excavation.

The construction phase of the project is characterized by a combination of environmental disturbances, social interactions and operational challenges typical of large-scale urban developments. These impacts, though mostly temporary, require careful monitoring and planning to minimize disruption to the surrounding Westlands area urban environment.

7.0 Mitigation measures for the negative impacts during construction phase

Mitigation measures are necessary to minimize these impacts, ensure compliance with national regulations and promote sustainable construction practices.

Air Quality and Dust Control: Dust suppression will be achieved through regular wetting of exposed surfaces, covering of soil stockpiles and construction materials during transport and proper storage of cement, sand and other fine materials. Construction vehicles and machinery will be maintained to reduce exhaust emissions, while sensitive receptors in the vicinity will be monitored for air quality levels.

Noise and Vibration Management: Construction activities will be scheduled to limit noisy operations to daytime hours, minimizing disturbances to nearby residents and businesses. Modern, well-maintained machinery and equipment with noise-reducing technology will be employed. Temporary noise barriers may be installed around high-

intensity work zones, and vibration-sensitive activities will be carefully monitored to prevent structural impacts on neighboring buildings.

Traffic and Transportation Management: Traffic management plans will regulate the movement of construction vehicles to avoid peak traffic hours, establish designated loading and unloading zones, and ensure safe pedestrian crossings. Coordination with local authorities will be maintained to manage temporary lane closures and reduce congestion Off Waiyaki Way road and surrounding streets.

Soil and Land Management: Excavated soils will be stockpiled on-site in designated areas and stabilized to prevent erosion. Proper grading and sediment control measures, including silt fences and sediment traps, will be implemented to manage stormwater runoff. Site access routes will be reinforced to minimize soil compaction and prevent damage to surrounding areas.

Water Resource Protection: Measures will be adopted to prevent contamination of stormwater and municipal water systems, including proper containment of concrete washout, lubricants, oils, and other construction-related chemicals. Water use will be monitored to avoid excessive consumption, and temporary water storage facilities will be provided to meet site needs.

Solid and Hazardous Waste Management: Construction waste will be segregated into reusable, recyclable, and non-recyclable streams. Hazardous materials will be stored in secure containers and disposed of in accordance with national environmental guidelines. Regular collection and safe disposal of waste will be maintained to prevent environmental pollution and health hazards.

Occupational Health and Safety: Comprehensive health and safety protocols will be enforced on-site, including the provision of personal protective equipment (PPE), worker training, emergency response plans, and signage to prevent accidents. Safety monitoring and compliance inspections will be conducted throughout the construction phase.

Visual and Aesthetic Management: Temporary fencing, hoardings and signage will be used to reduce visual intrusion and maintain orderly site appearance. Landscaping and

site tidiness will be maintained to minimize negative aesthetic impacts on surrounding properties.

Biodiversity and Urban Ecology: Any remaining trees or urban vegetation will be protected during site preparation, and disturbed areas will be rehabilitated with native or low-maintenance plant species to restore limited urban habitats.

The proposed mitigation measures aim to minimize adverse environmental and social effects, enhance worker safety, maintain public amenity, and ensure that construction activities are conducted responsibly, sustainably, and in compliance with Nairobi City County regulations and national environmental standards. These measures form an integral component of the Environmental and Social Management Plan for the project.

7.1 Operational phase positive impacts

The operational phase of the proposed 30-storey high-rise residential development on Plot L.RNo. NAIROBI/BLOCK 7/338 Off Waiyaki Way road in Westlands sub-county, Nairobi City, is expected to generate a wide array of long-term socio-economic, environmental and urban development benefits for the local community.

One of the most significant impacts is the creation of sustained employment opportunities across various sectors including retail, hospitality, office administration, property management and facility maintenance. These jobs will provide stable income for local residents and contribute to poverty alleviation and improved livelihoods in the surrounding communities.

The development will also stimulate economic activity by supporting local businesses, suppliers and service providers that cater to the needs of residents, office occupants, hotel guests and retail customers. Increased commercial activity is expected to generate additional revenue for the local economy through business taxes, permits and other fiscal contributions to Nairobi City County. The project is likely to enhance property values in Westlands area, encouraging further investment in surrounding residential and commercial properties, thereby contributing to urban revitalization.

From an urban planning perspective, the development will improve the built environment by providing modern mixed-use facilities, integrating landscaped areas, parking & recreational amenities and enhancing the streetscape Off Waiyaki Way

road.

These improvements will increase the attractiveness and functionality of the area, supporting pedestrian movement, urban vibrancy and community engagement.

The operational phase also offers opportunities for environmental sustainability, including the incorporation of energy-efficient systems, water conservation measures, waste management strategies and green spaces, which collectively contribute to reducing the overall environmental footprint of the development. These measures can serve as a model for sustainable urban high-rise developments within Nairobi.

Socially, the development will provide access to high-quality residential, commercial, and hospitality services, enhancing convenience and quality of life for residents, employees and visitors. It will also create venues for social interaction, cultural engagement and leisure, further strengthening community cohesion and urban livability.

The operational phase of the project is anticipated to generate substantial positive impacts, including employment creation, local economic stimulation, urban revitalization, infrastructure enhancement, environmental sustainability and improved social amenities. These benefits will contribute to the long-term growth, resilience and socio-economic development of the Westlands area and the broader Nairobi metropolitan region.

7.1. Operational phase negative impacts

The operational phase of the proposed project, is anticipated to generate a range of environmental, social and economic impacts arising from the daily functioning of the development facilities, including residential apartments, retail outlets, offices and conference room services. These impacts are typically long-term and may influence both the immediate project site and the surrounding urban environment.

Air Quality: The operation of the development will increase vehicular traffic to and from the site, leading to elevated emissions of carbon monoxide, nitrogen oxides, particulate matter and other air pollutants. HVAC systems, backup generators, and kitchen exhausts from hotels and restaurants may also contribute to localized air quality impacts.

Noise and Vibration: Continuous human activity, operation of mechanical equipment

such as elevators, HVAC systems, generators, and increased traffic volumes are likely to elevate ambient noise levels. The presence of retail, hospitality and commercial activities may also contribute to intermittent noise, affecting neighboring residential and institutional establishments.

Traffic and Transportation: The operational phase will significantly increase traffic flow Off Waiyaki Way road and adjacent streets due to employees, residents, hotel guests and retail customers. Peak-hour congestion is expected to intensify, potentially impacting public transport efficiency, pedestrian safety and emergency vehicle access. Parking demand will rise, and management of vehicle ingress and egress will be critical for smooth traffic operations.

Water Demand and Supply: Daily operations will require substantial quantities of water for domestic use, hotel and restaurant services, irrigation, cleaning and recreational facilities such as the swimming pool. This increased demand may place additional pressure on the municipal water supply network.

Wastewater Generation: The development will generate significant volumes of domestic, commercial, and graywater effluent, including wastewater from hotel kitchens, restaurants, and residential units. The increased discharge into the municipal sewerage system may affect treatment capacity and downstream water quality if not properly managed.

Solid Waste Generation: Operational activities will produce large amounts of solid waste, including domestic refuse, commercial packaging, organic waste from food services and recyclables. Management of these wastes is essential to prevent accumulation, pollution and associated public health risks.

Energy Consumption: The operation of lighting, elevators, air conditioning, kitchen appliances and office equipment will result in high energy consumption. This may increase demand on the local electricity grid and contribute to greenhouse gas emissions unless energy efficiency measures are incorporated.

Socio-Economic Impacts: The operational phase will create employment opportunities, stimulate local business activity and enhance urban vibrancy.

Conversely, increased human activity may intensify competition for local resources, impact pedestrian movement and create noise and congestion for surrounding businesses and residents.

Occupational and Public Health: The concentration of people, especially in restaurants, hotels, and offices, may elevate the risk of communicable diseases, hygiene-related issues, and occupational hazards for staff if proper health and safety protocols are not maintained.

Visual and Aesthetic Impacts: The fully operational high-rise, with its lighting, signage, and active commercial fronts, may alter the visual character of the area. Nighttime illumination and building mass may affect views and contribute to light pollution.

Biodiversity and Urban Ecology: Although the site is highly urbanized, the operation of landscaped areas, rooftop gardens, and green spaces may support urban-adapted birds and insects, while the presence of human activity may limit other wildlife. Changes in vegetation management, water use, and lighting will continue to influence these minor ecological components.

The operational phase impacts are predominantly associated with increased resource use, urban activity and human-environment interactions. While many impacts are typical of dense mixed-use developments, their cumulative effects on air quality, traffic, waste generation, and socio-economic dynamics require comprehensive assessment and monitoring to ensure sustainable integration of the project into the Westlands urban context.

7.1.Mitigation measures for negative operational impacts during operational phase

The operational phase of the proposed 30-storey high-rise residential development, presents several negative potential environmental, social and economic impacts, including increased air pollution, elevated noise levels, traffic congestion, high water and energy demand, wastewater and solid waste generation, occupational and public health risks, visual impacts, and effects on urban biodiversity.

To ensure sustainable operation and minimize negative consequences, a comprehensive set of mitigation measures is essential.

Air Quality Management: Measures will focus on minimizing vehicle emissions from residents, employees and visitors by promoting the use of public transport, designated drop-off zones, and vehicle-sharing programs. On-site facilities for loading and delivery will be carefully managed, and energy-efficient building systems, such as low-emission generators and HVAC systems, will be installed to reduce indoor and ambient air pollution.

Noise Control: Operational noise will be managed through the use of sound-insulated mechanical and electrical systems, strategic building orientation, and landscape buffers to minimize disturbances to neighboring properties. Operational hours for commercial and service activities, particularly for restaurants, loading areas and HVAC equipment, will be coordinated to reduce noise impacts during sensitive times.

Traffic and Transportation Management: The development will incorporate sufficient parking facilities, clear traffic flow plans and safe pedestrian pathways to reduce congestion and enhance mobility. Coordination with local authorities will ensure that vehicle ingress and egress is efficient, minimizing disruptions to Waiyaki road and adjacent streets. Encouragement of alternative transportation modes, such as cycling and walking, will further reduce operational traffic pressures.

Water Use and Supply Management: Water-efficient fixtures, metering, and rainwater harvesting systems will be implemented to optimize water consumption for residential, commercial, hotel, and recreational facilities. Regular monitoring will ensure that water use remains within sustainable limits, reducing pressure on the municipal supply.

Wastewater Management: The project will incorporate appropriate on-site wastewater pre-treatment, greywater recycling and connection to municipal sewerage systems to manage effluent from domestic, commercial and hotel operations. Operational monitoring will ensure compliance with effluent standards, safeguarding local water quality.

Solid Waste Management: Segregation of solid waste into organic, recyclable and non-recyclable streams will be implemented throughout the site. Waste storage areas will be designed to prevent contamination, and regular collection and disposal will be coordinated with licensed waste management service providers to minimize environmental and public health risks.

Energy Efficiency and Sustainability: Energy-efficient lighting, HVAC and building management systems will be employed to reduce electricity consumption and associated greenhouse gas emissions. Renewable energy technologies, such as solar panels, may be integrated to supplement grid electricity and enhance sustainability.

Occupational and Public Health: Health and safety protocols will be established for all operational staff, including training, emergency response plans and safe handling of hazardous materials. Public safety measures will include clear signage, secure access control and fire protection systems to protect residents, employees and visitors.

Visual and Aesthetic Management: The operational phase will include maintenance of building facades, landscaping and lighting systems to ensure a visually attractive environment and minimize light pollution.

Biodiversity and Urban Ecology: Green spaces, landscaped areas and rooftop gardens will be maintained to support urban-adapted flora and fauna, enhancing ecological value and promoting a healthier micro-environment.

The mitigation measures for the operational phase aim to minimize environmental impacts, ensure social acceptability, enhance resource efficiency and maintain a safe and attractive urban environment. These measures are integral to the project's long-term sustainability and are central to the Environmental and Social Management Plan for the development in Westlands area.

7.1.Decommissioning phase impacts

The decommissioning phase of the proposed 30-storey high-rise residential development, is expected to generate a range of environmental, social and economic impacts as the building and associated facilities are systematically dismantled or removed at the end of their functional life. Although this phase is temporally limited, it has the potential to produce significant disturbances similar to those experienced during construction, although in a context where the surrounding urban environment is fully established.

Air Quality and Dust Emissions: Demolition and dismantling of structural elements, walls, flooring and mechanical installations may release dust, particulate matter and airborne debris into the surrounding environment. The operation of heavy machinery, crushers and transportation vehicles will contribute additional emissions, which can affect nearby residents, office occupants and pedestrians.

Noise and Vibration: Decommissioning activities including demolition, cutting of structural component and operation of heavy equipment, will generate elevated noise levels and vibrations. These disturbances may affect neighboring buildings, residents, commercial facilities and institutions, potentially causing discomfort, structural stress or disruption of daily activities.

Traffic and Transportation: The removal of materials, debris and dismantled components will result in increased vehicular traffic around Waiyaki road and surrounding streets. Delivery trucks and transport vehicles may cause temporary congestion, reduce accessibility, and impact pedestrian and public transport movement in the vicinity.

Soil Disturbance and Land Degradation: Excavation, removal of foundations and dismantling of basements or underground facilities may disturb existing soils, resulting in erosion, sediment runoff and potential contamination from residual construction or operational materials. Landform alteration may occur if heavy equipment compacts soils or damages landscaped areas.

Water Resources and Wastewater: Water may be used during decommissioning to suppress dust or clean equipment, increasing local demand. Contaminated runoff from demolition debris, paint, oils, or construction residues may enter stormwater drains, affecting water quality and municipal drainage systems.

Solid and Hazardous Waste Generation: Large volumes of debris including concrete, metals, wood, glass and mechanical components, will be generated. Potentially hazardous wastes, such as asbestos, chemicals or oils, may also be present. Improper handling or storage could lead to pollution, occupational hazards and disruption to local waste management systems.

Socio-Economic Impacts: Decommissioning may temporarily affect surrounding businesses, residents and traffic flows, causing disturbances, reduced accessibility or interruptions to commercial activities. Employment opportunities may arise for skilled and unskilled labor, but temporary social stressors, such as increased noise, dust and crowding, could affect local communities.

Occupational Health and Safety: Workers engaged in dismantling and demolition activities face risks including falls from heights, exposure to dust and hazardous materials, machinery accidents and structural collapses. The urban setting requires careful planning to prevent accidents that could affect both personnel and the public.

Visual and Aesthetic Impacts: The presence of demolition equipment, debris stockpiles and partially dismantled structures will temporarily degrade the visual character of the site and surrounding area, potentially affecting the streetscape and local perception of safety and cleanliness.

Biodiversity and Vegetation: Although urbanized, any remaining landscaped areas, trees or small pockets of vegetation may be affected by demolition activities, reducing minor urban habitats for birds, insects and other urban-adapted wildlife.

The decommissioning phase impacts are largely temporary but can be substantial due to the scale of the development and the dense urban context. These impacts affect air quality, noise levels, traffic, waste management, safety and local socio-economic conditions, emphasizing the need for comprehensive planning and assessment to ensure orderly dismantling and minimal disruption to the Westlands area urban environment.

7.1.Mitigation measures for decommissioning phase impacts

The decommissioning phase of the proposed 30-storey high-rise residential development, has the potential to generate various negative environmental, social and occupational impacts, including dust and air emissions, noise and vibration, traffic congestion, soil disturbance, water contamination, solid and hazardous waste generation, public safety risks, visual impacts, and minor effects on urban biodiversity.

To ensure that the decommissioning process is conducted safely, responsibly and sustainably, a set of comprehensive mitigation measures will be implemented.

Air Quality and Dust Control: Dust suppression strategies will include regular wetting of demolition areas, covering debris during transportation and minimizing the drop height of demolition materials. Equipment will be maintained to reduce exhaust emissions and sensitive receptors in the surrounding area will be monitored for air quality throughout the process.

Noise and Vibration Management: Demolition and dismantling activities will be carefully scheduled to limit operations during early mornings and late evenings. Modern, low-noise machinery will be utilized and temporary noise barriers or enclosures will be installed around high-intensity work zones. Vibration-sensitive activities will be monitored to protect adjacent buildings and infrastructure.

Traffic and Transportation Management: The movement of heavy equipment, debris and waste will be coordinated to avoid peak traffic hours and reduce congestion Off Waiyaki Way road. Designated access and egress routes for vehicles, secure loading/unloading areas and traffic marshals will be employed to maintain safe circulation for pedestrians and motorists.

Soil and Land Management: Excavation and removal of foundations will be conducted systematically to minimize soil disturbance. Stockpiled materials will be stabilized and erosion control measures such as silt fences, sediment traps and graded access routes will prevent land degradation and sediment runoff into adjacent areas.

Water Resource Protection: Water will be used efficiently for dust suppression and equipment cleaning, while containment measures will prevent accidental spills of hazardous materials, oils or concrete washouts from contaminating stormwater drains or local watercourses.

Solid and Hazardous Waste Management: All demolition waste will be segregated into reusable, recyclable and non-recyclable streams. Hazardous materials including chemicals, paints and oils, will be securely stored and disposed of according to national environmental regulations. Waste transport and disposal will be coordinated with licensed service providers to prevent environmental pollution and health risks.

Occupational and Public Health and Safety: Strict safety protocols will be enforced for all decommissioning personnel, including the use of PPE, training in safe demolition techniques and emergency response preparedness. Measures will also be implemented to protect the general public from access to hazardous areas.

Visual and Aesthetic Management: Temporary hoardings, fencing and signage will be used to minimize visual disruption. Site cleanliness and orderly management of debris will maintain aesthetic standards during decommissioning.

Biodiversity and Urban Ecology: Any remaining landscaped or vegetated areas will be protected or restored after decommissioning, and minor urban-adapted wildlife habitats will be preserved or rehabilitated where feasible.

These mitigation measures aim to ensure that the decommissioning phase is conducted in a manner that minimizes environmental degradation, protects public health and safety, preserves urban ecological features and maintains social acceptability within the Westlands urban context. They form a critical component of the Environmental and Social Management Plan guiding responsible dismantling of the development.

CHAPTER EIGHT

SUMMARISED ENVIRONMENTAL MANAGEMENT PLAN

8.1 Introduction

The Environmental and Social Management Plan (ESMP) for the proposed 30-storey high-rise residential development on Plot L.R No. NAIROBI/BLOCK 7/338, Off Waiyaki Way road in Westlands sub-county, Nairobi City County, provides a structured framework for managing environmental and social impacts during construction, operation and decommissioning. The ESMP aims to guide the implementation of mitigation measures, monitor performance, define stakeholder roles, and ensure compliance with national regulations and best practices.

It highlights the project's mixed-use components, including residential, commercial, office, hotel & recreational facilities, and emphasizes the importance of minimizing disturbances to surrounding communities while promoting sustainable urban development. The plan aligns with legal requirements under EMCA and NEMA guidelines and integrates local planning policies to enhance the overall environmental, social, and economic benefits of the project.

The ESMP serves as a practical tool for ensuring that the project is executed responsibly, sustainably, and with minimal negative impact on the Westlands area urban environment.

8.1 Significance of ESMP

The Environmental and Social Management Plan (ESMP) for the proposed 30-storey high-rise residential development, is a critical tool for ensuring that environmental and social considerations are systematically integrated into all phases of the project. Its primary significance lies in providing a structured approach to identifying, managing, and mitigating potential adverse impacts while enhancing positive outcomes for the surrounding community and urban environment.

The ESMP ensures compliance with national environmental laws, including the Environmental Management and Coordination Act (EMCA) and guidelines from the National Environment Management Authority (NEMA), as well as alignment with county-level urban planning and development policies. It promotes accountability by

defining clear roles and responsibilities for the project proponent, contractors and relevant authorities in implementing and monitoring environmental and social safeguards.

The ESMP enhances stakeholder confidence by demonstrating proactive management of potential risks and promoting transparency, public participation and community engagement. It contributes to sustainable urban development by guiding resource-efficient operations, reducing environmental degradation, ensuring occupational and public health and safety, and supporting the long-term socio-economic benefits of the project.

The ESMP is significant for maintaining regulatory compliance, minimizing environmental and social risks, fostering stakeholder trust and ensuring that the proposed development is executed sustainably and responsibly within the Westlands urban context.

8.1 Objectives of ESMP

The Environmental and Social Management Plan (ESMP) for the proposed project, is designed to provide a structured framework for managing environmental and social risks throughout the project lifecycle.

The primary objectives of the ESMP are to identify potential adverse impacts arising from construction, operation and decommissioning, and to establish practical measures to prevent, minimize, or control these impacts.

The ESMP aims to ensure compliance with national and county-level environmental regulations, including the Environmental Management and Coordination Act (EMCA) and guidelines from the National Environment Management Authority (NEMA). It seeks to promote sustainable use of natural and urban resources, safeguard public health and occupational safety, and maintain the social well-being of surrounding communities.

The ESMP also provides mechanisms for monitoring and evaluating environmental and social performance, defines clear roles and responsibilities for the project proponent, contractors & authorities, and facilitates effective reporting and communication with stakeholders. It also aims to enhance the positive outcomes of the project including economic, social and environmental benefits, while fostering transparency, accountability and community trust.

The objectives of the ESMP are to guide the responsible and sustainable execution of the proposed development, ensuring that all environmental and social aspects are systematically managed to achieve long-term benefits for both the project and the Westlands urban environment.

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN DURING CONSTRUCTION PHASE

ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	MONITORING INDICATORS	MONITORING FREQUENCY	ESTIMATED COST (Ksh)
Noise Pollution	Disturbance to nearby residents and workers	• Use well-maintained and regularly serviced equipment and machinery. • Install silencers/mufflers on noisy equipment. • Limit construction activities to daytime hours. • Erect temporary noise barriers/screens around the site. • Adopt low-noise construction technologies where possible. • Provide workers with appropriate Personal Protective Equipment (PPE) such as earmuffs and earplugs. • Conduct community sensitization on expected noise levels and working schedules. • Regularly monitor noise levels to comply with NEMA standards. • Proper scheduling of high-noise activities to avoid peak sensitive times. • Prohibit unnecessary idling of construction vehicles and machinery.	Contractor EHS Officer	-Measured noise levels (dB(A)) at site boundary. -Frequency of noise level monitoring reports. -Number of community complaints related to noise. -Percentage of equipment with functional silencers and maintained regularly. -Compliance with work-hour restrictions.	Weekly	200,000
Dust/Air Pollution	Respiratory health risks Reduced air quality	• Regular sprinkling of water on dusty surfaces, especially access roads. • Covering of trucks transporting construction materials and debris. • Stockpiles of sand and soil to be covered or kept moist to prevent windblown dust. • Proper storage and handling of cement in enclosed areas. • Planting of temporary vegetation or grass on exposed soils. • Use of dust suppression equipment (e.g., mist sprayers) where applicable. • Restricting vehicle speeds on unpaved surfaces to reduce dust. • Scheduling deliveries to minimize traffic congestion and associated dust. • Ensuring construction equipment is well maintained to minimize exhaust emissions. • Prohibit open burning of waste on site.	Contractor Site Manager	-Measured ambient particulate matter levels (PM₁₀, PM_{2.5}). -Number of complaints from the surrounding community on dust/air pollution. -Frequency of water sprinkling on site. -Percentage of trucks transporting materials while covered. -Compliance with NEMA air quality standards.	Daily	300,000
Solid Waste Generation	Environmental degradation, littering	• Segregate waste at source into recyclables, non-recyclables, and hazardous waste. • Provide clearly labeled waste collection bins/skips at designated points. • Contract licensed waste handlers for collection and disposal. • Reuse and recycle construction materials (e.g., scrap metal, timber offcuts). • Compost biodegradable waste where applicable. • Avoid open dumping and burning of waste on-site. • Store hazardous waste (e.g., used oil, paints, solvents) in designated, bunded areas. • Ensure regular waste collection to prevent accumulation. • Train workers on proper waste management practices. • Maintain a waste inventory/record for tracking.	Contractor Waste Manager	-Volume/tonnage of waste generated per week/month. -Number of bins/skips provided and percentage filled regularly. -Records of waste collection and disposal by licensed handlers. - % of waste recycled or reused. -Compliance with county and NEMA waste management regulations.	Weekly	250,000
Soil Erosion & Sedimentation	Sedimentation of drains, land degradation	• Minimize vegetation clearance and restrict it to construction footprint only. • Preserve topsoil for later landscaping and site rehabilitation. • Install silt traps, sedimentation basins, and check dams in drainage paths. • Use terracing, contouring, and slope stabilization (e.g., grassing, geotextiles).		-Presence and condition of erosion control structures (silt traps, fences, drains). -Number of re-vegetated or stabilized sites. -Evidence of soil loss or sediment deposition off-site.	Weekly and after rains	

		• Maintain proper grading to reduce uncontrolled runoff. • Water exposed soils during dry/windy conditions to reduce erosion. • Avoid excavation during heavy rains where possible. • Cover stockpiles with tarpaulins and surround them with silt fences. • Construct temporary drainage channels to direct stormwater. • Re-vegetate disturbed areas progressively rather than waiting for project completion.	Contractor Engineer	- % of stockpiles covered/protected. -Compliance with site erosion control plan.		180,000
Water Pollution	contamination of nearby surface and groundwater resources through uncontrolled discharge of construction wastewater, oils, fuels, and sediments	• Provide proper sanitation facilities (portable toilets/septic tanks) for workers. • Channel and treat wastewater from construction activities (e.g., concrete works, vehicle washing) before discharge. • Prohibit direct discharge of untreated wastewater into drains, rivers, or streams. • Store hazardous materials (fuels, oils, paints, solvents) in bunded, impermeable areas. • Refuel and service construction machinery at designated contained zones. • Use drip trays and spill kits during fuel/oil handling. • Regularly maintain equipment to avoid oil and fuel leaks. • Collect and properly dispose of sewage, greywater, and oily wastewater. • Install temporary stormwater drains to divert runoff away from sensitive water bodies. • Train workers on good environmental practices to prevent accidental discharges.	Contractor	-Number of functional sanitary facilities provided on site. -Records of wastewater management/disposal. -Presence of bunded fuel/oil storage areas. -Frequency of machinery maintenance and inspection. -Water quality test results (e.g., turbidity, pH, oil/grease content) near discharge points. -Evidence of spills or leakages around storage/refueling areas.	Monthly	220,000
Health and Safety Risk	Accidents, injuries, exposure to dust/chemicals	• Provide all workers with appropriate PPE (helmets, gloves, boots, reflective vests, earplugs, masks). • Enforce occupational health and safety (OHS) standards and safety signage on site. • Conduct regular toolbox talks and OHS training for workers. • Develop and implement a site-specific Health & Safety Plan. • Maintain first-aid kits and have trained first-aid personnel on site. • Install proper site fencing, barricades, and warning signage to restrict unauthorized access. • Ensure safe scaffolding, ladders, and fall protection systems are in place. • Enforce safe storage and handling of hazardous materials and tools. • Provide adequate sanitation, potable water, and resting areas for workers. • Establish an emergency response plan including fire extinguishers, assembly points, and contacts. • Carry out routine inspection and maintenance of machinery and equipment. • Employ a qualified Health & Safety Officer to oversee OHS compliance. • Limit working hours and avoid fatigue by regulating shifts. • Provide insurance cover and medical examinations for workers.	Contractor Safety Officer	-Percentage of workers with PPE compliance. -Number of safety training sessions/toolbox talks conducted. -Records of accidents, incidents, and near-misses. -Availability and use of first-aid kits. -Condition of safety equipment, scaffolds, ladders, and machinery. -Functionality of fire extinguishers and emergency response systems. -Sanitation and drinking water facilities available on-site.	Daily	500,000
Traffic Disruptions	Road congestion, accident risks	• Develop and implement a Traffic Management Plan (TMP) before construction begins. • Schedule material deliveries during off-peak hours to reduce congestion. • Provide advance warning signs, traffic diversion signs, and flag personnel at site entrances.		-Number of traffic complaints received from community/authorities. -Presence and enforcement of Traffic Management Plan.		

		• Designate specific entry and exit points for construction vehicles. • Maintain clear pedestrian walkways and crossings around the site. • Coordinate with local traffic authorities to manage road use and diversions. • Avoid roadside parking of construction vehicles and equipment. • Ensure construction vehicles are well-maintained to prevent breakdowns on public roads. • Limit the number of trips by maximizing vehicle loading capacity (without overloading). • Provide holding/queuing areas for trucks away from main roads to prevent bottlenecks. • Use speed control measures (speed bumps, signage, speed limits) near the site. • Regularly communicate with the community about traffic changes and diversions. • Train drivers on safe driving, road courtesy, and adherence to TMP. • Provide reflective vests and safety gear for traffic marshals/flagmen. • Monitor and adjust TMP based on actual traffic flow and feedback.	Contractor Logistics Manager	-Records of accidents, near-misses, or traffic violations involving project vehicles. -Availability and visibility of traffic control signage. -Percentage of deliveries scheduled during off-peak hours. -Condition of designated pedestrian walkways and site access roads.	Daily	150,000
Community Relations	Social conflicts, complaints	• Establish a Community Liaison Office or designate a community relations officer. • Maintain open communication channels (notice boards, newsletters, public meetings, suggestion boxes, hotline). • Provide advance notices of construction activities that may disrupt daily life (e.g., road closures, noise, dust). • Implement a Grievance Redress Mechanism to address complaints promptly and transparently. • Hold regular stakeholder engagement meetings with local leaders, residents, and businesses. • Respect local culture, customs, and community practices during construction. • Minimize disruptions to local services (water, electricity, road access). • Engage local community members in employment opportunities where possible. • Implement Corporate Social Responsibility (CSR) activities such as supporting schools, health centers, or local initiatives. • Provide clear signage on-site for safety, detours, and project information. • Avoid construction activities during night hours unless unavoidable, and notify the community in advance. • Manage dust, noise, and traffic proactively to minimize nuisance to neighbours. • Ensure workers adhere to a code of conduct that emphasizes respect for the local community. • Provide regular updates on project progress and expected completion timelines. • Foster partnerships with local institutions (chief's office, ward representatives, CBOs) to build trust.	Proponent Liaison Officer	-Number of complaints received and resolved through the GRM. -Records of community consultation meetings held. -Community satisfaction levels (via feedback forms/surveys). -Employment records showing local hires. -Frequency and timeliness of project updates to the community. - CSR initiatives implemented during the project. -Evidence of a functional liaison officer/office.	Quarterly	100,000

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN DURING OPERATIONAL PHASE

ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	MONITORING INDICATORS	MONITORING FREQUENCY	ESTIMATED COST (Ksh)
Pressure on Utilities	Overburdening of existing water supply and sewerage systems, which may result in frequent water shortages, low water pressure, and inadequate sewage disposal	• Install water-efficient fixtures and appliances (e.g., dual-flush toilets, low-flow taps, and showerheads). • Incorporate rainwater harvesting systems for non-potable uses (e.g., landscaping, cleaning). • Adopt greywater recycling systems for flushing and irrigation. • Use energy-efficient lighting (LEDs) and appliances to reduce power demand. • Integrate solar panels or other renewable energy technologies to supplement grid electricity. • Promote waste segregation, recycling, and composting to reduce strain on waste management systems. • Conduct periodic water and energy audits to track consumption and implement efficiency improvements. • Implement smart metering for water and electricity to monitor and regulate usage. • Encourage residents to adopt conservation practices through awareness campaigns. • Design landscaping with drought-tolerant and native plants to minimize water demand. • Coordinate with utility providers (water, power, sewerage) to plan for adequate capacity. • Provide adequate on-site storage capacity for water to buffer against supply interruptions. • Install standby generators or alternative backup systems to prevent power disruptions. • Ensure regular maintenance of utility systems (water supply, sewer lines, electrical systems). • Develop a utilities emergency response plan to handle unexpected service interruptions.	Management (Stellar Bay Limited)	-Utility consumption records	Monthly	300,000
Waste Generation	Accumulation and improper disposal of solid waste, which can overwhelm local waste management systems.	• Provide adequate waste collection facilities, including color-coded bins for segregation of recyclable, organic, and hazardous waste. • Establish a waste management plan in line with county and NEMA regulations. • Promote source segregation of waste at the household and commercial unit levels. • Contract licensed waste collection and disposal service providers. • Encourage recycling and reuse of materials such as plastics, paper, glass, and metals. • Compost biodegradable/organic waste for use in landscaping. • Provide a designated storage area for solid waste that is well-ventilated, enclosed, and regularly cleaned. • Sensitize residents and tenants on proper waste handling practices. • Adopt e-waste management practices for electronic appliances and gadgets. • Establish partnerships with recycling companies for plastics, glass, and metallic waste streams. • Conduct regular inspections and monitoring of waste storage and disposal facilities.	Residents Waste Handler	-Waste logs -Recycling rates	Weekly	200,000

		• Minimize packaging waste by encouraging bulk purchasing and eco-friendly packaging. • Ensure proper handling and disposal of hazardous waste (e.g., used batteries, fluorescent bulbs, medical waste). • Display signage to guide residents and tenants on proper waste management practices. • Integrate modern waste management technologies such as smart bins or compaction systems to optimize disposal.				
Noise Pollution	Disturbance of the surrounding community's peace and comfort, particularly from increased human activity, vehicular traffic, and operation of mechanical equipment such as generators, water pumps, and HVAC systems.	• Enforce noise level limits in compliance with Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009. • Install soundproofing materials in walls, windows, and ceilings of residential and commercial units. • Use noise-dampening materials for generators, pumps, and HVAC systems. • Schedule maintenance of mechanical equipment (e.g., generators, lifts, pumps) to minimize excessive noise. • Place generators and mechanical plants in acoustically treated rooms or install silencers. • Establish designated quiet hours for sensitive activities, particularly at night. • Provide adequate landscaping and vegetation buffers (trees/shrubs) to absorb noise. • Prohibit idling of vehicles within parking and loading zones. • Use modern low-noise equipment and appliances within the facility. • Sensitize residents and tenants on noise management, especially during social gatherings or events. • Restrict commercial or recreational activities that may cause disturbance during late hours. • Conduct regular noise level monitoring to ensure compliance with permissible standards. • Establish a grievance redress mechanism for residents to report excessive noise incidents. • Limit traffic congestion and engine revving within the compound to reduce vehicular noise. • Implement periodic audits to assess and improve noise control measures.	Management (Stellar Bay Limited)	-Noise measurements -Complaint logs	Quarterly	150,000
Air Pollution	Deterioration of local air quality due to increased vehicular emissions and energy use	• Install and maintain proper ventilation systems in all units to ensure good indoor air quality. • Regularly service and maintain standby generators and mechanical equipment to minimize emissions. • Use low-sulphur fuels or cleaner energy alternatives (e.g., solar, grid electricity) instead of diesel generators. • Incorporate green building technologies such as energy-efficient appliances and natural lighting to reduce fuel demand. • Establish green landscaping (trees, shrubs, and lawns) to act as natural air filters and carbon sinks. • Prohibit open burning of waste within or around the premises. • Ensure waste is properly collected and transported by licensed service providers to minimize odor emissions.	Management (Stellar Bay Limited) NEMA	- Air quality tests (PM, NOx)	Quarterly	180,000

		• Provide adequate parking and encourage residents to adopt shared transport, cycling, or walking to reduce vehicle emissions. • Use dust suppression measures (e.g., watering driveways, paved parking) to minimize resuspension of dust. • Designate a smoking zone away from residential and sensitive areas to reduce second-hand smoke exposure. • Promote the use of electric or hybrid vehicles within the facility through charging points. • Conduct regular indoor air quality checks for pollutants such as CO₂, VOCs, and particulate matter. • Develop and implement a waste management plan to prevent odor and gas emissions from decomposing waste. • Educate residents and staff on best practices for reducing emissions (energy efficiency, responsible waste disposal). • Establish a monitoring framework to ensure compliance with NEMA air quality standards.				
Water Pollution	Contamination of surface and groundwater sources due to improper management of wastewater and stormwater runoff	• Install and maintain an efficient sewage treatment system or connect to the municipal sewer line to prevent raw effluent discharge. • Ensure regular inspection and maintenance of plumbing systems to prevent leaks and blockages. • Provide oil and grease traps in kitchens and parking/vehicle service areas to prevent contamination of wastewater. • Segregate and properly dispose of hazardous waste (e.g., paints, oils, chemicals) through licensed waste handlers. • Avoid direct discharge of wastewater into nearby drains, rivers, or water bodies. • Implement a rainwater harvesting system to reduce stormwater runoff pressure on drainage. • Design and maintain an adequate stormwater drainage system to prevent flooding and contamination. • Prohibit disposal of solid waste or construction debris into drains or sewer systems. • Adopt water-efficient fixtures and appliances (dual-flush toilets, low-flow taps, and showers) to reduce wastewater generation. • Educate residents and staff on proper waste and wastewater disposal practices. • Monitor effluent quality regularly to ensure compliance with NEMA water quality standards. • Establish an emergency response plan for accidental spills (oil, fuel, chemicals).	Management (Stellar Bay Limited)	-Water quality monitoring reports	Monthly	250,000
Environmental Degradation	Loss of local biodiversity and green spaces due to increased land cover change, pollution, and resource consumption.	• Implement a comprehensive landscaping plan using indigenous and drought-resistant plant species to enhance aesthetics and biodiversity. • Maintain green open spaces and gardens to reduce heat island effects and improve air quality. • Enforce strict waste management practices (segregation, recycling, composting, and proper disposal). • Prevent illegal discharge of wastewater and solid waste into surrounding areas. • Install and maintain stormwater drainage systems to control runoff and erosion.	Management (Stellar Bay Limited)	- Vegetation cover assessment	Bi-annual	200,000

		• Promote energy efficiency through solar panels, LED lighting, and energy-saving appliances. • Encourage water conservation practices such as rainwater harvesting and greywater recycling. • Regularly inspect and maintain sewer, drainage, and waste management systems to avoid blockages and leaks. • Establish environmental awareness programs for residents, tenants, and workers on responsible resource use. • Monitor and control vehicular emissions and parking management to reduce localized pollution. • Collaborate with local authorities for environmental monitoring and compliance reporting. • Develop a sustainability management plan for long-term environmental stewardship.				
Traffic Congestion	Increased travel delays and reduced mobility within the surrounding road network.	• Provide adequate on-site parking spaces to reduce roadside parking and obstruction. • Designate separate entry and exit points to ease vehicular flow and reduce queuing. • Implement traffic management plans including signage, speed limits, and directional guidance. • Encourage the use of public transport by providing information and accessibility to nearby bus stops or railway stations. • Schedule deliveries and service vehicles during off-peak hours to avoid traffic build-up. • Employ smart traffic flow systems like automated gates or access cards to reduce congestion at entry points. • Collaborate with local traffic authorities for enforcement and integration with broader traffic control measures.	Management (Stellar Bay Limited) County Government	-Traffic counts -Parking occupancy	Monthly	250,000

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN DURING DECOMMISSIONING PHASE

ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	MONITORING INDICATORS	MONITORING FREQUENCY	ESTIMATED COST (Ksh)
Demolition Waste	Environmental pollution and land degradation resulting from improper handling and disposal of large volumes of construction and demolition debris.	• Conduct a pre-demolition waste audit to identify recyclable, reusable, and hazardous materials. • Segregate waste at source into categories such as metals, concrete, wood, glass, plastics, and hazardous waste. • Reuse or recycle construction materials such as bricks, concrete, and metals in other projects where feasible. • Dispose of non-recyclable waste at licensed disposal sites approved by NEMA and local authorities. • Ensure hazardous materials (e.g., paints, chemicals) are handled and disposed of by certified waste handlers. • Provide adequate waste storage facilities such as skips and containers on-site during demolition. • Engage NEMA licensed waste management companies for collection and transportation of demolition waste. • Implement a waste tracking system to ensure accountability and prevent illegal dumping. • Train workers on proper waste handling procedures and safe demolition practices. • Monitor and document waste generation, recycling, and disposal throughout the decommissioning phase.	Contractor NEMA Waste Handler	- Waste transfer notes - Inspection records	Weekly	300,000
Dust & Noise Pollution	Deterioration of ambient air quality and community well-being due to excessive emissions of dust particles and high noise levels from demolition machinery and activities	• Regularly sprinkle water on demolition debris, exposed surfaces, and during material handling. • Use dust suppression equipment such as mist cannons or dust screens/barriers around the demolition site. • Ensure covered transportation of demolition debris using tarpaulins to prevent dust dispersion. • Minimize drop heights during loading and unloading of demolition materials. • Restrict demolition activities to non-windy periods where feasible. • Provide personal protective equipment (PPE) such as masks and respirators to workers. • Establish green buffers or temporary vegetation cover where applicable to minimize dust spread. • Use modern, well-maintained, and muffled machinery to minimize noise emissions. • Restrict noisy demolition activities to daytime hours only (e.g., 8:00am – 5:00 pm). • Install temporary noise barriers or acoustic screens around the site. • Adopt controlled demolition techniques (mechanical dismantling instead of blasting where possible). • Conduct regular maintenance of equipment to avoid excessive noise. • Provide workers with hearing protection PPE (earplugs or earmuffs). • Notify surrounding communities in advance about demolition schedules and expected noise levels.	Contractor Safety Officer	-Air and noise level records	Daily	250,000

Occupational Safety	Increased risk of accidents and injuries to workers due to exposure to hazardous demolition activities, falling debris, heavy machinery operation, and handling of sharp or unstable materials.	• Provide workers with appropriate Personal Protective Equipment (PPE) such as helmets, gloves, safety boots, reflective vests, ear protection, and respirators. • Conduct safety induction and training sessions for all workers on demolition hazards and emergency response. • Develop and implement a site-specific Health and Safety Management Plan. • Erect warning signage and safety barriers around hazardous areas to prevent unauthorized access. • Ensure safe dismantling procedures are followed to prevent collapse or falling debris. • Appoint qualified safety officers to monitor compliance with occupational safety guidelines. • Provide first aid kits and trained first aiders on site, with quick access to emergency medical services. • Implement fall protection measures such as harnesses, guardrails, and scaffolding safety standards. • Ensure safe handling, storage, and disposal of hazardous materials (e.g., asbestos, chemicals, fuels). • Establish clear emergency evacuation routes and drills for workers. • Maintain regular equipment inspection and servicing to prevent accidents. • Enforce strict adherence to work schedules to avoid worker fatigue and unsafe practices.	Contractor Safety Officer	- Accident/incident records	Daily	400,000
Soil and Water Contamination	Release of hazardous substances such as oils, paints, solvents, heavy metals, or asbestos residues into the soil and nearby water sources through improper handling, spillage, or disposal of demolition waste.	• Conduct site assessments before decommissioning to identify potential contamination risks (e.g., fuel, oils, asbestos, chemicals). • Implement controlled dismantling and waste segregation to prevent accidental spillage of hazardous substances. • Store fuels, lubricants, and chemicals in bunded, leak-proof containers away from watercourses. • Use spill kits and absorbent materials on-site to immediately contain and clean accidental spills. • Ensure safe handling, labelling, and disposal of hazardous wastes through licensed waste handlers. • Avoid decommissioning activities during heavy rainfall periods to minimize runoff into nearby soil and water bodies. • Establish designated washing/maintenance areas for machinery with proper drainage systems. • Prevent direct discharge of wastewater into the environment by using sediment traps or oil-water separators. • Conduct progressive site restoration (e.g., backfilling and re-vegetation) to reduce erosion and runoff. • Undertake post-decommissioning soil and water quality monitoring to ensure no residual contamination. • Train workers on safe environmental practices and emergency response to pollution incidents.	Contractor Environmental Officer	- Soil & water quality tests	Monthly	220,000

Traffic Disruption	Increased road congestion and reduced accessibility caused by the frequent movement of heavy trucks, machinery, and debris haulage vehicles, which may obstruct normal traffic flow.	• Prepare and implement a Traffic Management Plan (TMP) before decommissioning begins. • Schedule demolition and debris transportation during off-peak hours to reduce congestion. • Use clearly marked diversion routes and install adequate road signage and warning signals. • Coordinate with local traffic authorities to manage road closures or lane restrictions. • Deploy traffic marshals/flagmen to guide vehicles and pedestrians safely around the site. • Ensure trucks transporting debris are covered to prevent dust, falling material, and road hazards. • Limit heavy truck movements to designated access roads to avoid disturbance to residential areas. • Provide temporary pedestrian crossings or walkways where access routes are blocked. • Use staggered scheduling of decommissioning activities to avoid high traffic volumes. • Engage in community communication and public notices on anticipated traffic disruptions.	Contractor Traffic Police	- Traffic monitoring reports	Daily	150,000

CHAPTER 9

STAKEHOLDER ENGAGEMENT PLAN

9.1 Stakeholder Identification

The stakeholder identification process for the proposed 30-storey high-rise residential development plus associated amenities on Plot L.R No. NAIROBI/BLOCK 7/338, Off Waiyaki Way road in Westlands Sub-county, Nairobi City County, involved the systematic mapping of individuals, groups, and institutions with interests or potential influence over the project.

This process aims to ensure that all relevant stakeholders are recognized, engaged, and considered in decision-making to promote transparency, inclusivity and sustainable outcomes.

Key stakeholders identified include regulatory authorities such as the National Environment Management Authority (NEMA), Nairobi City County departments responsible for planning, infrastructure, water and waste management, and utility providers.

Community stakeholders include neighboring residents, local businesses, informal traders and service providers who may be affected by the project during construction and operation. Additionally, professional bodies, interest groups and non-governmental organizations concerned with urban development, environmental management and social welfare were recognized as important participants.

The identification process also considered the potential influence and interest levels of stakeholders, categorizing them according to their capacity to impact or be impacted by the project. This categorization helps prioritize engagement efforts, ensuring that critical stakeholders receive timely and meaningful consultation while broader community interests are also addressed.

By systematically identifying stakeholders, the project ensures that concerns, expectations and potential contributions are integrated into planning and decision-making processes. This approach facilitates conflict avoidance, enhances social acceptability and promotes the long-term sustainability of the development within the Westlands urban environment.

9.1 Consultation methods

The stakeholder consultation and public participation process for the proposed 30-storey high-rise residential development, will employ a variety of participatory methods designed to ensure inclusivity, transparency and effective information exchange. The consultation methods will target all identified stakeholders including regulatory authorities, local communities, businesses, utility providers and professional and interest groups.

Public meetings and workshops will be conducted to present project plans, anticipated impacts and proposed mitigation measures, allowing stakeholders to provide feedback and raise concerns. Focus group discussions and targeted interviews will be held with key stakeholders such as local business owners, resident associations and utility providers to gather in-depth perspectives on specific issues. Written communication methods, including questionnaires and letters, will be utilized to reach stakeholders unable to attend in-person engagements.

Information dissemination will also leverage public notices, project brochures and digital platforms to ensure broader community awareness and participation. Throughout the process, efforts will be made to accommodate vulnerable and marginalized groups, ensuring equitable access to information and consultation opportunities. Feedback collected will be systematically documented, analyzed, and integrated into project planning, design, and environmental management strategies.

The consultation methods aim to foster meaningful engagement, enhance stakeholder understanding, address concerns proactively, and promote social acceptability and sustainability of the proposed development within the Westlands area urban context

9.1 Response to issues raised

During the stakeholder consultation and public participation process for the proposed project, a range of issues and concerns are anticipated from residents, businesses, regulatory authorities and other interest groups. These may relate to construction impacts, traffic congestion, noise and dust, waste management, water and energy demand, socio-economic effects, safety and potential disruption to local services.

All issues raised will be systematically recorded, categorized and analyzed to determine their significance and relevance to project planning and implementation. Responses will include the adoption of appropriate mitigation measures, design modifications, or

operational strategies to address stakeholder concerns.

For example, traffic and pedestrian safety concerns may be addressed through traffic management plans and on-site pedestrian pathways, while environmental concerns such as dust, noise, and wastewater management will be managed through best practice environmental control measures and compliance with national regulations.

A structured feedback mechanism will be established to ensure that stakeholders receive timely information on how their concerns have been considered and addressed. This may include written responses, public meetings, and incorporation of mitigation measures into the Environmental and Social Management Plan (ESMP). Additionally, ongoing engagement will continue throughout construction and operation to address any emerging issues promptly.

The approach ensures that stakeholder concerns are not only heard but actively integrated into project planning and management, thereby enhancing transparency, social acceptability, and the long-term sustainability of the development within the Westlands urban context.

CHAPTER TEN; REPORTS AND DELIVERABLES

9.1 Reporting

- i. Deliver a Work Plan
- ii. Deliver report; Environmental and Social Assessment that includes the requirements outlined in this plan as well as the stakeholder analysis and consultation plan.
- iii. Deliver report; Environmental and social assessment with its respective Environmental and Social management Plans for operation in the workplan and that includes the results of the public consultations.
- iv. Deliver Report; The final updated ESIA study report

WORKPLAN	Timelines	Lead Actors
Activity		
Approval of the TOR by NEMA	3 days	• Proponent • Lead Expert
Review the ESMP with assemble the EIA team	Week 1	EIA team
Initiate the Public Participation and consultation plan	Week 2- 4	• Sociologist. • Associate Expert
Stakeholder engagement		• Chief • NEMA • Sociologist • Associate expert
Advertisement on radio	Week 3 to 8	• Proponent • Lead Expert
Advertisement on newspapers		• Proponent • Lead Expert

PP Feedback review	Week 7-8	EIA team
Measurement of negative impacts	Week 8-9	EIA team
Mitigation and monitoring of negative impacts		EIA team
Develop draft EIA report	Week 9	EIA team
Validate and Submit EIA Study report to NEMA	Week 9	• Lead expert • Proponent

9.2 Conclusion and recommendations

The ESIA concludes that the proposed 30-storey mixed-use development is feasible, socially acceptable, and environmentally manageable, provided that all mitigation measures and monitoring protocols outlined in the ESMP are rigorously implemented. This ensures that the project contributes positively to the Westlands area while minimizing adverse environmental and social impacts.

The project is expected to deliver substantial positive outcomes, including employment creation, local economic stimulation, urban infrastructure enhancement, improved social amenities, and sustainable use of resources. Conversely, potential negative impacts such as air and noise pollution, traffic congestion, solid and wastewater generation, occupational hazards, and temporary disruption to surrounding communities have been identified and addressed through targeted mitigation strategies embedded within the ESMP.

Recommendations emphasize the need for strict adherence to the ESMP, continuous monitoring and stakeholder engagement throughout all project phases to ensure environmental compliance, public safety and social acceptability.

It is recommended that the project proponent maintains continuous stakeholder engagement, including regular communication with regulatory authorities, neighboring communities and other key stakeholders, to address emerging concerns and enhance transparency. Implementation of robust monitoring and reporting mechanisms is essential to track compliance with environmental and social safeguards and to enable timely corrective actions where necessary.

The report further recommends the integration of sustainable practices in design and operation, including energy efficiency, water conservation, waste management, and green infrastructure, to reduce resource consumption and long-term environmental impacts. Occupational health and safety measures for workers and public safety protocols should be prioritized, while traffic, noise, and visual impacts should be managed through careful planning and operational controls.