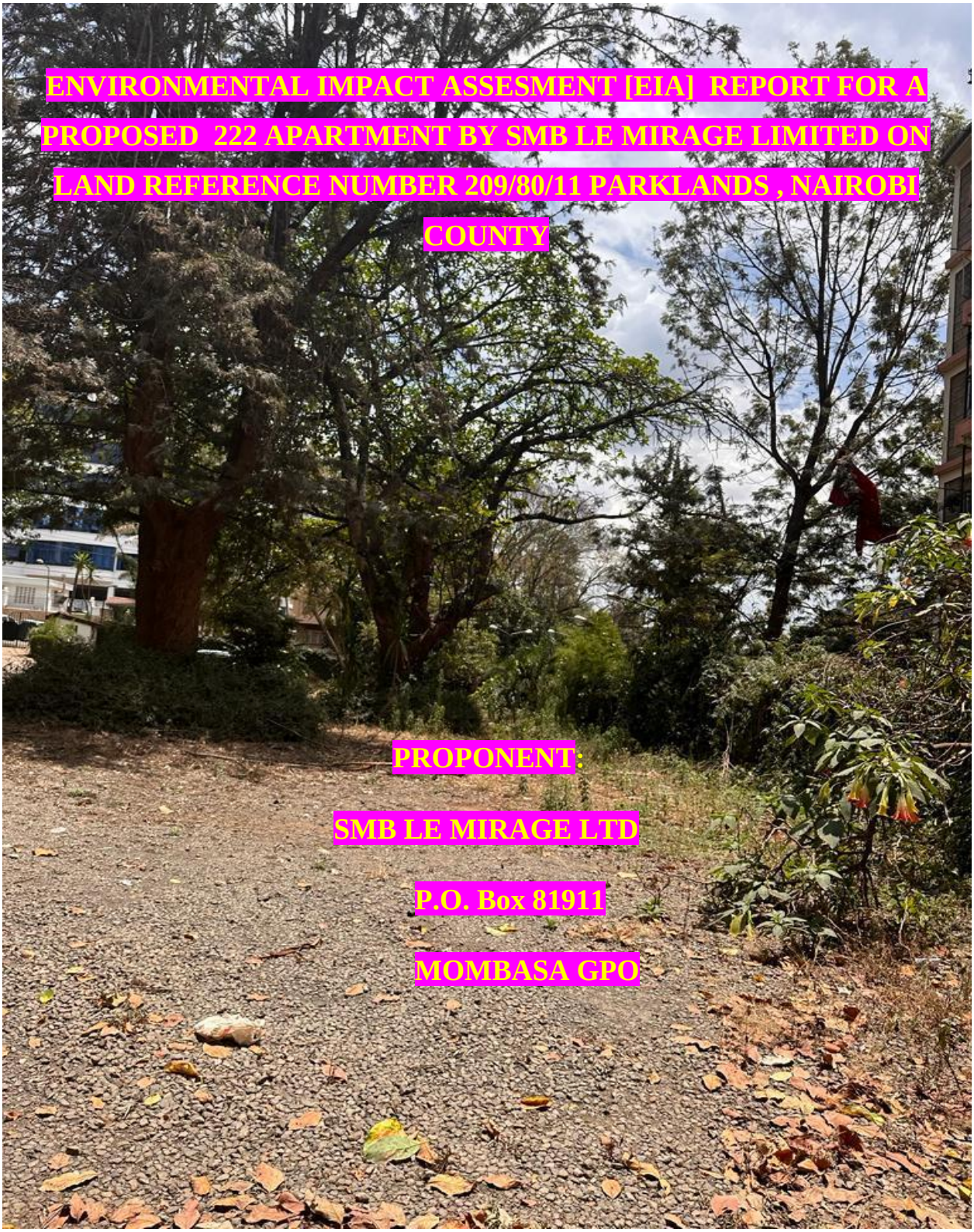

ENVIRONMENTAL IMPACT ASSESMENT [EIA] REPORT FOR A PROPOSED 222 APARTMENT BY SMB LE MIRAGE LIMITED ON LAND REFERENCE NUMBER 209/80/11 PARKLANDS , NAIROBI COUNTY

PROPONENT :

SMB LE MIRAGE LTD

P.O. Box 81911

MOMBASA GPO

DECLARATION

We hereby certify that this Environmental Impact Study assessment is for SMB LE MIRAGE LIMITED along parklands Road, Westlands in Nairobi County has been conducted and the report compiled by the NEMA expert below. The contents are factual and conform to the guidelines contained in the Environmental Management and Coordination (Amendment) Act 2015 (Environmental Impact Assessment and Audit Regulations, 2003).

Name	**Designation**	**Registration**	**Signature**
Ms Mary Ndungu	Lead Expert	1967	
Dr. Purity Muthoni	Lead Expert	7136	

Proponent:

Name	**Signature**	**Date**
Sahel Quresh		27th October 2023

LE MIRAGE LIMITED
P.O. Box 81911,
MOMBASA - GPO.

October 2023

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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Description
NEMA	National Environment Management Authority
DOSH	Directorate of Occupational Safety and Health
EIA	Environmental Impact Assessment
EA	Environmental Audit
OSHA	Occupational Safety and Health Act of 2007
EMCA	Environment Management and Co-ordination Act of 2015
KEBS	Kenya Bureau of Standards
NCA	National Construction Authority
GPS	Global Positioning System
TOR	Terms of Reference
PPP	Polluter Pays Principle
EMP	Environmental Management and Monitoring Plan
GPS	Global Positioning System
TOR	Terms of Reference
FGD	Focus Group Discussions
KII	Key Informant Interviews
DSQs	Domestic Servants Quarters
CBD	Central Business District
OSHA	Occupational Safety and Health Act
PPE	Personal Protective Equipment
NWSC	Nairobi Water and Sewerage Company
PVC	Polyvinyl Chloride
ODM	Orange Democratic Movement
KNBS	Kenya National Bureau of Statistics
NGO	Non-governmental Organisation
NSP	National Spatial Plan
EEZ	Exclusive Economic Zone
ROW	Right of Way
KENHA	Kenya National Highways Authority
KERRA	Kenya Rural Roads Authority
KURA	Kenya Urban Roads Authority
WRMA	Water Resources Management Authority
dB	Decibels
GDP	Growth Domestic Product
KV 2030	Kenya Vision 2030
NCG	Nairobi County Government
TIA	Traffic Impact Analysis
CCTV	Closed Circuit Television Cameras
MOH	Ministry of Health

LIST OF TABLES

OPERATIONAL DEFINITION OF TERMS AS USED IN THIS STUDY

Concept	Operational definition of the concept
Environmental Audit	The systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing in conserving or preserving the environment.
Developer	A person who is developing a project which is subject to an environmental impact assessment process under EMCA 2015.
Authority	The National Environment Management Authority.
Environment	Includes the physical factors of the surroundings of human beings including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants and the social factor of aesthetics and includes both the natural and the built environment.
Effluent	Means gaseous waste, water or liquid or other fluid of domestic, agricultural, trade or industrial origin treated or untreated and discharged directly or indirectly into the aquatic environment.
Environmental Impact Assessment	Means a systematic examination conducted to determine whether or not a programme, activity or project will have any adverse impacts on the environment.
Environmental Management	Includes the protection, conservation and sustainable use of the various elements or components of the environment.
Environmental Monitoring	Means the continuous or periodic determination of actual and potential effects of any activity or phenomenon on the environment whether short-term or long-term.
Lead Agency	Means any Government ministry, department, parastatal, state corporation or local authority, in which any law vests functions of control or management of any element of the environment or natural resource.

Noise	Means any undesirable sound that is intrinsically objectionable or that may cause adverse effect on human health or the environment.
Occupier	Means a person in occupation or control of premises, and in relation to premises different parts of which are occupied by different persons, means the respective persons in occupation or control of each part.
Pollution	Means any direct or indirect alteration of the physical, thermal, chemical, biological, or radio-active properties of any part of the environment by discharging, emitting, or depositing wastes so as to affect any beneficial use adversely, to cause a condition which is hazardous or potentially hazardous to public health, safety or welfare, or to animals, birds, wildlife, fish or aquatic life, or to plants or to cause contravention of any condition, limitation, or restriction which is subject to a licence under EMCA 2015.
Polluter-Pays-Principle	Means that the cost of cleaning up any element of the environment damaged by pollution, compensating victims of pollution, cost of beneficial uses lost as a result of an act of pollution and other costs that are connected with or incidental to the foregoing, is to be paid or borne by the person convicted of pollution under this Act or any other applicable law.
Premises	Include measures, buildings, lands, and hereditaments in every tenure and machinery, plant or vehicle used in connection with any trade carried on at any premises.
Project	Includes any project, programme or policy that leads to projects which may have an impact on the environment;
Proponent	Means a person proposing or executing a project, programme or an undertaking specified in the Second Schedule.
Waste	Any matter, whether liquid, solid, gaseous, or radioactive, which is

	discharged, emitted, or deposited in the environment in such volume composition or manner likely to cause an alteration of the environment.

EXECUTIVE SUMMARY

Introduction

SMB LE MIRAGE Limited herein referred to as "the proponent" intends to construct a 222 apartment that will include 1,2&3 bedrooms on Land Reference Number 209/80.11 along Parklands Road, Westlands area in Nairobi County. In order to comply with the requirements of EMCA 2015 in order to be issued with a NEMA License, the proponent contracted the services of a NEMA registered EIA/EA experts to conduct an Environmental and social Impact Assessment Study and prepare a report that will be submitted to NEMA for approval and acknowledgement.

Environmental Impact Assessment [EIA] is a tool for environmental Planning and has been identified as a key component in new project implementation. According to section 58 of the Environmental Management and Coordination Act (EMCA) No.8 of 2015 second schedule 9 (1), and Environmental (Impact Assessment and Audit) regulation, 2003, new projects must undergo Environmental Impact Assessment. The Report of the same must be submitted to National Environment Authority (NEMA) for approval and issuance of relevant License. This was necessary as many forms of developmental activities cause damage to the environment and hence the greatest challenge today is to maintain sustainable development without interfering with the environment.

Scope, Objective and Criteria of the Environmental Impact Assessment (EIA)

The Kenya Government policy on all new projects, programmes or activities requires that an environmental impact assessment study be carried out at the planning stages of the proposed project. The scope of this Environmental Impact Assessment, therefore, covered:

i. The baseline environmental conditions of the area,
ii. A description of the proposed project,
iii. Provisions of the relevant environmental laws,
iv. Identification and discuss of any adverse impacts to the environment anticipated from the proposed project,
v. Appropriate mitigation measures,

vi. Provision of an environmental management plan outline.

The scope of the assessment covered construction works of the proposed project which includes ground preparation, masonry works and installation of service lines as well as the utilities required by the development. The output of this work was a comprehensive Environmental Impact Assessment Study Report for the purposes of applying for an EIA license.

The Broad objective of the assignment

The overall objective of the assignment was to assist the proponent prepare a study report after carrying out an Environmental Impact Assessment (EIA) study of the proposed project to ensure that appropriate measures to mitigate any adverse impacts to the environment are taken into consideration. The Environmental Impact Assessment carried out on the project identified existing and potential environmental impacts and possible concerns that interested and/or affected parties have with the development, as well as the associated prevention and mitigation measures for the negative impacts as stipulated in the environmental Management Plan (EMP) proposed.

Terms of Reference

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

a) Description of the nature of the proposed project;

b) The location of the project including the physical area that may be affected by the project's activities;

c) The activities that shall be undertaken during the project construction, operation and decommissioning phases;

d) The design of the project;

e) The materials to be used, products and by-products, including waste to be generated by the project and the methods of their disposal;

f) The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project;

g) An action plan for the prevention and management of possible accidents during the project cycle;

h) A plan to ensure the health and safety of the workers and neighbouring communities;

i) The economic and socio-cultural impacts to the local community and the nation in general;

j) The project budget; and

k) Any other information the Authority (NEMA) may require.

Methodology

The general steps followed during the assessment were as follows:-

i. Environment screening, in which the project was identified as among those requiring environmental impact assessment under schedule 2 of EMCA, 1999

ii. Environmental scoping that provided the key environmental issues

iii. Desktop studies and interviews

iv. Distribution of questionnaires / community meetings

v. Physical inspection of the site and surrounding areas

vi. Reporting

Impacts and mitigation measures

A number of both positive and negative environmental impacts were identified in the course of conducting the EIA for this project. To mitigate the negative impacts, adequate environmental management systems will be incorporated during the entire planning, construction and operation stages of the proposed project to minimize any adverse environmental impacts and assure sustainable development of the area. A Summary of both positive and negative impact are listed below. Their mitigation measures are presented in the EMP in detail.

Positive impacts

- Employment opportunities
- Impacts on the local and national economy
- Optimal use of space on the proposed project site
- Improved infrastructure

Negative impacts

- Generation of noise and vibrations
- Air pollution by dust and exhaust emissions
- Health and Safety risks
- Waste generation

- Increased water demand
- Increased energy consumption

Conclusion

Considering the proposed location, construction, management and mitigation measures that will be put in place and the project, the proponent should be issued with a NEMA license because the project will contribute to the economic development and creation of employment opportunities during its implementation and contribute towards Kenya Kwanza Manifesto in providing adequate housing to a certain segments of the community.

Recommendations

Emphasis should be placed towards safeguarding the environment. This can be effectively be achieved through full implementation of the recommendations in the Environmental Management Plan [EMP].

CHAPTER ONE:

INTRODUCTION

1.1 Background and rationale for an Environmental Impact Assessment (EIA)

According to Sections 58 and 138 of the Environmental Management and Coordination Act (EMCA) of 2015 and Part II and III of the Environmental (Impact Assessment and Audit) Regulations 2003 (Legal No. 101), construction of the proposed development requires an Environmental Impact Assessment Report prepared and submitted to the National Environment Management Authority (NEMA) for review and eventual Licensing before the development commences.

SMB LE MIRAGE LIMITED is proposing to construct 222 apartments on **Land Reference Number 209/88/11** along Parklands Road, in Westlands Nairobi County. The proposed development will comprise a lounge areas, lavatories, 1,2,&3 bedrooms, kitchen, verandah , swimming pool, full gym, kids play area, multi-purpose hall, sport arena, badminton/pickle ball court squash court, pool bar, cinema room ,and a management office . In addition there will be rain harvesting, common area and serviced floor powered by solar, full building including all apartments power back up and RO for the whole building.

1.2 Terms of Reference (TOR)

The TOR for this Environmental Impact Assessment is based on the Environmental (Impact Assessment and Audit) Regulations dated June 2003. According to the Regulations an EIA Study Report should where possible, cover the following areas:-

i. A description of the nature of the proposed project/activity;
ii. The location of the project including the physical area that may be affected by the project's activities;
iii. The activities that shall be undertaken during the project construction, operation and decommissioning phases;
iv. The design of the project;
v. The materials to be used, products and by-products, including waste to be generated by the project and the methods of their disposal;

vi. The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project;
vii. An action plan for the prevention and management of possible accidents during the project cycle;
viii. A plan to ensure the health and safety of the workers and neighbouring communities;
ix. The economic and socio-cultural impacts to the local community and the nation in general;
x. The project budget; and
xi. Any other information the NEMA may require.

1.3 Scope and objective of the environmental impact assessment

The Kenya Government policy on all new projects, programmes or activities requires that an environmental impact assessment study be carried out at the planning stages of the proposed undertaking to ensure that any significant impacts on the environment are taken into consideration during the design, construction, operation and decommissioning of the project, programme or activity. The scope of this Environmental Impact Assessment, therefore, covered:

- The baseline environmental conditions of the area;
- A description of the proposed project;
- A review of the legal, policy and environmental regulations;
- Identification and discussion of any adverse impacts to the environment anticipated from the proposed project;
- Appropriate mitigation measures; and
- Developing of an Environmental Management Plan [EMP] to guide the developer in mitigating the negative impacts of the proposed project.

1.4 Methodology of the environmental impact assessment

1.4.1 Data collection procedures

In the course of undertaking this study, data collection was carried out using various ways. They are: administration of questionnaires, use of checklists, observations and

photography, site visits and desktop environmental studies, where necessary, in the manner specified in Part V (Section 31-41) of the Environmental (Impact Assessment and Audit) Regulations, 2003.

1.4.2 Desktop study

This included documentary review on the nature of the proposed activities, project documents, Nairobi County Development Plan, and relevant legislative and regulatory frameworks among others. It also included discussions with the developer regarding the proposed project.

1.4.3 Site assessment

Field visits were carried out specifically for physical inspection of the proposed project site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts. It also included taking photographs of the proposed project site, access roads that will be used to access the site and other important features within the site and the surrounding areas.

1.4.4 EIA public consultation

The Constitution of Kenya recognises and encourages public participation in the management, protection, and conservation of the environment. Any development can affect the environment and impact negatively to the lives of the people living and working within the vicinity of the proposed project development through socially, economically and the general alteration of the project area. Thus it is important that the general area residents be made aware of the proposed residential project and submits their opinions at the initiation stage. The public awakening was facilitated through Consultations and discussions (more participatory, interactive and intensive processes of stakeholder engagements) undertaken in the neighbourhood of the proposed development site.

The objective of the public consultation is to inform the stakeholders in the area about the project; gaining their views, concerns and values, taking account of neighbours and general public inputs in decision making; obtaining local knowledge, reducing conflict, improving

transparency and accountability in decision making, and increasing public confidence and awareness. It was relatively easy to acquire the reservations of the community whether these kinds of developments are welcome. The community could therefore understand easily the potential impacts that could result from the implementation of the project i.e. through comparative analysis.

The proponent organized a public hearing with the support of the Lead experts and a suitable qualified person appointed from Nema to attended the hearing. The date and venue of the hearing was published at least one week prior to the meeting. The venue was convenient to the affected communities. The invitation for public comments under this regulation shall state - (a) the nature of the project; (b) the location of the project; (c) the anticipated impacts of the project and the proposed mitigation measures to respond to the impacts; (d) the times and place where the full report can be inspected; and (e) the period within which the Authority shall receive comments

After submission of the study report the proponent will publish for two successive weeks in the Gazette and in a newspaper with a nation-wide circulation and in particular with a wide circulation in the area of the proposed project, a public notice once a week inviting the public to submit oral or written comments on the environmental impact assessment study report; Make an announcement of the notice in both official and local languages of the communities living within the proximity at least once a week for two consecutive weeks in a radio with a nation-wide coverage.

1.4.5 Reporting

A comprehensive EIA Study Report containing the findings was prepared by the NEMA experts in accordance with NEMA guidelines and submitted to NEMA on behalf of the proponent for consideration and approval.

1.4.6 Chapters in this report

This study report contains the following chapters:

- **Executive Summary**
- **Chapter one:** Introduction
- **Chapter two:** Description of the Project and Budget

- **Chapter three:** Baseline Information of the Study Area
- **Chapter four:** Relevant Legislative and Regulatory Frameworks
- **Chapter five:** Public Participation
- **Chapter six:** Analysis of Project Alternatives
- **Chapter seven**: Assessment of Environmental Impacts
- **Chapter eight:** Impacts Mitigation and Monitoring
- **Chapter nine:** Environmental Management Plan
- **Chapter ten:** Conclusion and Recommendations.
- **References**
- **Appendices**

CHAPTER TWO:

DESCRIPTION OF THE PROJECT

2.1 Introduction

This chapter presents a description of the proposed project. It comprises the following sections: the proposed project, location and size of the proposed project, existing structures, character of surrounding environment, a description of the project's construction activities, a description of the project's operational activities and a description of the project's decommissioning activities.

2.2 The proposed project / Budget

SMB Le MIRAGE Limited is proposing to construct 222 Apartments units on Land Reference Number 209/80/11 Parklands Road, Westland's, Nairobi County. The proposed project will comprise of a lounge areas, lavatories, 1,2,&3 bedrooms, kitchen, verandah , swimming pool, full gym, kids play area, multi-purpose hall, sport arena, badminton/pickle ball court squash court, pool bar, cinema room ,and a management office . In addition, there will be rain harvesting, common area and serviced floor powered by solar, full building including all apartments power back up and RO for the whole

The actual design components of the project include: -

i. Construction of the 222 apartments units Highrise building of 27 floors
ii. Construction of a driveways, sidewalks and parking silo
iii. Development utilities (water, drainage, electricity, health and safety systems, IT systems and security)
iv. Site landscaping/beautification

Project Budget

The project cost is estimated at 746Million (Seven hundred and forty six million Kenya shilling), The project Bill of Quantities will be annexed to the report.

2.3 Location and size of the proposed project

The proposed project site is located in a Land Parcel identified as **L. R. No. 209/80/11** and covers a total area of 0.2647 hectare. Parklands is located approximately 3.5 kilometers (5.9 mi),

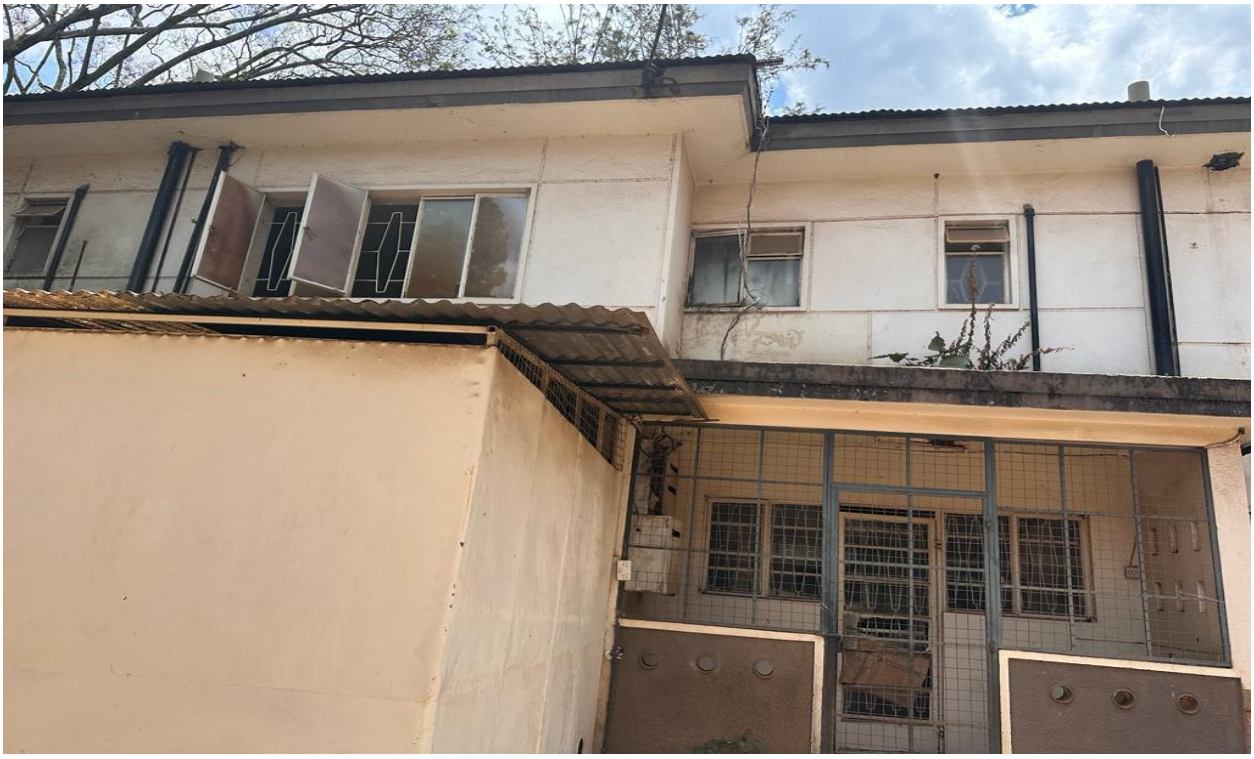
by road, northwest of the central business district of Nairobi. The coordinates of PARKLANDS are:**01 12 24S, 36 46 08E** (Latitude:-1.2400; Longitude:**36.7688).**

Table 1: Proposed Project details

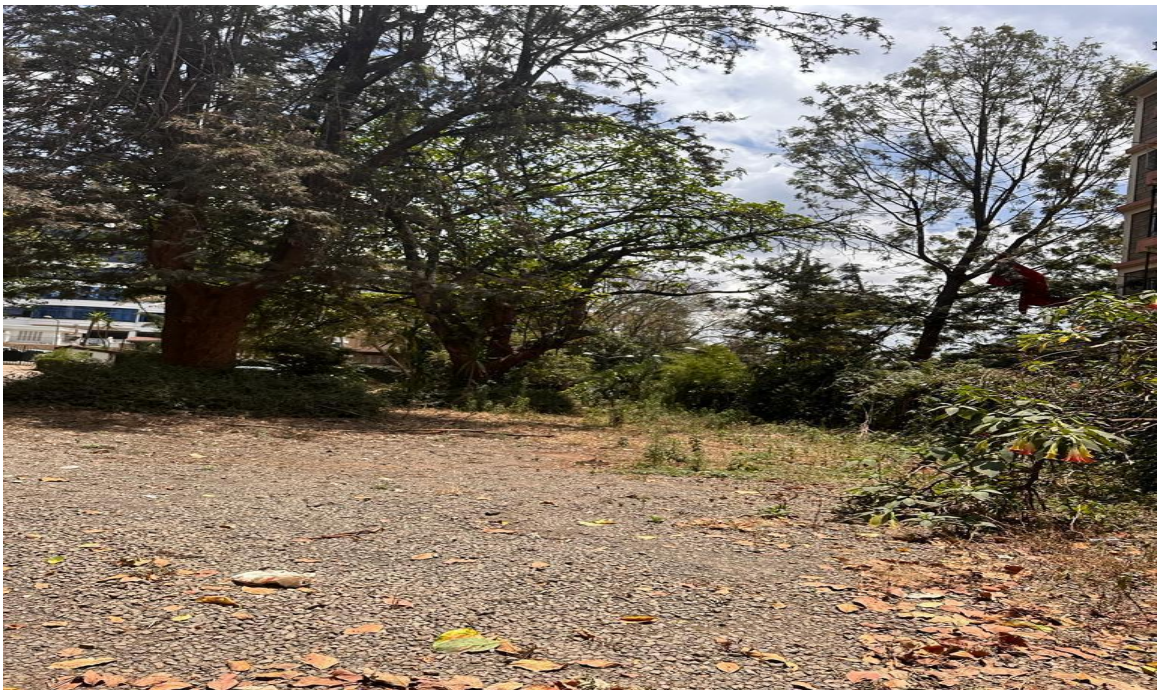
No.	ITEM		DESCRIPTION
	Proponent		SMB LE MIRAGE Limited
	Project Description		To construct 222 apartments
	Main Components		lounge areas, lavatories, 1,2,&3 bedrooms, kitchen, verandah , swimming pool, full gym, kids play area, multi-purpose hall, sport arena, badminton/pickle ball court squash court, pool bar, cinema room ,and a management office
	Number of floors		27
	Project budget		Kshs 700,000,000
	Plot L.R. No.		209/80/11
	Plot Size		Approx. 3.5 Acres
	Access road/street		Parklands road next to Mayfair hotel
	GPS Coordinates	Latitude	**01^0 12" 24S,**
		Longitude	**36^0 46" 08E**
	Elevation		1755m above sea level
	Distance from Nairobi CBD		Approximately 3.5 km
	Neighbouring properties		Mixed use, with similar apartments, hotels, recreational facilities among others
	Available infrastructure		NWSC sewer network, NWSC water supply, Tarmac roads,
	Structure that was on site		A single dwelling residential housing unit with servants quarter
	Vegetation on site		Exotic trees, landscaping shrubs and bush, landscaping grass and flowers

2.4 Existing Structures

In the compound there is an old building which will be demolished and the materials will be sold and some donated .to needy communities within some neighbourhood .Also within the compound there are three trees and flowers within the project site. The area is served by NW&SCo piped water and sewer line connection as well as KPLC electricity power.



An existing Housing still in good condition



Trees on site

2.4 Character of surrounding environment

The project area and the surrounding area consist of high end Highrise building which include hotels, hospital, business malls, Casino so in other a other words the area can well be classified as mixed use development area. The existing single dwelling housing units have been transformed into commercial high rise building, hotels and residential building.The zoning of the area is mixed use development and high rise buldings. The proposed development will thus fit in with the existing type of buildings in the surrounding neighbourhood.

2.5.1 Parking area and driveway

The proposed project site has exterior ground parking bays paved with Cabro concrete blocks that is enough to accommodate approximately 220 vehicles are designed in the parking silos in the project design.

To ease movement, direction road signs and markings will be installed to ensure smooth traffic flow. A guard house at the main gate is also provided to control and monitor the in-and-out flow of vehicles and people.

2.5.2 Source of power

The development will be connected to the electricity main line of the Kenya Power and Lighting Company which already exists within the project area and thus will be used in all phases of the project. It is also expected that a generator(s) will be installed within the development once complete for back-up power in the event of power outages. The necessary guidelines and precautionary measures relating to the use of electricity shall be adhered to.

2.5.3 Security

Security within and around the project during construction and during operational phases will be enhanced by security guards posted at the site main gate and will be complemented by a CCTV system currently on site. During operation, 24 hours security will be incorporated by having security guards on site, radio call security alarms systems, closed circuit television surveillance and security lighting around and within the premises.

2.5.4 Health and Safety measures

Several health and safety measures will be incorporated into the project design so as to boost the emergency response and preparedness index of the building. Portable fire extinguishers and smoke detectors shall be installed at strategic points in the building to enhance fire safety. Emergency response and “Emergency Exit” notices will also be posted where applicable and appropriate.

2.5.5 Water reticulation

Water from the Nairobi Water & Sewerage Company will be used during the construction phase of the project. It has been proposed that a borehole will be dug within the project site; if this is done water supply from NW&S Co shall be augmented by borehole water during the operational phases of the project. Underground water reservoir tanks shall be built on site while overhead (rooftop) water tanks shall also be used to increase water storage capacity within the project. Necessary pumps shall be installed to facilitate water pumping into overhead tanks.

2.5.6 Storm water run-off

All storm water drainage will be channelled into storm water drains which will be constructed within the project surroundings. The drains will then be channelled to the nearby existing peripheral NCC storm water drainage systems. All inspection chambers in the driveway and parking will have heavy duty covers.

2.5.7 Waste water/Sewerage

Foul water drainage from the building block will be connected to the Nairobi Water & Sewerage Company (NW&SCo) main sewer line running along westlands and parklands area which is highly urbanized. All sanitary works will be up to M.O.H standards.

2.5.8 Landscaping

The project site will be landscaped after construction, using plant species available locally. This will include establishment of flower gardens to improve the aesthetic quality of the site. Sidewalks and decks will also be incorporated around the project site to allow easy access and provide a beautiful finish to the project exterior.

2.6 Description of the project's construction activities

2.6.1 Pre-construction investigations

The implementation of the proposed project's designs and construction phase will start with thorough investigation and studies of the site's biological, physical and socio-economic factors in order to minimize any unforeseen adverse impacts during the project cycle. Infrastructure assessment studies shall also be conducted so as to harmonize the proposed project with existing infrastructure and amenities.

2.6.2 Site set up and management

This will involve activities such as taking the necessary measurements from the blueprints marking the ground, setting up temporary offices and storage areas among others.

2.6.3 Site clearance

Site clearance process will entail removing any obstruction on the way of the intended construction project. This will involve clearing of obstructions including vegetation that may lie within the proposed project path. Selling the materials for the house and structures that need to be demolished. The materials for the old house will be reused since they are in good condition.

Because there are no existing structures on the proposed project site, clearance of existing vegetation such as grasses is expected to occur. Site clearance will result in insignificant generation of solid waste generation which should be disposed by using appropriate methods to be identified within this report.

2.6.4 Ground works

Ground works will involve excavation and digging of trenches for the foundation, back filling and various constructions from the foundation to the roof as guided by the blueprints. Because it is a small project, general construction machinery and manual labour will largely be used.

2.6.5 Construction of foundations and structural works;

The construction of the buildings foundations, walls, floors, pavements, drainage systems among other components of the proposed project will involve a lot of masonry work and related rough carpentry works. General masonry and related activities will include concrete mixing, plastering, slab construction, construction of foundations, construction of the envelope of the building, the external facings, cladding, erection of building walls and curing of fresh concrete surfaces. These activities are known to be labour intensive and will be supplement by machinery such as concrete mixers, pavers and concrete vibrators.

2.6.6 Mechanical and electrical installations and associated trades

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

Plumbing will entail the installation of pipe-work for water supply and distribution will be carried out within the building and associated facilities. In addition, pipe-work will be done to connect the building into the existing sewer system and for drainage of storm water from the rooftops and driveways into the peripheral storm water drainage system.

Other associated trades include as carpentry and joinery, painting, window placement and plastering. These activities will include the use metal, wood, glass, plastic and ceramic tiles cutting, the use of adhesives, metal grinding and wall drilling among other construction materials.

2.6.7 Landscaping and habitat restoration or creation

To improve the aesthetic value or visual quality of the site once construction ceases, landscaping will be carried out. This will include establishment of flower gardens and sidewalks on top of the existing ones to improve the visual quality of the site. The use top soil and indigenous plant species that are available locally is preferable.

2.6.8 Site reinstatement, removal of site offices and final clear away

This includes site reinstatement, removal of temporary building structures such as scaffolds and props, removal of fittings machinery and equipment and final clear away of surplus soil and construction debris.

2.7 Description of the project's operational activities

2.7.1 Residential activities

Once complete, this project will be used purely as residential houses. This means that several residential activities will be carried out within the building. Vehicle use and parking will also provided.

2.7.2 Partitioning, general repairs and maintenance

The building and associated facilities will be repaired and maintained regularly during the operational phase of the project. Such activities will include repair of building walls and floors,

repair and maintenance of electrical gadgets and equipment, repairs of leaking water pipes, painting, maintenance of flower gardens and replacement of worn out materials among others.

2.7.3 Housekeeping

Regular cleaning (sweeping, mopping, vacuum cleaning, polishing etc.) of the buildings floors, carpets, pavements and general compound is expected to be carried out during the operational phase of the project.

2.8 Description of the project's decommissioning activities

2.8.1 Demolition works

Upon decommissioning, the proposed project components including the buildings, pavements, drainage systems, parking areas and perimeter fence will be demolished.

2.8.2 Dismantling of equipment and fixtures

All equipment including electrical installations, furniture partitions, pipe-work and sinks among others will be dismantled and removed from the site on decommissioning of the project.

2.8.4 Environmental restoration

Once everything on the site has been removed by way of demolition, the land will be levelled accordingly and indigenous vegetation reintroduced. This vegetation will include trees, grass and bush.

CHAPTER THREE:

BASELINE INFORMATION OF THE STUDY AREA

3.1 Introduction

This chapter presents the baseline information of the on-going project surrounding. It comprises of: the background information of the project area, constituency, infrastructure, population, climate, economic activities, sources of water, sources of energy and the environment.

3.2 Background information of the project area

Parklands in Westlands is within the suburb of Nairobi, the capital city and largest metropolitan area in Kenya. The area was occupied by Kenyan Indians in the 1900 and the area has changed from one generation to the other from single dwelling units to multi-development and Highrise building . This has been brought about by rapid urbanisation and increase in population

3.3 Constituency

Parklands area is nested in Westlands Constituency, one of the 290 electoral constituencies in Kenya. It is also one of the seventeen (17) constituencies in Nairobi City County as indicated in the map above.

3.4 Infrastructure

Parklands is well served by infrastructure. This area of Nairobi has good communication and transport network such as road and railway. Bus stations are within an easy walk of the neighbourhood. Most roads for example park road Road are tarmac roads.

3.5 Location

Parklands is located approximately 3.5 kilometres (5.9 mi), by road, northwest of the central business district of Nairobi. The coordinates of the project area are:01 12 24S, 36 46 08E (Latitude:-1.2400; Longitude:36.7688).

3.6 Climate

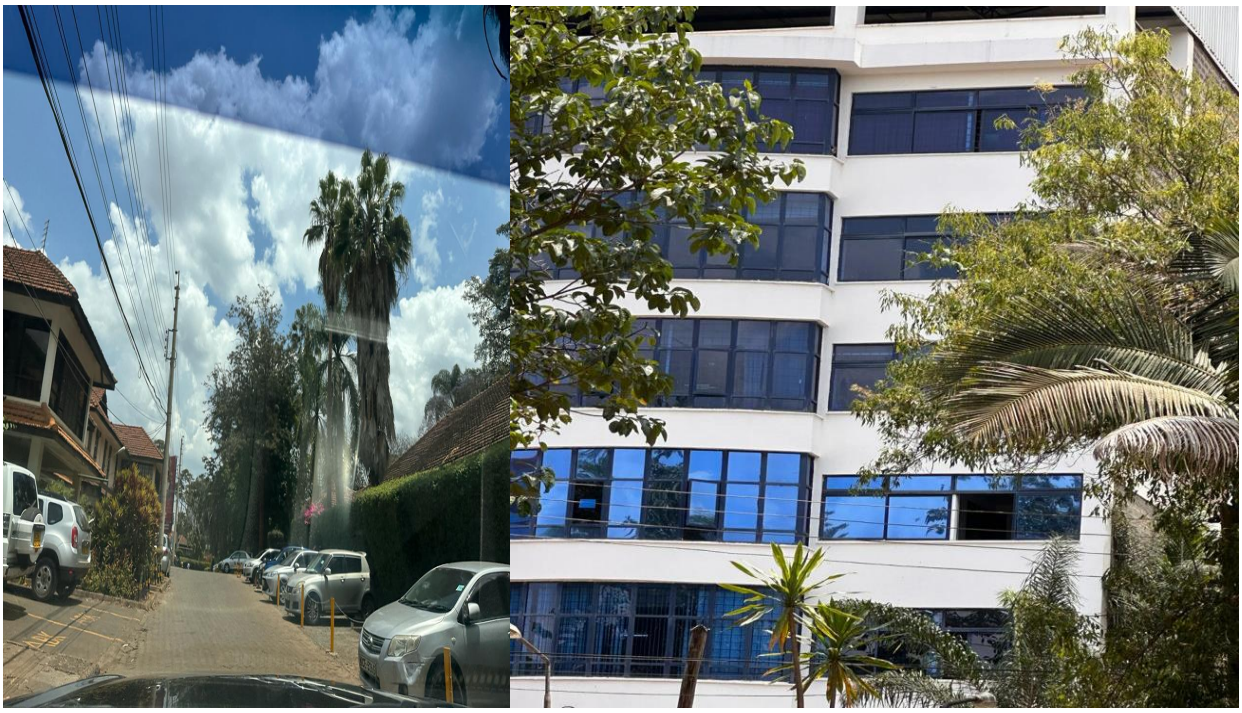
Parklands in Westlands climate is largely a derivative of Nairobi's climate. The climate is warm and temperate. Nairobi has a significant amount of rainfall during the year. This is true even for the driest month. The average annual rainfall is 869mm while the temperature averages at 19^{o} Celcius. The driest month is July with 14 mm of rainfall. With an average of 191mm, most precipitation falls in April. The warmest month of the year is March, with an average temperature of 20.7^{o} Celsius. July has the lowest average temperature of the year at 16.7^{o} Celsius. The difference in precipitation between the driest month and the wettest month is 177mm. During the year, the average temperatures vary by 4.0^{o} Celsius.

3.8 Sources of water

Water supply for residents and businesses of westlands is the Nairobi Water and Sewerage Company (NWSCo). To mitigate water shortages, some residents have sunk bore holes while others use the services of water bowsers during acute shortages. Others harvest rain water to supplement the other sources of water.

3.9 Sources of energy

Being within the vicinity of Nairobi City CBD, Westlands power supply comes from the Kenya Power and Lighting Company Limited. However, in the event of power outages, some residents have installed diesel generators while others use solar panels.



Neighbouring properties along ParklandsRoad

CHAPTER FOUR:

POLICY, LEGAL AND REGULATORY FRAMEWORKS

4.1 Introduction

This chapter presents the policy, legal and regulatory frameworks of the EIA study. It comprises the following main sections: the Environmental Policy Framework the Institutional Framework and the Environmental Legal Framework.

4.2 Environmental Policy Framework

Environmental Impact Assessment (EIA) is a methodology used to identify the actual and probable impacts of the projects and programmes on the environment and to recommend alternatives and mitigating measures. The assessment is required at all stages of project development with a view to ensuring environmentally sustainable development for both existing and proposed public and private sector development ventures. The National EIA regulations were issued in accordance with the provisions of Environmental Management and Coordination

Act (EMCA) of 1999 as amended in 2015. The EIA Regulations must be administered, taking into cognizance provisions of EMCA 1999 and other relevant national laws. The intention is to approve and license only those projects that take into consideration all aspects of concern to the public as they impact on health and the quality of the environment.

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 Environmental Management Authority (NEMA), the Forestry Department, Kenya Wildlife Services (KWS) and others. There are also local and international NGOs involved in environmental issues in the country.

4.3.1 National Environmental Management Authority (NEMA)

The object and purpose for which NEMA is established is to exercise general supervision and co-ordinate 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.

4.4 Environmental Legal Framework

Environmental Management and Co-ordination Act No. 8 of 1999, provide a legal and institutional framework for the management of the environmental related matters. It is the framework law on environment, which was enacted on the 14th of January 1999 and commenced in January 2002. Topmost in the administration of EMCA is National Environment Council (NEC), which formulates policies, set goals, and promotes environmental protection programmes. The implementing organ is National Environment Management Authority (NEMA). EMCA comprises of the parts covering all aspects of the environment.

Part VIII, section 72 of the Act prohibits discharging or applying poisonous, toxic, noxious or obstructing matter, radioactive or any other pollutants into aquatic environment. Section 73 requires that operators of projects which discharge effluent or other pollutants submit to NEMA accurate information about the quantities and quality of the effluent. Section 74 demands that all

effluent generated from point sources are discharged only into the existing sewages system upon issuance of prescribed permit from the Local Authorities.

4.4.1 Environmental Management and Coordination Act (EMCA), 1999 (Amended) 2015

Environmental Management and Co-ordination Act No. 8 of 1999, provides a legal and institutional framework for the management of the environmental related matters. It is the framework law on environment, which was enacted on the 14th of January 1999 and commenced in January 2002. Topmost in the administration of EMCA is National Environment Council (NEC), which formulates policies, set goals, and promotes environmental protection programmes. The implementing organ is National Environment Management Authority (NEMA). EMCA comprises of the parts covering all aspects of the environment.

The Second Schedule to the Act specifies the projects for which an EIA and environmental audit must be carried out. According to the Act, Section 68, all projects listed in the Second Schedule of the Act must undertake an Environmental Impact Assessment, keep accurate records and make annual reports to NEMA or as NEMA may, in writing, require. The Environmental (Impact Assessment and Audit) Regulations, 2003, provide the basis for procedures for carrying out Environmental Impact Assessments (EIAs) and Environmental Audits (EAs).

The main objectives of the Act are to:

i. Provide guidelines for the establishment of an appropriate legal and institutional framework for the management of the environment in Kenya;
ii. Provide a framework legislation for over 70 statutes in Kenya that contain environmental provisions;
iii. Provide guidelines for environmental impact assessment, environmental audit and monitoring, environmental quality standards and environmental protection orders.

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

The Environmental (Impact Assessment and Audit) Regulations, 2003 state in Regulation 3 that "the Regulations shall apply to all policies, plans, programmes, projects and activities specified in Part IV, Part V and the Second Schedule of the Act".

Regulation 4(1) further states that:

> ''…no proponent shall implement a project:
>
> a) likely to have a negative environmental impact; or
>
> b) for which an environmental impact assessment is required under the Act or these Regulations; unless an environmental impact assessment has been concluded and approved in accordance with these Regulations…''

Compliance

The Proponent has commissioned the carrying out of an Environmental Impact Assessment for submission to NEMA for approval.

The Proponent undertakes to protect the environment during the implementation (Construction and Operation) of the project and also carry out annual Environmental Audits.

4.4.3 Waste Management Regulations, 2006

Part II of the Waste Management Regulations 4 (1) states that no person shall dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated receptacle. Regulation 4 (2) further states that a waste generator shall collect, segregate and dispose such waste in the manner provided for under the regulations.

Compliance

The proponent has undertaken to ensure that all waste generated is collected and handled appropriately and disposed off at a designated waste disposal sites.

4.4.4 Noise and Excessive Vibrations Pollution Control Regulations of 2009

Part II of the Noise and Excessive Vibrations regulations, regulation 3 (1) states that Except as otherwise provided in these Regulations, no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.

Regulation 4 of the Noise and Excessive vibrations: - states that except as otherwise provided in the Regulations, no person shall-

(a) make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; or

(b) cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source;

Regulation 11 on Machinery: - states that any person wishing to

(a) operate or repair any machinery, motor vehicle, construction equipment or other equipment, pump, fan, air-conditioning apparatus or similar mechanical device; or

(b) Engage in any commercial or industrial activity, which is likely to emit noise or excessive vibrations shall carry out the activity or activities within the relevant levels prescribed in the First Schedule to the Regulations as shown in the **Table 2 and 3** below.

Table 2: First Schedule: Maximum Permissible Noise levels

Zone		***Sound Level Limits dB(A)***		***Noise Rating level (NR)***	
		(Leq, 14h)		***(Leq, 14h)***	
		Day	Night	Day	Night
A	Silent Zone	40	35	30	25
B	Places of worship	40	35	30	35
C	Residential: Indoor	45	35	35	25

	Outdoor	50	35	40	25
D	Mixed residential (with some commercial and places of entertainment)	55	35	50	25
E	Commercial	60	35	55	25

Time Frame

Day: 6:01 a.m.-8:00 p.m. (Leq, 14h)

Night: 8:01 p.m. – 6:01 a.m. (Leq, 10h)

Table 3: Second Schedule: Maximum Permissible Noise Levels for Construction Sites

Facility		Maximum Noise Level Permitted (Leq) in dB(A)	
		Day	**Night**
(i)	Health facilities, educational institutions, homes for disabled etc	60	35
(ii)	Residential	60	35
(iii)	Areas other than those prescribed in (i) and (ii)	75	65

Compliance

The proponent has undertaken to ensure that all noise and vibration are kept below the maximum allowable threshold.

4.4.5 Water Quality Regulations, 2006

Part II of the Water Quality Regulations 4 (1) states that 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 the Act. Regulation 4 (2) further states 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.

Regulation 6 (b) further states that no person shall abstract ground water or carry out any activity near any lakes, rivers, streams, springs and wells that is likely to have any adverse impact on the quantity and quality of the water, without an Environmental Impact Assessment license issued in accordance with the provisions of the Act; or (C) cultivate or undertake any development activity within a minimum of six meters and a maximum of thirty meters from the highest ever recorded flood level, on either side of a river or stream, and as may be determined by the Authority from time to time.

Compliance

The proponent undertakes to safeguard any natural water bodies within or near the project site.

4.4.6 Water Act, 2002

Section 25 (1) of this Act states that a permit shall be required for any of the following purposes: any use of water from a water resource, except as provided by Section 26;

- the drainage of any swamp or other land;
- the discharge of a pollutant into any water resource; and
- Any purpose, to be carried out in or in relation to a water resource, which is prescribed by rules made under this Act to be a purpose for which a permit is required.

Part II, Section 18, of this Act provides for national monitoring and information system on water resources. Following on this, Sub-section 3 of the same Section, allows 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 facility operator and the information thereof furnished to the Authority.

Compliance

The proponent undertakes to safeguard any natural water bodies within or near the project site.

4.4.7 The Energy Act, 2006

The Act establishes an Energy Regulatory Commission mandated to perform all function that pertains to energy production, transmission, setting and enforcing of energy policies, Public education and enforcing energy conservation strategies, prescribing the energy licensing process and issuing of licenses that pertain to energy sector in Kenya. Section 30 of the Act provides the factors that shall be taken into consideration prior to issuance of license.

It states the need and expression of an entity to conserve and protect the environment and natural resources in accordance to the Environmental and Coordination Act of 1999 (No. 8 of 1999), moreover, the Act gives provisions for the need to protect health and safety of users of energy by providing an enabling environment of operation that protects the health and safety of users of the service for which the license or permit is required and other members of the public affected by the undertaking.

4.4.8 The Occupational Safety and Health Act, 2007

This is an Act of Parliament to make provision for health, safety and welfare of persons employed in factories and other places, and for matters incidental thereto and connected therewith.

4.4.8.1 Building Operations and Works of Engineering Constructions

The provisions of the Factories and Other Places of Work Act relevant to engineering construction works are contained in the Abstract of the Act for Building Operations, and Works of Engineering Construction Rules. These are summarized in Table 5 below.

Table 4: Build operations and works of engineering constructions

Legal Requirements	**Description**
General requirements	
Give notice of particular operations or works	Notice should be sent in writing to the Occupational Health and Safety Officer, not later than seven days after commencement of construction and building works except where the construction works will be complete in less than six weeks or notice had already been given to the Occupational Health and Safety Officer
General Register	A general register of every person undertaking building operations or construction works is kept in adherence to the prescribed form. This register is kept at the site of operations or at the office of the person undertaking the operations or works. The register should contain: ➢ The certificate of registration of the workplace; ➢ Every other certificate issued by the Chief Inspector under this Act; ➢ The prescribed particulars as to the finishing (washing, white washing, colour washing, painting or varnishing) of the facility; ➢ The prescribed particulars as to every accident and case of occupational disease occurring in the workplace of which a notice is required to be sent to a labour officer under the provisions of any law for the time being in force; ➢ All reports and particulars required by any other provision of this Act to be entered in or attached to the general register; ➢ Such other matters as may be prescribed in the Occupational Safety and Health Act, 2007.
Safety Requirements	
Air receivers	➢ These should be of sound construction and be properly maintained. They should be thoroughly examined by a competent person at intervals of 24 months and the reports of such examinations attached to the General Register.
Cylinders for compressed, liquefied and dissolved gases	➢ Such cylinders should be of good construction, sound material, and adequate strength and free from patent defect. The cylinders should conform to standards specified under the Standards Act or to a prescribed standard specification, approved in writing, by the Director, Kenya Bureau of Standards. They should be thoroughly examined by a competent person at regular intervals and a maintenance register kept
Notification of accidents	➢ The particulars of an accident causing death or disablement of a worker for more than three days from earning full wages at the work place where he was employed must be sent in the prescribed form to the Occupational Health and Safety Officer and entered in the General Register. Certain dangerous occurrences must also be reported whether or not they cause disablement

Health Requirements	
Sanitary accommodation	➢ Sufficient and suitable sanitary conveniences must be available for persons employed. These must be kept clean and well lit
Miscellaneous Requirements	
Prohibition of deduction from wages	➢ The occupier must not make a deduction from wages in respect of anything he has to do or provide in pursuance of the Factories Act or permit any person in his employment to receive payment from other employees for such services
Duties of persons employed	➢ An employee must not willfully interfere with or misuse any means, appliance, convenience or other thing provided in pursuance of the Act for securing health, safety or welfare provided for his use under the Act. ➢ He must not willfully and without reasonable cause do anything likely to endanger himself or others.
Inspection	➢ The Occupational Health and Safety Officer has the power to inspect every part of the premises by day or by night. He may require the production of registers, certificates and other papers. May examine any person alone or in the presence of any other person as he thinks fit and may require him to sign a declaration of truth of the matters about which he is examined. ➢ Every person obstructing an Occupational Health and Safety Officer is liable to a penalty.

4.4.9 Public Health Act (Cap. 242)

Part IX, section 115, of the Act states that no person/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 be injurious or dangerous to human health.

Such nuisance or conditions are defined under section 118 as waste pipes, sewers, drainers or refuse pits in such state, situated or constructed as in the opinion of the medical officer of health to be offensive or injurious to health. Any noxious matter or waste water flowing or discharged from any premises into the public street or into the gutter or side channel or watercourse, irrigation channel, or bed not approved for discharge is also deemed as nuisance. Other nuisances are accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbour rats or other vermin.

Compliance

The Proponent undertakes to safeguard the environment ensuring that all solid waste or waste water effluent emanating from the proposed project is discharged appropriately.

4.4.10 Physical Planning Act, 1999

The Local Authorities are empowered under Section 29 of the Act to reserve and maintain all land planned for open spaces, parks, urban forests and green belts. The same section, therefore allows for the prohibition or control of the use and development of land and buildings in the interest of proper and orderly development of an area.

Section 30 states 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.

Finally, section 36 states that if connection with a development application, Local Authority is of the opinion that the proposed development activity will have injurious impact on the environment, the application shall be required to submit together with the application an environment impact assessment EIA report. EMCA, 1999 echoes the same by requiring that such an EIA is approved by the NEMA and should be followed by annual environmental audits. Land Planning Act (Cap. 303).

Section 9 of the subsidiary legislation (The Development and Use of Land Regulations, 1961) under this Act requires that before the Local authorities submit any plans to then Minister for approval, steps should be taken as may be necessary to acquire the owners of any land affected by such plans. Particulars of comments and objections made by the landowners should be submitted. This is intended to reduce conflict with the interest such as settlement and other social and economic activities.

Compliance

The Proponent has launched and obtained and shall apply for any other required approvals of the project development and licences from all relevant Local Authority Offices.

4.4.11 Planning and Building Regulations 2009

T hese Regulations are a guide on good planning and building practice. They set out, in the simplest and shortest way possible, requirements to ensure that planning will be so undertaken and buildings are designed and built in such a way that persons may live and work in a healthy, safe and convenient environment.

The overall aim of these Regulations is to promote and enhance planning and its enforcement at all levels; to encourage optimal use of resources; enhance safety, health and convenience; and to improve acceptability and compliance of these Regulations**.**

Compliance

The proponent contracted the services of a registered architect who used these regulations to develop the project designs.

4.4.12 Urban Areas and Cities Act No 13 of 2011

The Act came into function with regard to Article 184 of the Constitution providing regulations on the classification, governance and management of urban areas and cities and further providing the criteria of establishing urban areas. Part III of the Act gives the regulations and functions of every city or municipality with regard to integrated development plans, which shall include but not limited to environmental plans and disaster preparedness, within the area of jurisdiction in achieving objects of devolved governments under section 174 of the constitution while maintaining the socio-economic rights of the people.

Moreover, in the first schedule, the Act enlists the services the services that the any municipality shall provide to its residents which include but not limited to traffic control and parking, water and sanitation, refuse collection, solid waste management, pollution abatement services among others.

4.4.13 Public Roads and Roads of Access Act (Cap. 399)

Sections 8 and 9 of the Act provides for the dedication, conversion or alignment of public travel lines including construction of access roads adjacent lands from the nearest part of a public road.

Section 10 and 11 allows for notices to be served on the adjacent land owners seeking permission to construct the respective roads.

4.4.14 The Environment and Land Court Act, 2011

This Act is in place to give effect to Article 162(2) (b) of the Constitution; to establish a superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to, land, and to make provision for its jurisdiction functions and powers, and for connected purposes.

4.4.15 Licenses and permits

Ideally, the Proponent should demonstrate compliance to the legislation through acquiring of the appropriate licenses and permits. Further all contractors and consultants who will be engaged during the planning and design, construction, operation and maintenance and decommissioning should demonstrate compliance to the necessary pieces of legislation.

Those who will be involved should therefore provide the Proponent with all legal documents that shows that they are legally in the business or services that they intend to deliver to the Proponent. These includes: NEMA registration certificates and licenses, trade licenses, etc.

Compliance

The Proponent has launched and obtained and shall apply for any other required approvals of the project development and licences from all relevant Local Authority Offices.

4.4.16 The Kenya Vision 2030

The Kenya Vision 2030 is Kenya's long-term development plan covering 22 years from 2008-2030. The blueprint's main agenda is to transform Kenya into a middle-income country by the year 2030. The plan has three main pillars that the architects saw as important areas that the government ought to put emphasis on. They include: the economic, the social and the political.

According to the plan, the economic pillar aims to improve the prosperity of all Kenyans through an economic development programme covering all regions of Kenya and aiming to achieve an average Gross Domestic Product (GDP) growth rate of 10% per annum beginning with the year

2012. The social pillar seeks to build a just and cohesive society with social equity in a clean and secure environment while the political pillar aims to realise a democratic political system founded on issue-based politics that respect the rule of law and protects the rights and freedoms of every individual in Kenya.

Compliance

Besides feeding into the economic and pillar of the vision, the proponent affirms to contributing to the environmental pillar by abiding by all environmental laws and regulations.

4.4.17 Architects and quantity surveyors act chapter 525

Is an Act of Parliament to provide for the registration of Architects and Quantity Surveyors. Section 3 Subsection (1) of this Act restricts the use of titles "architect", architecture", "architectural", "quantity surveyors" or "quantity surveying" to persons registered under this Act. Under Section 6 Subsection (1) and (2), the registrar shall keep and maintain a register of qualified persons under this Act. Under Section 7, no person shall be registered as an architect unless (a) has attained the age of twenty-one years; and (b) (1) has a minimum of 5 years of approved training followed by at least 1 year of practical experience in the work of an Architect to the satisfaction of the Board, and has passed a prescribed exam; or has been admitted as a corporate member of an approved professional institution whose qualifications for such admission are not less than those set out in subparagraph (i) of this paragraph; and (c) has had a minimum of one year of professional experience in Kenya to the satisfaction of the Board or has satisfied the Board that he has otherwise acquired an adequate knowledge of Kenya building contract procedures; and (d) has paid the prescribed registration fee.

Under Section 8 the qualification for registration as a Quantity Surveyor are outlined. No person shall be registered as a Quantity Surveyor unless: (a) has attained the age of 21 years; (b) (i) has passed a prescribed exam; or (b) (ii) has been admitted as a corporate member of an approved professional institution whose qualifications for such admission include the equivalent of such prescribed exams; and (c) has had a minimum of 1 year of professional experience in Kenya to the satisfaction of the Board or has satisfied the Board that he has otherwise acquired an

adequate knowledge of Kenya building contract procedures; and (d) has paid a prescribed registration fee.

Compliance:

The proponent confirms that they sought the services of a registered architect and quantity surveyor to prepare the project's Architectural drawings and bill of quantities.

4.4.18 The registration of Titles Act Chapter 281

The Registration of Titles Act is an act of Parliament that provides for the transfer of land by registration of titles. When the Commissioner of land issues a letter of allotment to any person in respect of any land, one of the laws under which the title to that land is issued is the Registration of Titles Act. A freehold title issued under this act confers absolute control upon individuals or other legal entities upon a given parcel of land. It also confers upon them power to determine the use to which such land can be put. A leasehold title contains conditions such as the term of the lease, commencement date thereof, the user of the land etc. Private ownership of land is embodied in this Act.

Comment on relevance of this law to this project:

*Property in Kenya can be acquired on freehold or leasehold basis. A freehold title will give the owner absolute proprietorship over the land in perpetuity. On the other hand, Leasehold property is held on a government lease for a specified period of time, which is usually **50 or 99 years**. At the end of this period, the landowner applies for an extension (a process that takes **approximately 6 months**) of the lease, which is usually granted.*

*Freehold and leasehold land in Kenya are subject to local authority rates which are usually a fraction of the unimproved site value. However, leasehold is further subject to Land Rent, based on the size of the land. For most properties, payment is in form of a **10%** deposit and the balance within **60-90 days.***

It is important that the developer is aware of these modes of property ownership before committing his/her resources to the project implementation. The nature of ownership will also affect the disposal of the units once complete.

4.4.19 The Land Titles Act (Chapter 282) Revised in 2010

Is an Act of Parliament to make provision for the removal of doubts that have arisen in regard to titles to land and to establish a Land Registration Court. According to Section 10 Subsection (1) of the Act, land surveyors are empowered to survey land, make a plan or plans and define and mark the boundaries; and when and where directed by the Recorder of Titles, either before, during or after the termination of any question concerning land or any interest connected to a piece of land.

Comment on relevance of this law to this project:

This law is relevant to this project when making the subdivision plan of the project's piece of land and in the verification of the true owner of the said piece of land prior to the subdivisions.

4.4.20 Nairobi County zoning ordinance

The Nairobi City County Zoning ordinance is meant to regulate the height and type of developments in the different zones of Nairobi in order to enhance harmony and orderliness in these zones. According to the current Nairobi City County Zoning Ordinance, the area where the ongoing project is located falls under zone three with the type of development allowed being commercial, offices, residential (High Rise Flats) to a maximum of four story's up.

Compliance:

The proponent of the proposed project will abide by the zoning policy of Kitisuru Estate.

4.4.21 The National Construction Authority (NCA) Regulations 2014

The National Construction Authority (*NCA*) is a Government Parastatal which regulates, streamlines and builds capacity in the construction industry in Kenya. The mandate of the body is to regulate the construction industry and coordinate its development. In this regard NCA has a number of regulations which a developer MUST abide with.

According to paragraph 17 Sub-paragraph (1), all construction works, contracts or projects either in the public or private sector *shall be registered with the authority* in accordance with the Act. According to paragraph 17 Sub-paragraph (2) an owner shall make an application for registration

of a project to the National Construction Authority (NCA) in writing *within 30 days from the date on which a tender* for construction works, contract or project is awarded to a contractor registered under this Act. Paragraph 17 Sub-paragraph (3) and (4) outline the procedure for undertaking the registration. Provisions of Regulation 17 Sub-regulation (5) directs owners of projects to ensure that construction jobs or works, contracts, projects or tenders are awarded to a person, firm or contractor *registered under this regulations*. According to paragraph 17 Sub-paragraph (6), NCA shall, within 30 days from receipt of the duly completed application form register the construction works, contract or project and issue a compliance certificate. Provisions of paragraph 17 (7),(8) and 18 (1) and (2) further elaborate on matters relating to the registered construction works. According to the NCA Paragraph 25, there shall be payable to the authority by the owners of any construction works *a construction levy of 0.5%* of the value of the contract sum in respect of any construction works whose value *exceeds 5 million Kenya Shillings*. Provisions of Paragraph 26 (1) direct every owner to notify and submit to the NCA, in a prescribed form, the details of any contract or project which it has been awarded to a contractor whose sum or value exceeds 5 million Kenya Shillings for purposes of payment of the construction levy provided under Section 31 of the NCA Act 2011. Provisions of paragraph 26 (2), (3), (4), (5), (6), (7) and (8) further give guidance on matters connected with the 0.5% construction levy and the consequences of non-compliance.

Comments on relevance of these regulations to this project:

These regulations are relevant to this project as the owner of the development is required to:

i. *Register his/her project with the National Construction Authority (NCA);*
ii. *Award the construction tender to a contractor registered with NCA; and*

4.4.22 The National Construction Authority (NCA) Act 2011

Is an Act of parliament that established the NCA under provisions of Section 3 (1) and Section 3 (2). The functions of the authority as outlined under Section 5 Subsection (1) is to oversee the construction industry and coordinate its development. Subsection 2 from Clause (a) to (n) outline the core functions of the authority in detail. At the centre of the Act is the registration of

contractors as outlined under provisions of Section 17 Subsections (1), (2), (3), (4) and (5). Under Section 19 Subsection (1), a register of approved contractors shall be kept. Subsection (2) lists the contents of that register. The third Schedule of the Act lists the classes of contract works.

Comments of relevance of the law to this project:

The Act is relevant to this project in the following ways:

1. *When the developer will be required to register their construction project with the NCA*
2. *When the developer/owner will be required to use contractors only registered with the authority (NCA)*
3. *The Act supports the NCA regulations mentioned earlier under section 3.3*

4.4.23 The County Government Act 2012

Another law that is relevant to this project is the County Governments Act 2012. This is because the project will be constructed in Nairobi County; one of the 47 Counties of Nairobi. Under Section 5 Subsection 2 of the Act from (a) to (f) functions of County governments are explicitly outlined. Under Section 6 Subsection 2 from (a) to (c), the power of County governments have been outlined. Section 37 of the Act from Clause (a) to (d) outlines the roles of the executive committee in urban area or city planning. Under Section 102 from Clause (a) to (i) the principles of planning and development facilitation have been outlined. Section 103 from Clause (a) to (j) outlines the objectives of county planning.

Under Section 105 Subsection (1) from Clause (a) to (f), the responsibilities of County Planning unit have been outlined. Section 106 Subsections (1), (2), (3) and (4) outline the factors that ought to be considered when integrating national and County Planning. Section 107 Subsection (1) from Clause (a) to (d), the types and purposes of County plans have been listed. Section 108 Subsection (1) from Clause (a) to (d), give the guidelines for the development of County Integrated Development Plans.

Section 108 Subsection (2), (3), and (4) further elaborate on the guidelines of preparing County Integrated Development Plans. Section 109 Subsections (1) and (2) outline the procedures of developing county sectoral plans while Section 110 Subsections (1), (2), (3) and (4) outline the

requirements of County Spatial Plans. Under Section 111 Subsection (1), plans that are under the municipality and/or City have been listed. Subsection (2) notes that city or municipal plans shall be instruments for development facilitation and development control within the respective city or municipality.

It is important that the developer acquaints him or herself with these plans to establish whether the proposed development is aligned with their contents. Section 111 Subsection 3 from Clause (a) to (l) outlines the mandatory contents of a city or municipal plan. Section 111 Subsection (4) reiterates that city or municipal land use and building plans shall be binding on all public entities and private citizens operating within the particular city or municipality.

Comments on relevance of the law to this project:

i. *This law is relevant to this project because the project will take place in one of the 47 Counties of Kenya-Nairobi County.*
ii. *The law empowers counties and particularly Nairobi County to plan for development and oversee any development within its jurisdiction.*

In this regard, the County of Nairobi has its own development and zoning ordinance guidelines in addition to City By-Laws that every developer and citizen within Nairobi has to abide with.

4.4.24 The Constitution of Kenya 2010

The Constitution of Kenya is the supreme law of the land and was promulgated on the August 27th of 2010. This new constitution moved the country from a centralized system of government to a devolved one; by paving the way for the creation of the 47 Counties. According to Article 40 (1), every person has the right, either individually or in association with others to acquire and own property; of any description in any part of Kenya.

In the Fourth Schedule of the new Constitution 2010, a distribution of functions between the national government and the County governments is outlined. Thirty Five (35) functions are a preserve of the national government while fourteen functions are the responsibility of the County governments. Among the (14) functions of County governments; functions 2(g), 3, 4, 5, 7 and 8 are relevant to this project.

According to Article 42**,** every person has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and to have obligations relating to the environment fulfilled under Article 70.

Under Article 69 of the Constitution of Kenya, there are eight obligations to the state with respect to the environment. Those that are relevant to this study include: obligation (*d*) encourage public participation in the management, protection and conservation of the environment; obligation (*f*) establish systems of environmental impact assessment, environmental audit and monitoring of the environment; and obligation (*g*) eliminate processes and activities that are likely to endanger the environment

Article 69 (2), compels every person to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Compliance:

The proponent will abide by the articles of the constitution when implementing the proposed project.

Sustainable Waste Management Act 2022

The Acts ensure the realisation of the constitutional provision on the right to a clean and healthy environment and for connected purposes

Compliance

To promote a clean environment, promote the 3R(Reduce, Reuse and Recycle) waste Secondly the proponent will also promote reduction in generation and disposal of waste; "waste service providers" including collectors, transporters, waste processors, material recovery operators, recyclers and landfill operators; and "waste valorisation" will be sourced

The Climate Change Act No. 11 Of 2016

The provisions expect all developers to adhere to the provisions of the Act and mitigate through enhanced energy conservation, efficiency and use of renewable energy in the proposed apartments development and other uses as well as planting of favourable vegetation.

Compliance

The Proponent is to install solar lighting, provisions of open spaces using natural lighting. Planting of trees and flowers to improve the micro -climate of the area

CHAPTER FIVE:

PUBLIC PARTICIPATION

5.1 Introduction

This chapter describes the process of the public consultation/participation followed to identify the key issues and impacts of the proposed single dwelling housing project in Kitisuru. Views from the general public, who in one way or the other would be affected by the proposed project were sought through oral interviews, administering of questionnaires and meetings. The various concerns and proposed mitigation measures suggested by the public, neighbours and other stakeholders have been integrated in the report. The exercise was conducted by a team of experienced registered environmental experts. The objective of the consultation and public participation was to:-

i. Disseminate and inform the stakeholders about the project with special reference to its key components and location

ii. Gather comments, suggestions and concerns of the interested and affected parties

iii. Incorporate the information collected in the EIA Study Report

The Consultation and Public Participation (CPP) Process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA 2015 section 58, on

Environmental Impact Assessment for the purpose of achieving the fundamental principles of sustainable development.

5.2 Issues raised

This sub-section covers the views and opinions of the key stakeholders. It highlights both positive and negative socio-economic and environmental impacts anticipated during the construction and operational phases of the project. This is then followed by suggested mitigation measures that the proponent ought to incorporate to minimize environmental degradation and promote sustainable development.

5.3 Positive comments

Several positive impacts shall emanate from the proposed project as both directly and indirectly as viewed by the public. They include:-

i. The project shall lead to the creation of employment during both the construction and operational phases both directly and indirectly.
ii. The currently idle spaces on the land shall be used optimally through the implementation of the project.
iii. The construction shall create demand for construction material and other electronic installations.
iv. Through acquisition of various licences and approvals, the proponent will pay various levies thus supporting the government of the nation.

5.4 Negative concerns

The identified negative impacts of the project were as detailed below.

5.4.1 Noise and Dust emissions

Noise and Dust emissions will be generated at the project site during construction which if unmitigated can interfere with neighbours comfort and health.

5.4.2 Obstruction and traffic increase

Obstruction by construction transport vehicles during the construction phase and increased number of vehicles coming to and from the project site during the operational phase will lead to increase in traffic on Parklands and Mpaka Road. If entry and exit access routes to the proposed project site are not planned well, traffic flow along the road will be also be disrupted.

5.4.3 Insecurity

The proposed project may cause an increase in insecurity during the construction phase due to the increased number of transient workers and suppliers within and around the project site.

5.4.4 Over stretching of infrastructure

It was raised by some stakeholders that the conversion of idle spaces in the land to a residential building may put pressure on the existing public utilities and infrastructure such as sewer lines, water mains supply and roads

5.4.5 Clearing of existing vegetation

The section on which the proposed project is to is currently occupied a mature tree. The construction of the proposed will thus inevitably lead to loss of some of the tree. It is recommended that the tree be replaced with another once construction is completed.

5.4.6 Increased water and electricity demand

It is expected that both the workers and the construction works will create an increased demand for water and electricity in addition to the existing demand.

5.5 Suggestions and recommendations

i. Consult all relevant service providers and relevant authorities (i.e. KURA, KPLC, NCC, NW&SCo, NEMA amongst others) so as to harmonize the projects infrastructural and socio-economic developments with existing facilities

ii. Ensure an elaborate landscaping program is put in place as the construction phase is being concluded so as to replenish vegetation around the project site by planting trees, flowers and lawns where applicable

iii. Increase security during construction and operational phases by ensuring security guards are always posted within and around the project site and strategic placement of security lights around the site

iv. Adhere to all relevant construction, occupational, health and safety regulations and any other relevant law.

v. It was also suggested that renewable energy should be used where applicable

CHAPTER SIX:

ANALYSIS OF PROJECT ALTERNATIVES

6.1 No project alternative

No Project option with respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions.

This option will however, involve several losses both to the landowner and the community as a whole. The landowner will continue to pay land rent on the plot while the property remains underutilized. The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

a) The economic status of the local people would remain unchanged.
b) No employment opportunities will be created for Kenyans who will work in the project area.
c) Increased urban poverty and crime in Kenya.
d) No development shall be provided to alleviate a critical shortage.
e) Discouragement for investors

From the analysis above, it becomes apparent that the No Project alternative is not an alternative to the developer, Kenyans, and the government of Kenya.

6.2 Relocation option

Relocation option to a different site is an option available for the project implementation. However, at present the landowner/developer does not have an alternative site. This means that he has to look for the preferred land. Looking for the preferred land to accommodate the nature of this project and completing official transaction on it may take up to two (2) years although there is no guarantee that the land would be available. The developer will spend more time on design and approvals since design and planning has to be according to site conditions.

Project design and planning before the stage of implementation will cost the developer a large sum of money. Whatever has been done and paid to date will be counted as a loss by the developer. In addition, the time wasted on these deliberations would cause delays that the proponent and our economy can ill afford. This would also lead to a situation like No Project Alternative option. The other consequence of this is that it would be a discouragement for private/local investors especially in the commercial development sector.

In consideration of the above concerns and assessment of the current proposed site, relocation of the project is not a viable option.

6.3 Carrying on with the proposed development

Under the proposed project alternative, the proponent of the proposed project would be issued with an EIA License. In issuing the license, NEMA would approve the proponent's proposed development, provided all environmental measures are complied with during the construction period and occupation phases. This alternative consists of the applicant's final proposal with the inclusion of the NEMA regulations and procedures as stipulated in the environmental impacts to the maximum extent practicable. *This is the most suitable option.*

6.4 Analysis of alternative construction materials and technology

The buildings will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment and materials that save energy and water will be given first priority without compromising on cost or

availability factors. The concrete pillars and walls will be made using locally sourced stones, cement, sand, metal bars and fittings that meet the Kenya Bureau of Standards requirements.

Beautiful and durable clay tiles will be used because they are good in heat insulation as compared to the iron sheet roofs. This will ensure that the rainwater harvested will be used in gardening and other purposes. Heavy use of timber during construction is discouraged because of destruction of forests. The indigenous species would be preferred to foreign species in the construction where need will arise.

6.5 Domestic waste water management alternatives

Three suitable technologies are discussed below:

6.5.1 Alternative one: Connection to the sewer system

Connection to an existing main sewer line will solve the waste water management issue at a very minimal cost and in an environmental efficient manner. Currently this option is available and considered the best option since the existing sewer line runs along the plot boundary.

6.5.2 Alternative two: Construction of a treatment plant

This involves the construction of a treatment plant. A network of plant effluent drains, Aeration Pits, Tanks etc., It is very expensive to construct and not suitable for the domestic waste water to be generated from the building and in a town setup. Centralized treatment plants can cause a nuisance of bad odour to tenants near the plant and are usually neglected after a few years leading to breakdowns and malfunctions which may also lead to other environmental problems such as emission of raw effluent to the environment This option is thus not suitable.

6.5.3 Alternative three: Use of septic tanks

This involves the construction of underground concrete-made tanks to store the sludge with soak pits. It is not expensive to construct however regular empting in large Environmental discharge points like the large scale commercial building development is required. Given the kind of wastewater that will be emanating from the proposed project this option is viable.

6.5.4 Alternative three: Use of Bio-digester

Bio-digester is an on-site sanitation unit that utilizes anaerobic technology for the disposal of toilet (black) wastewater as well as of kitchen and bathroom (grey) water, in a closed system. This is a sanitation technology, which treats wastewater in an environmentally friendly manner, facilitating its use for irrigation or its return to water bodies without polluting them. The process also generates organic fertilizer and biogas (a form of fuel) by allowing naturally occurring bacteria to break down solid waste. From the analysis and economic as well as environmental; considerations use of bio-digester system is not a viable option for the proponent to adopt in order to supplement connection to the sewer system.

6.6 Solid waste management alternatives

A lot of solid wastes will be generated from the proposed project. An integrated solid waste management system is recommendable. First, the proponent will give priority to Reduction at Source of the materials. This option will demand a solid waste management awareness programme by the proponent.

Secondly, Recycling, Reuse and composting of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place. The waste will be sold to waste buyers within the surrounding area or be collected by a private waste management company.

The third priority in the hierarchy of options is combustion of the waste that is not recyclable. Finally, sanitary land filling will be the last option for the Proponent.

CHAPTER SEVEN:

ENVIRONMENTAL IMPACTS

7.1 Introduction

This section identifies and discusses both positive and negative impacts associated with the proposed project. The potential impacts from the proposed project area are identified and

assessed based on the nature, magnitude and merits/or demerits of the various activities associated with the project.

7.2 Negative impacts during construction phase

The following negative impacts were found to be associated with the construction of the proposed project during the construction phase.

7.2.1 Loss of vegetation

Before the construction process begins clearing of some of the existing vegetation cover will occur, especially within the areas where the building is to be constructed. The project designers have taken great care to ensure that the portions earmarked for construction of the proposed project building avoid areas currently occupied by mature trees.

7.2.2 Noise pollution and vibration

During construction, some noise and vibrations may be generated from increased movement; concrete mixer; trucks; concrete pumps; concrete vibrators; dump trucks; hammering; diesel generators; and even construction workers. Again, because the project is not massive, the noise is expected to be manageable.

The impact of noise and vibrations on the surrounding community depends upon:

i. Characteristics of the noise and vibrations source (instantaneous, intermittent, or continuous in nature);

ii. Time of day at which noise and vibrations occur; and

iii. Location of noise and vibrations source with respect to sensitive receptor.

Though the level of discomfort caused by noise and vibrations is subjective, the most commonly reported impacts of increased noise levels are interference in oral communication, hearing loss, anxiety and disturbance of sleep.

Noise and vibrations may also have an impact on the workers in the proposed project. Nonetheless, all the noise and vibrations generating activities shall be undertaken during day hours and appropriate measures shall be instituted to counter the said pollution.

7.2.3 Impact on air quality (generation of exhaust and dust emissions)

Potential impacts on the air quality during the construction stage will be due to the fugitive dust and the exhaust gases generated in and around the construction site. However, because the project is not massive, the impact on air quality will not be major.

7.2.4 Disposal of solid waste

Construction activities create solid wastes that need to be disposed. Such wastes include: Sand, Concrete, Gravel, Stones, Bricks, Plastics, Paper, Wood, Metals, Glass, and Cleared biomass among others. These wastes if handled inappropriately may have a direct impact on surrounding properties. Disposal of the same solid wastes off-site could also be a social inconvenience if done in wrong places. The off-site effects could be un-aesthetic view, pest breeding, unhygienic conditions, choking of nearby drains and pollution of physical environment. The severity of such impacts will depend upon the magnitude and type of construction waste. All construction waste should be disposed in sites approved by the Nairobi City County by NEMA licensed firms.

7.2.5 Surface and ground water hydrology and water quality degradation

Construction activities for the proposed development could have impacts on hydrology and ground water quality of the area. Changes in surface hydrology can occur due to landscaping; construction of impervious surfaces such as parking lots, roads and buildings (buildings increase the volume and rate of runoff, resulting in habitat destruction, increased pollutant loads, and flooding); blockage of existing drainages can also influence groundwater hydrology (i.e. recharge rates, flow, conditions).

7.2.6 Increased water demand

During the construction phase, both the construction works and the construction workers will create additional demand for water in addition to the existing local demand. Water will mostly be used in the creation of concrete for construction works and for wetting surfaces or cleaning completed structures. It will also be used by the construction workers for washing and drinking. Again, compared to other construction projects, the demand will no be higher than average.

7.2.7 Energy consumption

The proposed project will consume fossil fuels for construction machines (mainly Concrete mixers, heavy and light trucks; concrete pumps; concrete vibrators; dump trucks; diesel generators) to run.

Fossil energy is non-renewable and its excessive use may have serious environmental implications on its availability, price and sustainability. The proposed project will also use electricity supplied by Kenya Power and Lighting Company (KPLC) Ltd. Electricity in Kenya is generated mainly through natural resources, namely, water, wind and geothermal resources. In this regard, there will be need to use electricity sparingly since high consumption of electricity negatively impacts on these natural resources and their sustainability.

7.2.8 Insecurity risks

The proposed project may cause an increase in insecurity during the construction phase due to the increased number of transient workers and suppliers within and around the project site. Construction sites are known to attract large numbers of semi-skilled and un-skilled labour searching for job openings and may also use the opportunity to scout for potential robbery targets. However, the proponent will properly screen workers at the site.

7.2.9 Increased traffic

Obstruction by construction transport vehicles during the construction phase may lead to the increase in traffic along Parklands Road. This may be exacerbated if these activities time/schedule coincide with Peak Traffic hours.

7.2.10 Workers safety

In any civil works, construction staff safety risks can arise from various construction activities such as:-

i. Foundation works;
ii. Operation and movement of heavy equipment and vehicles;
iii. Injuries from falling objects; and

iv. Injuries from hand tools.

Because of the duration and non-complexity of the construction phase of the proposed project, activities are foreseen as not having serious safety risks to staff. However, even in such cases, activities need to be controlled to reduce associated risks. Proper supervision, high workmanship performance, and provision of adequate safety measures will suppress the likelihood of such impacts and ensure enhanced occupational safety.

7.3 Positive impacts during construction phase

A number of positive impacts are associated with the proposed project during construction phase. These are as discussed below.

7.3.1 Employment opportunities

The construction of the proposed project is expected to provide direct and indirect employment to a number of workers. However, the exact number cannot be predetermined at this stage. These range from unskilled casual workers, semi-skilled and skilled employees.

7.3.2 Provision of market for supply of building materials

The proposed project will require supply of building materials most of which will be sourced locally in the surrounding areas. Producers and suppliers of materials such as: masonry stone, iron sheets, timber, paint, electrical cables, water storage equipment, water pipes, steel, glass, sand, cement, fuel, will thus get a ready market for their merchandise.

7.3.3 Improving growth of the economy

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

7.4 Negative impacts during operation phase

The following negative impacts are associated with the proposed project during its operation phase.

7.4.1 Water use

During operation of the proposed project, water will be used. Water use is driven by the number of uses and users within the buildings. Water will be sourced from the Nairobi Water and Sewerage Company mains supply line, a borehole on site and several rain water storage tanks. However, this demand will be below average.

7.4.2 Electricity consumption

During operation, the building will use electrical energy mainly for purposes which include lighting, running of electrical gadgets including office equipments, air conditioning equipment, refrigeration systems, air compressors, pumping water into reservoirs. Again, because the building extension is not massive, and the occupants will be few, energy use is expected to be minimal.

7.4.3 Increased storm water flow

The building roofs and pavements will lead to increased volume and velocity of storm water around the project site. This will lead to increased amounts of storm water entering the peripheral storm water drains. However, landscaping in the project site, that encompasses open spaces is expected to check this.

7.4.4 Solid waste generation

During the operation phase, solid waste generation is expected to occur from various sources and activities carried out within the building. Solid waste impacts are expected to be minor but there impact maybe significant in the absence of a proper waste management plan i.e. improper disposal of waste may have adverse environmental effects.

7.5 Positive impacts during operation phase

Just as in the construction phase, there are positive impacts associated with the proposed project during operation phase. These positive impacts are discussed below.

7.5.1 Employment opportunities

Employment opportunities are one of the long-term major impacts of the proposed project. A number of people will be employed in various capacities in different professional and non-professional areas at the building.

7.5.2 Increase in revenue to national and local governments

The commissioning of the proposed project will result in positive gains for numerous authorities-Kenya Revenue Authority (KRA), KPLC, and Nairobi City Council through payment of relevant taxes, rates and fees to the respective institutions.

7.6 Negative impacts during decommissioning phase

The negative impacts discussed below are associated with the proposed project during decommissioning phase.

7.6.1 Noise and vibration

The demolition works will produce some noise and vibrations. However, they will not lead to significant deterioration of the acoustic environment within the proposed Project site and the surrounding areas.

7.6.2 Air quality

Dust will be generated during demolition works of the proposed project from the demolition activities. This will mainly affect demolition workers. In addition, soil will be used in rehabilitation and re-instatement to pre-project status, this will add to the amount of dust that will be generated during rehabilitation. However, it will be minimal.

7.6.3 Solid waste generation

Demolition of the proposed project will result in large quantities of solid waste. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. Because the project is not massive, these wastes are expected to be manageable.

7.6.4 Health and safety

Risk of accidents and ill health as a result of the demolition activities is likely to be experienced. This could be as a result of accidents involving construction equipment.

7.7 Positive impacts during decommissioning phase

In the event that the building is to be relocated, found to be economically unviable or condemned as structurally unstable. It can be abandoned and/or demolished. The following are positive impacts associated with decommissioning of the proposed project.

7.7.1 Rehabilitation

Decommissioning will involve phasing out the envisaged operations of the building. This may involve conversion of the facility to other uses or rehabilitation of the project site in line with the projected plans. This may involve new landscaping schemes and demolition of some structures within the facility.

7.7.2 Employment opportunities

For demolition to take place properly and in good time, several people will be involved. As a result, jobs will be created in various positions both in supervisory and non-supervisory positions.

CHAPTER EIGHT:

IMPACTS MITIGATION AND MONITORING

8.1 Introduction

This Chapter presents the mitigation measures that will be adopted to prevent or minimize significant negative environmental, health and safety impacts associated with the activities of the proposed project during its construction, operation and decommissioning phases. Allocation of responsibilities, time frame and estimated costs for implementation of these measures are presented in the Environmental Management Programme (EMP) in Chapter 9.

8.2 Mitigation of construction phase impacts

8.2.1 Minimizing vegetation disturbance

To minimize effects and mitigate vegetation disturbance the proponent shall:-

i. Ensure proper demarcation of the project area to be affected by the construction works. This will be aimed at ensuring that any disturbance to flora is restricted to the actual project area and avoid spillover effects on the neighbouring areas.
ii. Ensure strict control of construction vehicles to ensure that they operate only within the area to be disturbed by access routes and other works.
iii. Re-vegetate of some of the disturbed areas through implementation of a well-designed landscaping programme.

8.2.2 Efficient sourcing and use of raw materials

The Proponent will source building materials such as sand, ballast and hard core from registered quarry and sand mining firms, whose projects have undergone satisfactory environmental impact assessment/audit and received NEMA approval. Since such firms are expected to apply acceptable environmental performance standards, the negative impacts of their activities at the extraction sites are considerably well mitigated.

To reduce the negative impacts on availability and sustainability of the materials, the Proponent will only order for what will be required through accurate budgeting and estimation of actual construction requirements. This will ensure that materials are not extracted or purchased in excessive quantities. Moreover, the Proponent will ensure that wastage, damage or loss (through

run-off, wind, etc.) of materials at the construction site is kept minimal, as these would lead to additional demand for and extraction or purchase materials.

8.2.3 Minimization of noise and vibration

The Contractor of the proposed project shall put in place several measures that will mitigate noise and vibration pollution arising during the construction phase. The proponent shall ensure that he complies with all relevant requirements in the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 by:-

i. Apply for a License from NEMA whereby maximum permissible noise levels are to be exceeded
ii. In this regard the following noise-suppression techniques will be employed to minimize the impact of temporary construction noise at the project site.
iii. Prescribe noise reduction measures if appropriate e.g. restricted working hours and transport hours and noise buffering;
iv. Install portable barriers to shield compressors and other small stationary equipment where necessary and locate stationary noise sources as far from existing sensitive receptors as possible;
v. Use quiet equipment (i.e. equipment designed with noise control elements such as mufflers);
vi. Co-ordinate with relevant agencies regarding all construction activities in the project site;
vii. Limit trucks and other small equipment to minimize idling time and observe a common-sense approach to vehicle use such as shutting up idle engines whenever possible; and
viii. Ensure use of well serviced and maintained vehicles and equipment.

8.2.4 Minimization of dust generation and emission

Controlling dust during construction is useful in minimizing nuisance conditions and consequently health (respiratory and eye) complications. It is recommended that a standard set of feasible dust control measures be implemented for all construction activities. Emissions of other

contaminants (Nitrogen oxides, Carbon dioxide, Sulphur oxides, and diesel related Particulate Matter PM10) that would occur in the exhaust from heavy equipment are also included.

The Proponent shall be committed to implementing measures that shall reduce air quality impacts associated with construction. Dust emissions will be controlled by the following measures:-

a. Provide 2.4 metre high hoarding around the proposed project

b. Provide effective dust screen, sheeting or netting where a scaffolding is erected around the perimeter of a building under construction, from the ground floor level of the building, or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding;

c. any skip hoist for material transport shall be totally enclosed by impervious sheeting;

d. Water all active construction areas when necessary;

e. Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard;

f. Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction site;

g. Down wash of trucks (especially tyres) prior to departure from site;

h. Use of electrically operated construction machinery to avoid externalities produced by diesel engines. This procedural change may reduce problems related to emission, idling and maintenance; and

i. Rapid on-site construction so as to reduce duration of traffic interference and therefore reducing emissions from traffic delays.

All personnel working on the proposed project will be trained prior to starting construction on methods for minimizing air quality impacts during construction. Specific training will be focused on minimizing dust and exhaust gas emissions from heavy construction vehicles.

Minimization of exhaust emissions will be achieved through proper planning of transportation of materials to ensure that vehicle fills are increased in order to reduce the number of trips done or the number of vehicles on the road. In addition, truck drivers will be sensitized to avoid unnecessary racing of vehicle engines at loading/offloading areas, and to switch off or keep vehicle engines at these points.

The following measures shall be implemented during construction:-

i. The engine size of the construction equipment shall be the minimum practical size;
ii. The number of construction equipment operating simultaneously shall be minimized through efficient management practices;
iii. To ensure that the smallest practical number is operating at any one time;
iv. Construction equipment shall be maintained in tune per the manufactures specifications;
v. Idling of heavy duty diesel trucks during loading and unloading shall be minimized; and
vi. Alternatively, fueled construction equipment shall be used where feasible.

8.2.5 Minimization of construction waste

It is recommended that construction waste be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses. In this regard, the Proponent shall be committed to ensuring that construction materials left over at the end of construction will be used in other projects rather than being disposed of.

In addition, damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles, ceramic tiles and glass will be recovered for refurbishing and use in other projects. Such measures will involve the sale or donation of such recyclable/reusable

materials to construction companies, local community groups, institutions and individual residents or home owners.

The Proponent shall put in place measures to ensure that construction materials requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal.

It is further recommended that the Proponent should consider the use of recycled or refurbished construction materials. Purchasing and using once-used or recovered construction materials will lead to financial savings and reduction of the amount of construction debris disposed of as waste.

Additional recommendations for minimization of solid waste during construction of the proposed project include:-

a) Use of durable, long- lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time;

b) Provision of facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements;

c) Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste; and

d) Use of construction materials containing recycled content when possible and in accordance with accepted standards.

8.2.6 Minimization of insecurity

The Proponent shall be committed to implementing measures that shall reduce security threats by the following measures:-

i. The proposed project plot has shall be accessed through a designated entry/exit point during the transportation of all raw materials in and out the construction phase of the project.

ii. Security shall be enhanced by ensuring security guards are always posted within and around the project site and strategic placement of security lights around the site.

iii. A roster of all construction workers shall be kept while measures shall be put in place to ensure that loitering by itinerant workers is discouraged.

iv. Unattended public access to the construction site shall be restricted and only one entry/exit point shall be used.

8.2.7 Controlling soil erosion, water logging

The Proponent will put in place some measures aimed at minimizing soil erosion and associated water logging from the proposed project site during construction. These measures will include:-

a) Terracing, levelling and ripping off compacted areas of the project site to reduce run-off velocity and increase infiltration of storm water into the soil

b) Digging trenches and cut off drains to channel run-off into drainages

c) Proper planning of site excavation works such that a section is completed and rehabilitated before another section begins

d) Ensuring that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site

e) Surface run-off and roof water shall be harvested and stored in underground reservoir for reuse

f) A storm water management plan that minimizes impervious area infiltration by use of recharge areas and use of detention and/or retention with graduated outlet control structures will be designed.

8.2.8 Minimization of surface and groundwater contamination

Several measures shall be put in place to mitigate the impacts that are likely to lead to surface and groundwater quality degradation. The Proponent will prepare a hazardous substance control

systems and emergency response plans that will include preparations for quick and safe clean up of accidental spills. It will prescribe hazardous-materials handling procedures to reduce the potential for a spill during construction, and will include an emergency response programme to ensure quick and safe clean-up of accidental spills. The plan will identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted.

8.2.9 Minimization of water use

A combination of water saving appliances and water management measures will be planned in the proposed project. Rain water harvesting can serve as a solution to the water problem by capturing the run off. Rainwater harvesting will help in utilizing the primary source of water and prevent the run-off from going into sewer or storm drains.

8.2.10 Minimization of energy consumption

The Proponent shall ensure responsible electricity use at the construction site through sensitization of staff to conserve electricity by switching off electrical equipment or appliances when they are not being used. In addition, proper planning of transportation of materials will ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts. Complementary to these measures, the Proponent shall monitor energy use during construction and set targets for reduction of energy use.

8.2.11 Minimization of construction related traffic

The following measures shall be put in place so as to manage traffic along surrounding roads during construction: -

i. Ensure that the Entry/Exit to the project site is located where it will cause minimal traffic along Mpaka and parklands roads

ii. Ensure all construction vehicles to and from the construction site use the designated Entry/Exit to the project site

iii. All transportation of construction raw materials and excavated materials are to be conducted at traffic off peak hours only

iv. Sensitize truck drivers to avoid unnecessary road obstruction

v. Cover all trucks hauling soil, sand and other loose materials to avoid spillage and dust emissions that may interfere with smooth motoring

vi. Work hours shall be restricted to the period between 8:30 a.m. and 3:30 p.m., Monday through Friday, unless approved otherwise. When night work is required, work hours shall be 9 p.m. to 5 a.m.

vii. Access to driveways will be maintained at all times unless other arrangements are made

8.2.12 Minimization of risks of accidents and injuries to workers

To reduce the construction workers accidents and hazards during the construction phase of the proposed project, the Proponent shall be committed to adherence to the occupational health and safety rules and regulations stipulated in Occupational, Safety and Health Act, 2007. In this regard, the Proponent shall be committed to provision of appropriate personal protective equipment, as well as ensuring a safe and healthy environment for construction workers as outlined in the EMP.

8.3 Mitigation of operation phase impacts

8.3.1 Traffic management

The following measures shall be put in place so as to manage traffic along surrounding roads during operational phase of the project: -

i. "NO PARKING" signs will be posted around the building where Parking is prohibited and likely to cause obstruction as well as other necessary traffic signs;

ii. Traffic management/parking personnel shall be provided to monitor parking and ensure smooth motoring along the buildings adjacent roads;

iii. Access to driveways will be maintained at all times; and

iv. Any work that disturbs normal traffic signal operations shall be coordinated with the relevant authorities.

8.3.2 Ensure efficient water use

The Proponent should install water-conserving automatic taps and toilets. Moreover, any water leaks through damaged pipes and faulty taps will be fixed promptly by qualified staff. In addition, the occupants will be sensitized to use water efficiently. The following water saving investments should be taken into consideration: -

a. Reduce water delivery in taps, through the installation of low flow devices or aerators on taps;

b. Press action taps and flush valves shall be used to minimize water wastage Sensors on urinals, which ensure flushes, occur only when required in public areas of the proposed project; and

c. Install water efficient plumbing.

8.3.3 Ensure efficient energy consumption

The Proponent plans to install an energy-efficient lighting system at the building as well as solar power equipment. This will contribute immensely to energy saving during the operational phase of the proposed project. In addition, all staff members will be sensitized to ensure energy efficiency in their operations. To complement these measures, it will be important to monitor energy use during the operation and set targets for efficient energy use. The following energy saving techniques can be applied:-

i. Staff shall be sensitized to switch off machinery, equipment and lights when not being used

ii. Install energy saving bulbs and fluorescent lights

iii. Use of variable-speed motors to optimize the basement car park ventilation system performance

iv. Install alternative energy such as solar power and/or consider use of a highly efficient, inverter-type split-cycle system for heating and cooling, which also uses a more environmentally friendly refrigerant

8.3.4 Ensuring efficient solid waste management

During the operation phase of the proposed project, waste will be generated. All these waste should be handled according to the Environmental Management and Coordination (Waste Management) Regulations, 2006.

The Proponent of the proposed project will be responsible for efficient management of solid waste generated by the proposed project during its operation. In this regard, the Proponent will provide waste handling facilities such as waste bins and skips for temporarily holding of waste generated at the site. In addition, the Proponent will ensure that such wastes are disposed of regularly and appropriately.

Since the proposed project will be generating a substantial amount of waste, an integrated solid waste management system is recommended. First, the Proponent will give priority to reduction at source of the materials. This option will demand a solid waste management awareness programme in the management and the employed staff.

Secondly, recycling, reuse and composting of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place. The third priority in the hierarchy of options is combustion of the waste that is not recyclable in order to produce energy. Finally, sanitary land filling will be the last option for the Proponent to consider.

In order to achieve the above three recommendations the following will be done:-

Public awareness

- ❖ Sign boards and information notices informing the public to dispose waste appropriately shall be posted within the premises.
- ❖ Segregation or sorting of waste at its source should be practised in order to encourage reuse/recycling and to maximize the negative effects of the waste and increase its economic value. With segregation at source recyclables do not lose their commercial value due to cross contamination; and
- ❖ On all floors dedicated bins will be placed to collect biodegradable and non-biodegradable wastes.

Collection bins

- ❖ Daily collection of wastes shall take place from all the bins;
- ❖ Daily sweeping and collection of waste from common areas such as lobbies, staircases, entrances shall be done daily by management appointed cleaners; and
- ❖ Wastes shall be collected daily from all bins to a transfer station awaiting final collection. Separate collection for bio-degradable and non-biodegradable wastes will be ensured.

Waste treatment and disposal

- ■ Solid waste generated by the proposed project would be collected and disposed of by a licensed private firm.

8.4 Mitigation of decommissioning phase impacts

8.4.1 Efficient solid waste management

Solid waste resulting from demolition or dismantling works will be managed as described in the EMP.

8.4.2 Reduction of dust concentration

High levels of dust concentration resulting from demolition or dismantling works will be minimized as described in EMP.

8.4.3 Minimization of noise and vibration

Significant impacts on the acoustic environment will be mitigated as described in Section EMP.

8.4.4 Health and safety

Risk of accidents and ill health as a result of demolition activities, shall be mitigated by ensuring that appropriate health and safety measures are applied in all activities; fence all unsafe and dangerous areas; and continue to monitor environmental health (air quality, water quality, vegetation, noise) at all main receptor points around the site until site handover.

CHAPTER NINE:

ENVIRONMENTAL MANAGEMENT PLAN [EMP]

9.1 Introduction

The proponent of the proposed project realizes that the actual construction and operational activities will have some impacts on the biophysical environment, health and safety of its staff, clients and members of the public, and socio economic well-being of the local community. These impacts require to be mitigated.

To check these impacts, an environmental management plan was developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the proposed project. Because key factors and processes may change through the life of the proposed project, the EMP will be subject to a regular periodic review. The EMP will be used as a benchmark for conducting future environmental audits with a view of assessing compliance.

Table 5: Environmental Management Plan [EMP]

Environmental/Social Impact	Recommended Mitigation Measures	Responsibility	Costs (Ksh)	Monitoring Measures
PRE-CONSTRUCTION PHASE				
Commissioning of the Construction Works	➢ Site hand-over and Ground breaking	Project team (Lead Consultant/Architect, contractor Proponent)	Part of/Covered in the Project Cost	Presence of the project Team
Security for Construction Material	➢ Construction of Site Stores ➢ Construction materials to be delivered in small quantities to minimize storage problems	Contractor/Proponent	To be incurred by the proponent	Materials in the site store
Extraction and Use of Building Materials	➢ Availability and sustainability of the extraction sites as they are non-renewable in the short term ➢ Landscape changes e.g. displacement of animals and vegetation and poor visual quality	Contractor/Proponent/project team	Part of/Covered in the Project Cost	Material site rehabilitation
Collapse of Building during Construction	➢ Ensuring Building Strength and stability ➢ Use of appropriate construction materials and reinforcements as per specifications	Contractor/project team	Part of/Covered in the Project Cost	Presence of the project Team

	➢ Ensuring building components are as per designs ➢ Proper supervision ➢ Ensure proper time-lines are followed e.g. curing time			
Disturbance of Traffic flow during construction	➢ Install direction, warning and information signs ➢ Awareness creation ➢ Education to truck drivers ➢ The proponent has come up with a traffic management plan	Contractor/Project team and general public	To be incurred by the proponent	Presence of site Notice Board /Hoarding - Presence of Security guards to control traffic - warning signs
CONSTRUCTION PHASE				
Digging the foundation trenches leading to soil displacement	➢ Dig only areas to be affected by the building ➢ Restoration of the site after completion of works	Contractor	To be incurred by the proponent	Landscaping after completion of construction
Noise Pollution and Vibration	➢ Ensure use of serviced and greased equipment ➢ Switch off engines not in use ➢ Construction work to be confined to between	Proponent and Contractor	Part of Routine operation procedure	Lack of complaints from the immediate neighbours

	7am to 5pm - Ensure use of earmuffs by machine operators			
Air Quality	➢ Water sprinkling of driveways or the use of biodegradable hydrant e.g. Terrasorb polymer will reduce dust emission during construction Ensure servicing of vehicles regularly	Proponent and Contractor	To be incurred by the proponent	Lack of complaints Workers wearing protective clothing and earmuffs
Risks of Accidents and Injuries to Workers	➢ Education and awareness to all construction workers ➢ Ensure use of appropriate personal protective clothing ➢ Provide First Aid Kits on site ➢ Ensuring Building Strength and stability ➢ Proper supervision	Proponent/Contractor	To be incurred by the proponent	Presence of well-equipped First Aid kit Presence of Security Guards on site Presence of a register on the site
Solid Waste Generation	➢ Ensure waste materials are disposed of on County and NEMA approved sites ➢ Ensure re-use of materials that can be	Proponent /Contractor	To be incurred by the proponent	Absence of Solid waste on the site

	reused ➢ Use of the 3rs – Reduce, Re-use, Re-cycle			
Energy Consumption	➢ Use electricity sparingly since high consumption of electricity negatively impacts on these natural resources and their sustainability ➢ Use of Standby Generators	Proponent/ Contractor	To be incurred by the proponent	Presence of KPLC power lines - Presence of Generators
Excessive Water Use	➢ Excessive water use may negatively impact on the water source and its sustainability ➢ Consider drilling borehole to supplement NWSC supply ➢ Consider harvesting rain water	Proponent	To be incurred by the proponent	Metering of water Water harvesting systems
OCCUPATION PHASE				
Architectural incompatibility leading to disharmony of neighbourhood aesthetic	➢ Harmonize building scale with existing developments in neighbourhood. ➢ Harmonize detail, material and finishes for roofs and walls with	Architect/Proponent/Contractor	Part of/Covered in the Project Cost	Compatibility with the neighbourhood

	existing development in the neighbourhood.			
Solid Waste Generation and Management	➢ Regular inspection and maintenance of the waste disposal systems during operation phase ➢ Establish a collective waste disposal and management system ➢ Provide waste disposal bins that are well protected from adverse weather and animals ➢ Ensure waste materials are disposed off on County approved sites ➢ Engage a NEMA licensed waste handler to collect and transport the waste ➢ Use of the 3rs – Reduce, Re-use, Re-cycle	Proponent / Contractor	To be incurred by the proponent	Contract of NEMA registered waste management companies Presence of waste handling bins Absence of wastes
Liquid Waste Generation and Management	➢ Regular inspection and maintenance of the waste disposal systems during the operation phase ➢ Connect to county waste-water disposal	Proponent / Contractor	To be incurred by the proponent	Absence of liquid wastes

	systems			
Increased load on Infrastructure services: Increased vehicular and/or pedestrian traffic Increased demand on water, sanitation services	➢ Have paved private access road and walkway system ➢ Have paved road drainage system ➢ Encourage rainwater harvesting ➢ Provision of increased water storage capacity ➢ Provide adequate storm water drainage system	Contractor / Proponent	To be incurred by the proponent	Absence of run-off Presence of good roads Pavements and drainage channels
Traffic	➢ Come up with traffic management plan ➢ Provide adequate parking facilities within the project site ➢ Construction of private access road	Contractor/ Proponent	Routine operation procedure	Presence of amble parking in the premises
Increased social conflict	➢ Increased economic activities ➢ Employment generation and income earnings ➢ Encourage good relation with the neighbours through neighbourhood associations	Contractor/Proponent	Proponent	Good relationship with neighbours Absence of conflicts

Storm Water impacts	➢ Provide roof gutters to collect and direct roof water to drains or harvesting systems ➢ Construct drains to standard specifications ➢ Develop a storm water drainage system and linkage to natural	Proponent /Contractor	Costs to be incurred by the proponent	Absence of Flooding and dampness in the premise
Disruption of existing natural environment and modification of micro-climate: **Increased development density** **Increased glare/solar reflection** **Reduced natural ground cover/surface run-off** **Obstruction of ventilating winds**	➢ Development restricted to follow zoning policy/approved density – building line, plot coverage and plot ratio. ➢ Careful layout and orientation of buildings to respect wind and sun direction. ➢ Adequate provision of green and open space planted with grass, shrub and tree cover. ➢ Minimum use of reflective building material and finishes for roof, wall and pavement.	Project team (Contractor Proponent, Architect or Lead Consultant, etc)	To be incurred by the proponent	Proper orientation Trees cut replaced Landscaping
Insecurity	➢ CCTV cameras at strategic points on site	Contractor /Proponent	To be incurred by the	Presence of perimeter wall Presence of day and

	➢ Have a entry point that is manned 24 hours ➢ Gate house already on site ➢ Wall already on site		proponent	night security guards
DECOMMISSIONING PHASE				
Building Safety	➢ Assess the condition of buildings to ascertain usefulness	Proponent and Engineer	To be incurred by the proponent	Engineer and Tests on the building
Land and Building use	➢ Ascertain the Planning development policy	County Physical Planner	To be incurred by the proponent	Consultants present
Accidents/Injuries	➢ Securing the Site by fencing off	Contractor/Proponent	To be incurred by the proponent	Presence of perimeter fence
Un-disconnected services e.g. Power, Water, telephone, sewer etc.	➢ Ensure disconnection of all services ➢ Remove all surface and underground cables and wiring	Contractor	To be incurred by the proponent	Absence of cabling
Solid Waste Generation (demolition waste)	➢ Ensure waste materials are disposed of on County and NEMA approved sites Ensure re-use of materials that	Proponent/Contractor	To be incurred by the proponent	Absence of debris

	can be reused ➢ Use of the 3rs – Reduce, Re-use, Re-cycle			
Noise and Vibration	➢ Ensure use of serviced equipment ➢ Switch off engines not in use ➢ Demolition work to be confined to between 8am to 5pm ➢ Ensure use of earmuffs by workers	Proponent/Contractor	To be incurred by the proponent	Lack of complaints from the neighbours

CHAPTER TEN:

CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

i. The Proponent of the proposed project shall be committed to putting in place various measures to mitigate the negative environmental, safety, health and social impacts associated with the life cycle of the project identified within this report.

ii. It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the EMP as well as adhering to all relevant national, health and safety standards, policies and regulations that govern establishment and operation of such projects.

iii. The proponent of this project should be given the green-light to proceed with the proposed project assuming all mitigation measures to the negative impacts will be implemented fully.

10.2 Recommendations

i. The proponent should consult all relevant service providers and authorities (i.e. Nairobi County County Planning Department, KPLC, NW&SCo, NEMA, amongst others) to align the project with their regulations and guidelines

ii. The proponent ought to adhere to all relevant construction, occupational, health and safety regulations and any other relevant law.

iii. The proponent should ensure Water and Energy conservation measures are put in place as outlined within the report and incorporate rain water harvesting facilities.

iv. The proponent should ensure solid waste generated during construction and operational phases of the project will adhere to the Environmental Management and Coordination (Waste Management) Regulations, 2006.

v. The proponent must ensure strict adherence to provisions of Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) Regulations, 2009 with regards to noise pollution.

vi. The proponent of this project must ensure waste water is disposed off as per standards set in the Environmental Management and Coordination (Water Quality) Regulations, 2006.

vii. The proponent of the proposed project must ensure strict adherence to Occupational Health and Safety Act, 2007.

viii. The proponent of this project must ensure an elaborate landscaping program is put in place as the construction phase is being concluded so as to replenish vegetation around the project site by planting trees, flowers and lawns where applicable.

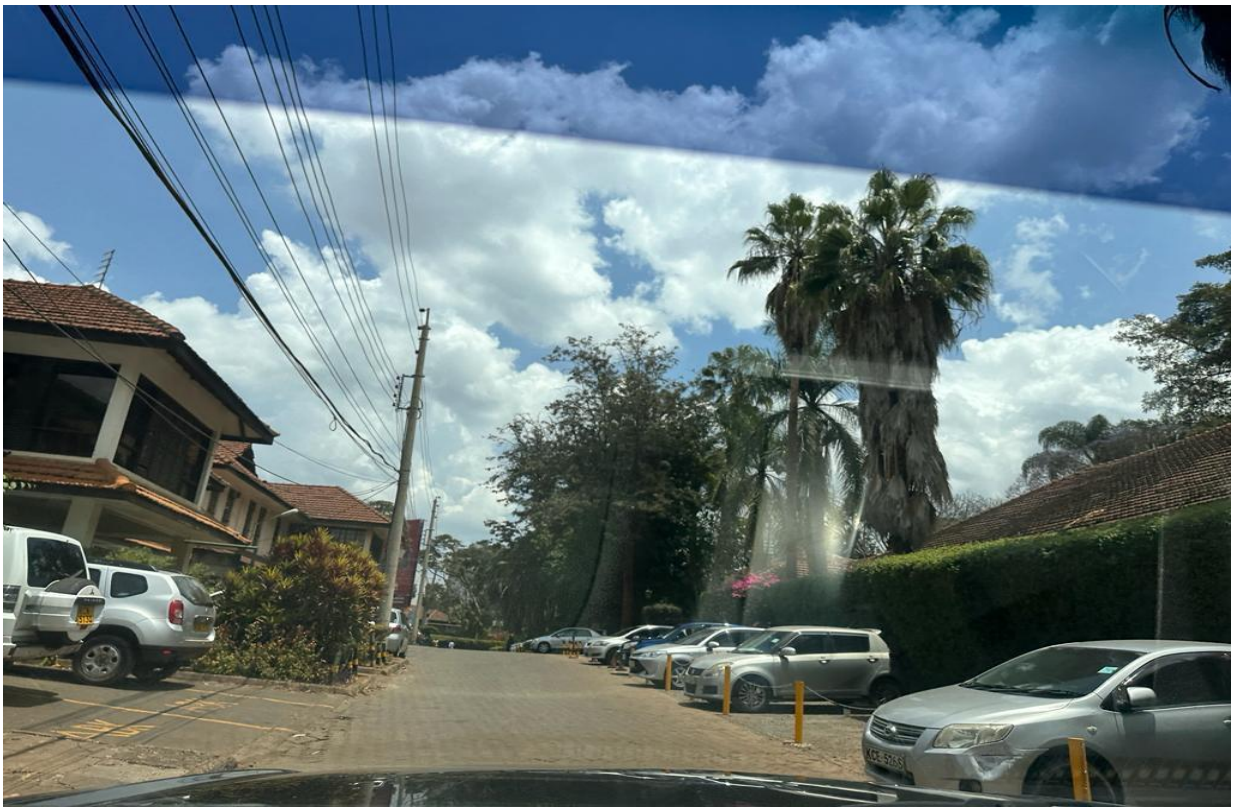


Photo 1. Access Road to the Proposed Project Site

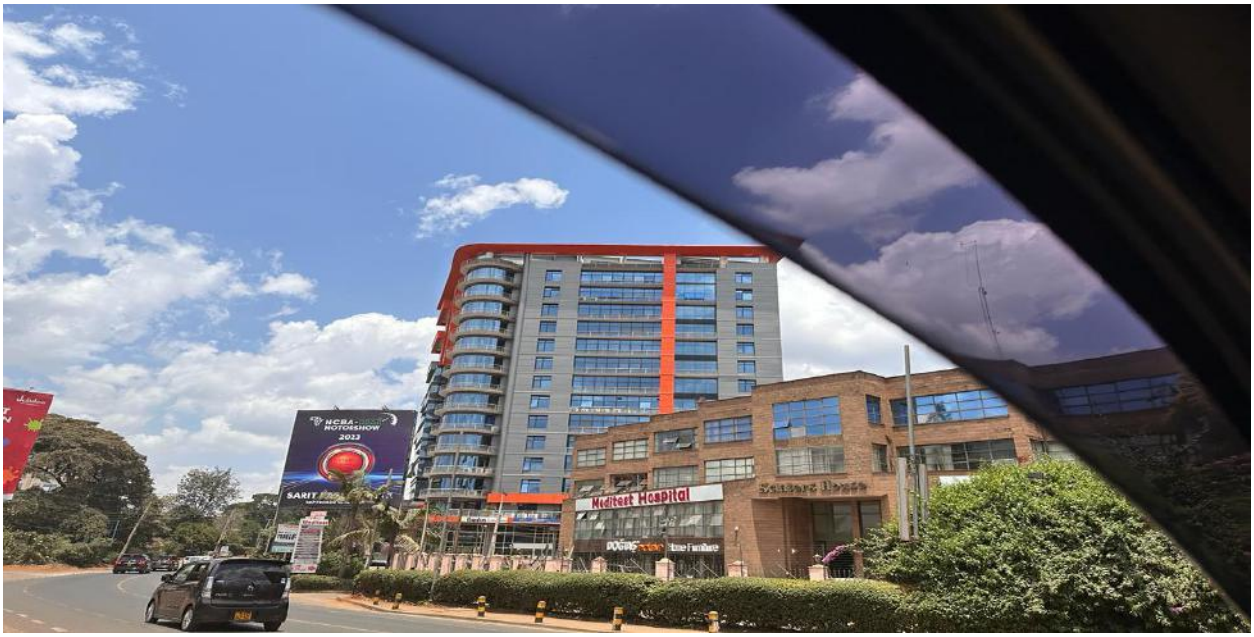


Photo 2. Similar building withing the project area

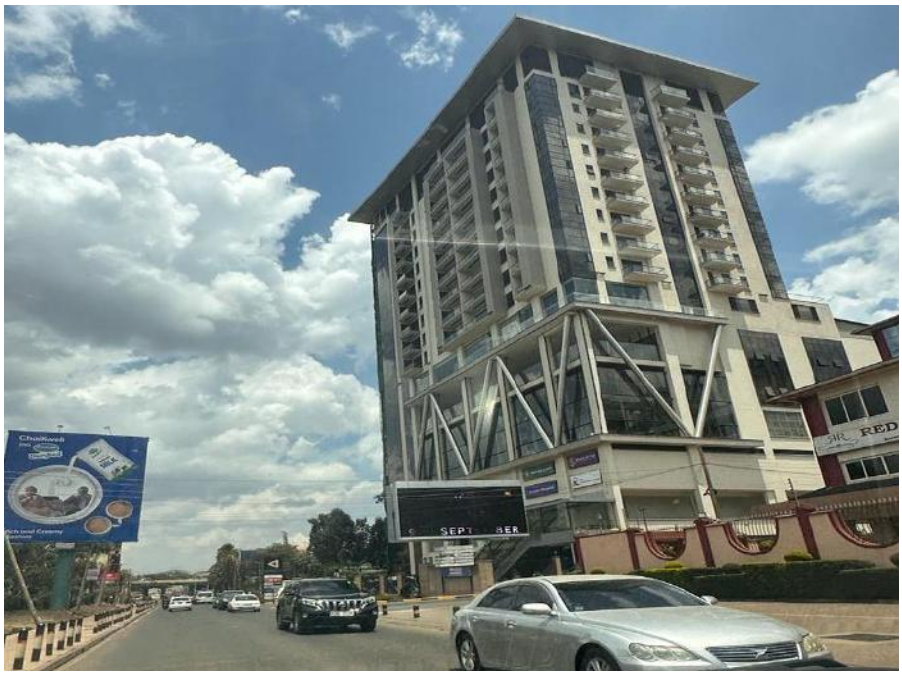


Photo 3. Infrastructure in the area

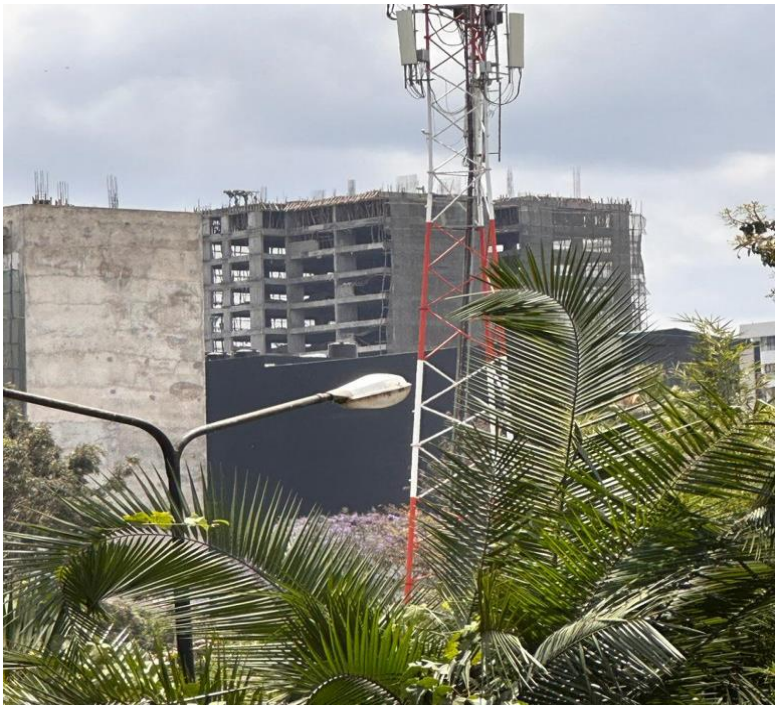


Photo 4. Similar project under construction within the area

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APPENDICES

1.0 Lead Expert Licence

2.0 Expert Licence

3.0 Ownership documents (Sale agreement)

4.0 Deed Plan

3.0 Structural Drawings / Architectural drawings

4.0 Minutes /Questionnaires