ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT
FOR
THE PROPOSED RESIDENTIAL APARTMENTS
LOCATED ON LR NO DAGORETI/UTHIRU/992 ALONG WAIYAKI WAY
NAIROBI COUNTY

(GPS coordinates are are 1^0 15'35.488"S and 36^0 42'28.42"E (-1.2062154, 36.918133)

PROPONENT

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OCTOBER 2020

DOCUMENT AUTHENTICATION

This Environmental Impact Assessment Exercise has been carried out according to the Environmental Management and Coordination Act, Cap 387 and Environmental (Impact Assessment and Audit) Regulations, 2003 which requires that every development project must have an EIA report prepared for submission to the National Environmental Management Authority (NEMA). We the undersigned, certify that the particulars in this report are accurate to the best of our knowledge.

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ACRONYMS

CCTVs	Closed Circuit Televisions
CPP	Consultation and Public Participation
CSR	Corporate Social Responsibility
EA	Environmental Audit
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management Coordination Act
EMP	Environmental Management/Monitoring Plan
EMS	Environmental Management System
GOK	Government of Kenya
ICs	Inspection Chambers
ICT	Information Communication Technology
KBS	Kenya Bureau of Standards
KPLC	Kenya Power and Lighting Company
KURA	Kenya Urban Roads Authority
MDGs	Millennium Development Goals
NCG	Nairobi County Government
NEC	National Environment Council
NEMA	National Environment Management Authority
NPEP	National Poverty Eradication Plan
NW&SC0	Nairobi Water & Sewerage Company
OSHA	Occupational Safety and Health Act
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
SHE	Safety, Health and Environment
TOR	Terms of Reference
VOC	Volatile Organic Compounds
WHO	World Health Organization
WIBA	Work Injury Benefic Act
WRA	Water Resources Authority

EXECUTIVE SUMMARY

INTRODUCTION

Pensacola Holding Ltd is proposing to **construct 4 blocks of Nine (9) storey apartments on plot L.R No Dagoreti//Uthiru//992 located along Waiyaki in Nairobi County**. The **proposed development will mainly comprise of one, two and three bedroomed all totaling to 234 apartment units and associated** ancillary facilities within the proposed plot.

ECO CARE LTD which is a NEMA registered Firm of Experts was contracted by the proponent to carry out an Environmental Impact Assessment for the Proposed Apartment Building. This is to comply with the Legal requirement stipulated in the Environmental Management and Coordination Act Cap 387.

Environmental Impact Assessment 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) Cap 387 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 certificates. 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 is carried out at the planning stages of the proposed undertaking. The scope of this Environmental Impact Assessment, therefore, covered:

- The baseline environmental conditions of the area,
- Description of the proposed project,
- Provisions of the relevant environmental laws,
- Identification and discuss of any adverse impacts to the environment anticipated from the proposed project,
- Appropriate mitigation measures,
- Provision of an environmental management plan outline.

The main objective of the assignment was to assist the proponent prepare a study report of the proposed development to ensure that appropriate measures to mitigate any adverse impacts to the environment are taken into consideration. The Term of refence study 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.

Impacts and Mitigation Measures

Adequate environmental management systems should be incorporated during the entire planning, construction and operating stages of the project to minimize any adverse environmental impacts and assure sustainable development of the area. A Summary of major impacts and proposed mitigation measures is presented in the Table below.

Negative Impacts	Mitigation Measures
Excessive noise and vibrations generation	• Apply for a License from NEMA whereby maximum permissible noise levels are to be exceeded • Prescribe noise reduction measures if appropriate e.g. restricted working hours and transport hours and noise buffering; • 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; • Use quiet equipment (i.e. equipment designed with noise control elements such as mufflers); • Ensure use of well serviced and maintained vehicles and equipment. • Limit trucks and other small equipment to minimize idling time and switch off idle engines whenever possible
Air pollution (dust and exhaust emissions)	• Provide 2.4 meter high hoarding along site boundary • 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 up to the highest level of the scaffolding; • Water all active construction areas when necessary; • Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard; • Down wash of trucks (especially tyres) prior to departure from site • Vehicle idling time shall be minimized
Waste generation	• 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; • 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; • Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste; • Use of construction materials containing recycled content when possible and in accordance with accepted standards; and • Adequate collection and storage of waste on site and safe transportation to licensed disposal sites and disposal methods at designated area shall be provided.
Negative Impacts	**Mitigation Measures**

Health and safety risks And hazards	• Security shall be enhanced by ensuring security guards are posted around the project site and the strategic placement of security lights around the site. • A roster of all construction workers shall be kept • Unattended public access to the construction site shall be restricted and only one entry/exit point shall be used • Appropriate health and safety measures shall be implemented. • Warnings and signs should be placed in appropriate places. • Ensure safety education and training of the construction workers • Appropriate Personal Protective Equipment shall be worn at all times by all within the construction site including visitors • Install proper fire management equipment and emergency response systems/strategies.
Increased of water demand	• Promote awareness on water conservation and reducing water wastage; • Install water meters where applicable • Determine the monthly water consumption and its cost • Identify activities and areas that cause high consumption • Install water-saving devices in the appropriate places (flow regulators, water flow sensors, self-closing taps, low-flush toilets, etc.) • Regularly maintain plumbing fixtures and piping in order to avoid losses • Replace defective seals and repair damage to water pipes
Increased of energy demand	• Identify and use areas/equipment/systems having minimum energy consumption; • Install energy efficient lighting in common areas such as staircases and driveways; • Use alternative energy sources such as solar power for water heating
Traffic and obstruction along access road	• Ensure that the Entry/Exit to the project site is located where it will cause minimal traffic along adjacent roads • Ensure all construction vehicles to and from the construction site use the designated Entry/Exit to the project site • All transportation of construction raw materials and excavated materials are to be conducted at traffic off peak hours only • Sensitize truck drivers to avoid unnecessary road obstruction • Cover all trucks hauling soil, sand and other loose materials to avoid spillage and dust emissions that may interfere with smooth motoring Other mitigation measures are outlined within this report

Conclusion

Considering the proposed location, construction, management and mitigation measures that will be put in place and the project's contribution in the provision of quality facility and creating employment opportunities its implementation is considered important and beneficial. The key effort should be geared towards safeguarding the environment. This can be effectively overcome through close following and implementation of the recommended Environmental Management Plan.

1.0.0 INTRODUCTION

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

Pensacola Holding Ltd is proposing to construct a 4 blocks of nine storey apartments each on plot L.R No Dagoreti//Uthiru//992 located along Waiyaki way in Nairobi County. The proposed development will mainly comprise of one, two and three bedroomed apartment units and associated ancillary facilities within the proposed plot. According to Sections 58 and 138 of the Environmental Management and Coordination Act (EMCA) Cap 387 and Part II and III of the Environmental (Impact Assessment and Audit) Regulations 2003, 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.

The main objective of the EIA study was to predict, assess, and analyze the possible positive and negative environmental and social impacts that are expected during the construction, operation and decommissioning phases of the project. This was done with the aim of proposing the possible mitigation measures for the highlighted negative impacts. This is in line with ensuring that the development does not impact negatively on the environment in terms of social, health, economic and physical (soil, water, plant and animals) state of the project site.

1.1.1 Terms of Reference (TOR)

The TOR for this assessment is based on the Environmental (Impact Assessment and Audit) Regulations. According to the Regulations the Study Report should where possible, contain description of the following:-

- a description of the nature of the proposed project;
- the proposed location of the project;
- a concise description of the national environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project;
- the objectives of the project;
- the technology, procedures and processes to be used, in the implementation of the project;
- the materials to be used in the construction and implementation of the project;
- the products, by products and waste generated by the project;
- a description of the potentially affected environment;
- the environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative irreversible, short-term and long-term effects anticipated;
- alternative technologies and processes available and reasons for preferring the chosen technology and processes;
- analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies.
- an environmental management plan proposing the measures for eliminating, minimizing or

mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures;

- provision of an action plan for the prevention and management of foreseeable accidents and hazardous activities in the cause of carrying out activities of the development project;
- the measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies;
- an identification of gaps in knowledge and uncertainties which were encountered in compiling the information;
- an economic and social analysis of the project;
- an indication of whether the environment of the surrounding areas is likely to be affected; and the available alternatives and mitigating measures; and
- any other matters as the NEMA may require.

1.2.0 Scope of the environmental impact assessment

In order to identify the potential environmental and social impacts, and to come up with the proper mitigation measures for the proposed project the consultant undertook the following:-

- The review of preliminary designs for the proposed project to get acquainted with environmental issues in the project site vicinity.
- The planning and preparing of a time schedule for the activities to be undertaken for the EIA.
- Visiting the project site, and consulting with the local communities and relevant key stakeholders
- Carrying out a comprehensive assessment ensuring all environmental concerns and views of all parties/persons likely to be affected by the project are taken into consideration.
- Developing an environmental and social management plan with mechanisms for monitoring and evaluating the compliance and environmental performance, which include the cost of mitigation measures and the timeframe of implementing the measures.
- Liaising with NEMA for compliance with all mandatory and regulatory requirements relating to the EIA.

1.2.1 Methodology of the environmental impact assessment

1.2.2 Data collection procedures

Data collection was carried out through 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.

1.2.3 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, project managers, architects and design engineers.

1.2.4 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 site, access roads that will be used to access the site and other important features within the site and the surrounding areas.

1.2.5 EIA public consultation

To ensure adequate public consultation in the EIA process, the Consultant prepared questionnaires which were administered to the sites neighbours within a one Kilometer radius and the information gathered was subsequently synthesized and incorporated into the EIA Study report. Due to the Covid 19 global crisis and subsequent government directives, the holding of 3 public meetings was not conducted. The appendices contain random sample copies of the completed questionnaires that were administered to the public.

1.2.6 Reporting and documentation

A comprehensive EIA Study report containing the findings has been compiled by the Consultant in accordance with NEMA guidelines and submitted to NEMA by the Firm of Experts on behalf of the proponent for consideration and approval. The Consultant ensured constant briefing of the client during the exercise. Description plans and sketches showing various activities are part of the Appendices.

2.0.0 PROJECT DESCRIPTION

2.1.0 Introduction

This chapter provides a detailed description of the project development assessed within this EIA. The overall objective of this Project is to develop and avail modern apartment block with associated amenities on plot **L.R No. Dagoreti//Uthiru//992 in** Nairobi County. The proposed project will lead to conversion of the current un used plot into a multi-housing project**.**

This will contribute towards increased availability of housing facilities within the area in general. The project will create several employment and business opportunities in addition to the several positive impacts discussed in this report. The proposed project site falls within a residential area with several upcoming residential and mixed-use developments and includes a good road network, piped water supply, electricity supply and sewer line. The main design components of the project include, but not limited to the following:-

- **Construction of four(4) Blocks of 9 storey each totaling to 234 units**
- Construction of a driveways, sidewalks and parking bays gym hall, children play area
- Development utilities (water, drainage, electricity, health and safety systems, IT systems and security)
- Site landscaping/beautification

2.2.0 Location and size of the project site

The proposed project site is located in a Land Parcel identified as L. R. No. Dagoretti /Uthiru /992 and covers a total area of Nought Decimal Five Four (0.54) ha. The proposed project site is along Waiyaki way at Uthiru (GPS coordinates are 1^0 15'35.488"S and 36^0 42'28.42" E (-1.2062154, 36.918133) in Nairobi County. Notable neighbours include the Uthiru Girls and Boys High School,Lake Naivasha Institute and Hotel El tomo among other places.

2.3.0 Building particulars

The increasing rate of urbanization in recent decades has seen an accelerated trend in construction of high-rise and tall buildings worldwide, particularly in the growing economies of the world. A fundamental economic driver for the growth of tall (particularly residential) buildings is the scarcity of land in the densely urbanized parts of the world.

The decisions made by the developer and his team have a profound impact on the cost, amenity, constructability, and sustainability of high-rise buildings. The structural materials used in high-rise buildings are typically one or a combination of (reinforced or pre-stressed) concrete, structural steel and composite systems. Structural material systems for the proposed apartment building shall be chosen by carefully considering architectural, economical and site factors.

In general, the design of the project will essentially optimize the use of best available technology to prevent or minimize potentially significant environmental impacts associated with the project and to incorporate efficient operational controls together with trained staff, to ensure high level utility and

environmental performances.

Specific details of the proposed development are outlined in the proposed projects architectural drawings containing the site plan, layouts, sections, elevation and other plans that illustrate the development in more detail attached within the appendices. The proposed buildings design proposes 4 blocks of nine storey building structure with the ground floor and two basement mainly to serve as the buildings parking bays. Table 1 below describes the facilities on each of the proposed buildings floors.

Table 1: Apartment units and facilities per floor

Floor	Facilities
Basement 1& 2	Car park
Ground Floor	Car park/ Gatehouse Entry/Exit
Typical floor Floor 1-9th	BLOCK A: will comprise of 6, two(2) bedroom units and 2, one(1) bedroom units giving a total of 72 units BLOCK B: Will comprise of 4, two(2) bedroom units and 4, one(1) bedroom units giving a total of 72 BLOCK C: Will comprise of 4, two (2) bedroom units giving a total of 36 units BLOCK D: Will comprise of 6, three (3) bedroom units giving a total of 54 units The units will comprise of a lounge, bedrooms, kitchen, washrooms and balcony **Total units will be 234 units**

In summary the proposed development will have 400 No. parking lots, 54 one bedroom units 126 two bedroom units and 54 three bedrooms all totaling to 234. Units, children play area, hall, gym, swimming pool and other associated facilities

- Design criteria

The design criteria and characteristics of the proposed development will also include the following among others:

- All works to be carried out in accordance with the local authority's regulations – Nairobi County Government
- All drainage passing under buildings and drive areas to be of PVC pipes.
- All sanitary work to be in accordance with MOH rules and regulations
- Staircases and lifts to be well lit to the top floor.
- Water storage tanks to be acquired for water harvesting and/or storage.
- All reinforced concrete (RC) works to be to structure engineer's details &
- All the designs to comply with the applicable codes of practice.
- CCTV Security surveillance
- Electrical fence
- Fibre internet
- Borehole
- Backup generator
- Solar heating system

2.3.1 Parking area and driveway

The ground and basement floors of the building will be designated mainly as vehicle car park. The driveways will measure 5 meters while the main entry/exit gate will measure 5.2 meters i.e. will be spacious enough such as to allow easy turning and passage of vehicles. A gate house will also be provided at the building entry/exit for sentries to control and monitor the in and outflow of vehicles and human traffic.

2.3.2 Electrical system

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. A backup generator shall also be installed to be used during the operational phase of the project. The necessary guidelines and precautionary measures relating to the use of electricity shall be adhered to.

2.3.3 Water reticulation system

Water from the Nairobi Water & Sewerage Company as well as a borehole to be drilled on site will be used during the operational phase 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.

2.3.4 Storm water run-off

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

2.3.5 Waste water/Sewerage

Foul water drainage from the buildings will be connected to the Nairobi Water & Sewerage Company (NW&SCo) sewer mains. All sanitary works will be up to M.O.H standards.

2.3.6 Security

Security within and around the project during construction and during operational phases will be enhanced by security guards posted at the site and installation of security lighting around the project site. During operation, 24 hours security will be incorporated by having security guards on site, CCTV and security lighting around and within the premises.

2.3.7 Health and Safety systems

Several health and safety components will be incorporated into the project design so as to boost the emergency response and preparedness index of the building. Emergency staircases shall be incorporated from the topmost floor to the ground floor on both ends of the building while hose reels shall be located at several strategic points of each floor. Once complete, portable fire extinguishers shall be incorporated at strategic points on all floors. Emergency response and "Emergency Exit" notices will also be posted where applicable and appropriate.

2.3.8 Landscaping

Green areas provided for on the ground floor shall be landscaped after construction, using plant and grass species available locally. This will include establishment of lawns and flower gardens to improve the aesthetic quality of the site.

2.4.0 Description of the project's construction activities

2.4.1 Pre-construction investigations

The implementation of the proposed Project's design and construction phase will start with 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.

2.4.2 Site set up and management

This involves activities such as screening, fencing the project site, setting up temporary stores, demarcation of temporary roads, car parks, storage areas etc.

2.4.2 site clearance

Site clearance process entails any obstruction on the way of the intended construction activity. Any site clearance waste generated should be disposed by using appropriate methods to be identified within this report.

2.4.3 Ground works

Ground works such as excavation and deep trenching, filling, and the construction of earth structures e.g. embankments, bunds and cuttings; will be carried out to prepare the site for construction of foundations and drainage systems. This will involve the use of machinery such as excavators, bulldozers, backhoes and also manual labour.

2.5.1 Construction of foundations and structural works;

The construction of the buildings foundations, walls, floors, pavements, drainage systems and parking area among other components of the proposed project will involve a lot of masonry work and related activities. 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, tower hoists, pavers, concrete vibrators amongst others.

2.5.2 Structural steel works

The building will be reinforced with structural steel for stability. Structural steel works will involve steel cutting, welding and erection.

2.5.3 Mechanical and electrical installations and associated trades

Electrical work during construction of the buildings will include installation of electrical gadgets and appliances including transformers, 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 joinery, painting, window placement and plastering. These activities will include metal, wood, glass, plastic and ceramic tiles cutting, the use of adhesives, metal grinding and wall drilling among other activities.

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

This includes site reinstatement, removal of temporary building structures such as tower cranes, scaffolds and props, removal of fittings machinery and equipment and final clear away of surplus spoil.

2.7.0 Construction Inputs (Materials and Equipment)

Construction inputs/ raw materials shall include but not limited to sand, cement, machine cut stones, crushed rock (gravel/ ballast), steel metal bars, paint/painting materials, ceramic tiles, plastic and metal plumbing, marble counters, wood doors, skirting among others. Construction machines shall include machinery such as tower crane, batch plants, trucks, excavators, concrete mixers, masonry tools, hoists and other relevant construction equipment. Both skilled and non-skilled workers will be required at all phases of the project. The labour force will require services such as energy, water supply and sanitation facilities. Large volumes of water will also be required during the civil works.

3.0.0 BASELINE INFORMATION

3.1.0 Background information on the project area

Uthiru is a settlement in Nairobi County on the northwest side of the city center of Nairobi. It is located between Kikuyu and Kangemi.Its 12.26 km from the CBD
The area consists of a blend of residential bungalows, multi-storey commercial buildings and apartments. As the area continues to rapidly develop, investment opportunities for real estate and commercial developments in the area are on the rise with the key pull factors being: proximity to Nairobi CBD, good transport network which makes travelling convenient and good security. The area is a low to mid population density area.

Figure1: Map of the Area

3.2.0.Proposed site location

The proposed project site is located in a Land Parcel identified as L. R. No. Dagoreti/ Uthiru/992 and covers a total area of Nought Decimal five four (0.54) ha. The proposed project site is along Waiyaki road (GPS coordinates are are 1^0 15'35.488"S and 36^0 42'28.42"E (-1.2062154, 36.918133) in Nairobi County. It is conveniently located along Waiyaki Way and can be accessed either from Naivasha Road with easy connectivity to its environs at a place referred to as "Cooperation

The proposed development is located in one of the best locations for residential development in Kenya:12. 8km from Nairobi's central business district using the upgraded Waiyaki Road. This provides good transport accessibility which is key to success in Nairobi's rapidly expanding urban environment. Road network to the proposed development is good. The matatu leading to the project site can be found at Railways Bus stop matatu in town

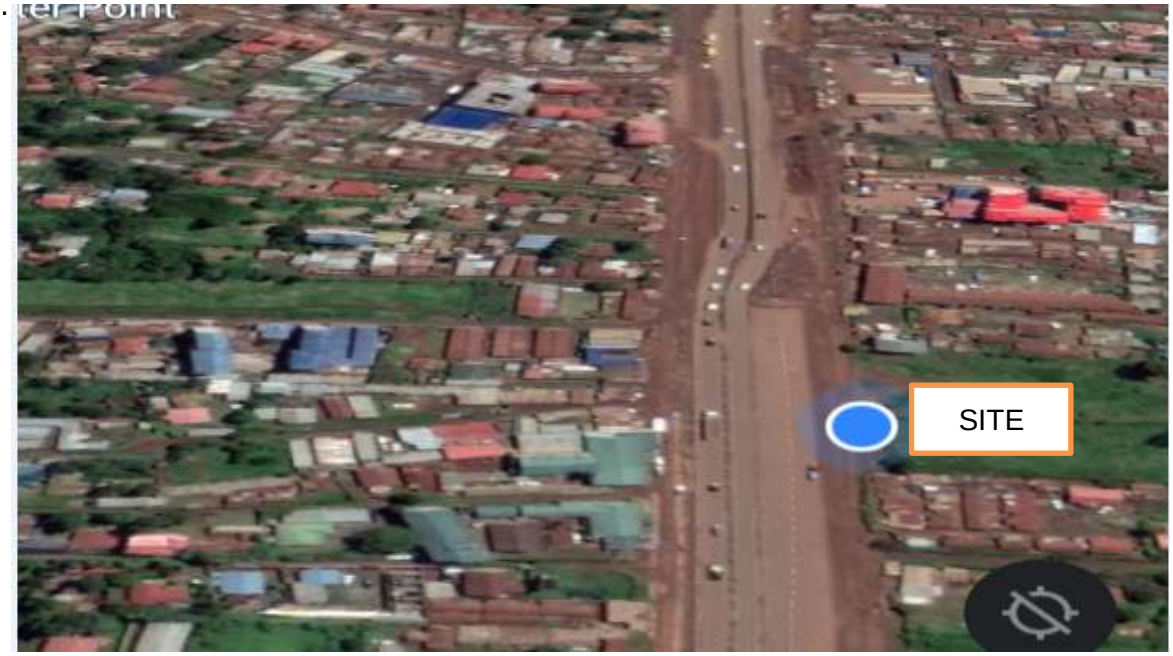

Figure 2: Location of the proposed project

3.2.1 Existing structures on the proposed site

The proposed project site is currently un used and is fensed using barbed and overgrown hedge boundary. There are no major trees but shrubs within the proposed plot which is rich in vegetation including various flowers and grass lawns. The area is served by NW&SCo piped water and sewer line connection as well as KPLC electricity power.

Plate 1: A view of the proposed project site

Plate 2: Other views of the project site

3.3.0 Character of surrounding environment

As indicated in section 3.1, The area consists of a blend of single dwelling, modern apartments and commercial buildings. The immediate proposed project area is also a blend of single dwellings, mixed use multi-storey buildings mainly residential apartments with one or two commercial buildings. The proposed project shall therefore be consistent with the mixed development nature of the surrounding environment (See pictures below).

Plate 3: Similar apartment buildings within the proposed site surroundings

3.4.0 Climate

At 1,795 metres (5,889 ft) above sea level, Nairobi enjoys a moderate climate. The altitude makes for some chilly evenings, especially in the June/July season when the temperature can drop to 10 C. The sunniest and warmest part of the year are from December to March, when temperatures average the mid-twenties during the day. The mean maximum temperature for this period is 24 C. There are two rainy seasons but rainfall can be moderate. The cloudiest part of the year is just after the first rainy season, when, until September, conditions are usually overcast with drizzle. As Nairobi is situated close to the equator, the differences between the seasons are minimal. The seasons are referred to as the wet season and dry season.

Table 2: Nairobi's average Temperature and Precipitation

Weather averages for Nairobi												
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Average high °C (°F)	24.5 (76)	25.6 (78)	25.6 (78)	24.1 (75)	22.6 (73)	21.5 (71)	20.6 (69)	21.4 (71)	23.7 (75)	24.7 (76)	23.1 (74)	23.4 (74)
Average low °C (°F)	11.5 (53)	11.6 (53)	13.1 (56)	14.0 (57)	13.2 (56)	11.0 (52)	10.1 (50)	10.2 (50)	10.5 (51)	12.5 (55)	13.1 (56)	12.6 (55)
Precipitation mm (inches)	64.1 (2.52)	56.5 (2.22)	92.8 (3.65)	219.4 (8.64)	176.6 (6.95)	35.0 (1.38)	17.5 (0.69)	23.5 (0.93)	28.3 (1.11)	55.3 (2.18)	154.2 (6.07)	101.0 (3.98)

3.4.1 Land use and Topography

The location of the proposed project is zoned for commercial/ residential use as per the Nairobi City County zoning guide The plot is gently sloppy with shrubs and low vegetation.

3.4.2 Geology and Soils

The ground is predominantly red soil which has low water holding capacity and therefore absorbs water fast during the rainy season though elaborate drainage measures and appropriate foundation structure have been designed for this geology.

3.4.3 Biological Diversity

- **Flora**

Natural vegetation in the area has been highly compromised by human settlement and other anthropogenic activities. The project area is covered with scattered shrubs and vegetation.The vegetation within the proposed site does not merit special conservation status since it is of least biological and cultural importance. However, the proponent will implement a landscaping plan upon completion of construction

- **Fauna**

There are no wildlife/wildlife corridors in the vicinity of the project site, It is therefore not anticipated that there will be great habitat destruction

3.5.0 Environment

Nairobi is well endowed with a pleasant environment that preserves much of its pristine natural beauty. Ponds, seasonal springs, rivers, flooded grasslands, and swamps abound. Unlike other major cities, Nairobi is not situated on a large river or near the sea. Nevertheless, several streams criss-cross the city. Streams running from the Ngong Hills to the south and the ridges to the north become the Athi and Nairobi Rivers. Natural springs feed a number of small swamps in secluded hollows. In addition, temporary wetlands are created with the coming of each rainy season. The planting of eucalyptus trees, however, has drained most of these springs. Nairobi National Park is another preservation of natural environment. It is covered by a highland forest of hardwoods. A spectrum of birds and animals find their home in the park. The park itself was established in 1948 as an effort by the government to preserve the remaining natural beauty of Nairobi.

3.6.0 Demography

Nairobi City is a cosmopolitan area. It records one of the highest urban population densities in the country. The current population is of Nairobi is 3.13 million (Central Bureau of Statistics 2009).The population is expected to reach 5 million by 2015. Provision of housing facilities is still a challenge to a large segment of population in Nairobi with majority of the residents living in slum areas. The project's surrounding is predominantly a residential area however there are schools, restaurants, shopping centres within the project vicinity.

3.7.0 Economic activities

The major economic activities in Nairobi include businesses in informal and formal lines. Some of the investments in the city are industries, farming and office complexes. The city also is a home of a number of international UN organisations for example United Nations Environmental Programme (UNEP) Agency. Due to its population, Nairobi provides numerous opportunities for trade at various scales. Because of these characteristics, it is considered the commercial centre for Kenya and even

East Africa. Owing to its huge economic potential, Nairobi was once the headquarters of the East African Community (EAC). Economic Activities within the proposed project site are Insurance brokers, Media consultancy, Estate holdings and Academic Institutions.

3.8.0 Water resources and quality

Nairobi area is supplied by water by the Nairobi Water and Sewerage Company (NW&SC) a major supplier of water to most business enterprises and household. The water is sourced from rivers flowing from the Mt. Kenya regions in central province. Various Nairobi enterprise owners and residents have however ventured into the sinking of boreholes within their premises or compounds so as to supplement the water supply whenever there is a shortage or for other credible reasons.

4.0.0 RELEVANT LEGISLATIVE AND REGULATORY FRAMEWORK

4.1.0 Introduction

According to Sections 58 and 138 of the Environmental Management and Coordination Act Cap 387 and Section 3 of the Environmental (Impact Assessment and Audit) Regulations 2003 (Legal No. 101), new projects require an Environmental Impact Assessment study report prepared and submitted to the National Environment Management Authority (NEMA) for review and eventual Licensing before the development commences. 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.

4.1.1 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 (Amendment) Act of 2015. The EIA Regulations must be administered, taking into cognizance provisions of EMCA 2015 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.

4.2.0.The Constitution of Kenya

Article 42 of the Bill of Rights of the Kenyan Constitution provides that 'every Kenyan has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures'. Under Chapter 5 (Land and Environment), Part 1 is devoted to land. It requires that land be used and managed in 'a manner that is equitable, efficient, productive and sustainable, and in accordance with the following principles:

(i) Equitable access to land;
(ii) Security of land rights;
(iii) Sustainable and productive management of land resources;
(iv) Transparent and cost effective administration of land; and
(v) Sound conservation and protection of ecologically sensitive areas.

Part 2 of Chapter 5 of the Constitution is dedicated to Environment and Natural Resources. Article 69 in Part 2 provides that the state shall;

(i) Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
(ii) Work to achieve and maintain tree cover of at least ten per cent of the land area of Kenya;

(iii) Encourage public participation in the management of, protection and conservation of the environment;
(iv) Protect genetic resources and biological diversity;
(v) Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;
(vi) Eliminate processes and activities that are likely to endanger the environment; and
(vii) Utilize the environment and natural resources for the benefit of the people of Kenya.

Further, Article 70 states that if a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress. The sub-project should ensure compliance with the constitution in so far as equitable sharing of the resources, between the stakeholders. Further, the project should ensure the sustainability of livelihoods and biological resources within the project areas are protected. Any development proposals should also be cognizant of the increased powers under the Constitution given to communities and individuals to enforce their rights through legal redress.

4.3.0 Kenya Vision 2030

Kenya Vision 2030 is the current national development blueprint for period 2008 to 2030 and was developed following on the successful implementation of the Economic Recovery Strategy for Wealth and Employment Creation which saw the country's economy back on the path to rapid growth since 2002. GDP growth rose from 0.6% to 7% in 2007, but dropped to between 1.7% and 1.8% in 2008 and 2009 respectively. The objective of the Kenya Vision 2030 is to transform Kenya into a middle income country with a consistent annual growth of 10 % by the year 2030". The 2030 goal for urban areas is to achieve "a well-housed population living in an environmentally-secure urban environment." This will be achieved by bringing basic infrastructure and services namely roads, street lights, water and sanitation facilities, storm water drains, footpaths, and others. One of the aims of the vision is to make Kenya to be a nation that has a clean, secure and sustainable environment by 2030. This will be achieved through promoting environmental conservation to better support the economic pillar. Improving pollution and waste management through the application of the right economic incentives in development initiatives is critical.

4.4.0 Institutional Framework

At present there are several 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.

4.4.1 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.

4.4.2 Environmental Legal Framework

4.4.2.1 Environmental Management and Co-ordination Cap 387

Environmental Management and Co-ordination Act No. 8 of 1999 as the principal act has since been providing 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. The Act has since been amended and replaced by Environmental Management and Co-ordination (Amendment) Act, 2015 which was enacted into a law on 3rd January, 2015.

Section 58 of the Second schedule of the Act require proponent of project to submit study reports to NEMA before financing, commencing, proceeding with, carrying out, executing or conducting projects. The Second Schedule to the Act specifies the projects for which an EIA and EA must be carried out. According to Section 68 of the Act, all projects listed in the Second

Schedule of the Act must undertake an environmental audit, keep accurate records and make annual reports to NEMA or as NEMA may, in writing, require.

The main objectives of the Act are to:-

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

There are several regulations under the Act which include:-

- Environmental (Impact Assessment and Audit) Regulations, 2003
- Environmental (Prevention of Pollution in Coastal Zone and Other Segments of The Environment) Regulations, 2003
- Environmental Management and Co-Ordination (Water Quality) Regulations, 2006
- Environmental Management and Co-Ordination (Waste Management) Regulations, 2006
- Environmental Management and Coordination (Air Quality) Regulations. 2014
- Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009
- Environmental Management and Co-Ordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006
- Environmental Management and Co-Ordination (Controlled Substances) Regulations, 2007
- Environmental Management and Co-Ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009
- The Environmental Management and Co-Ordination (Public Complaints Committee) Regulations, 2012

Compliance

- *This applies in all aspects of the project including among others; Waste management, Effluent discharge practices, Air emissions, Excessive noise and vibrations, Excavations and soil loss, Adverse interference with natural resources including wetlands and water resources.*
- *The project cycle should ensure compliance with this statute at all times*

4.4.2.2 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 study for submission to NEMA for approval.*
- *The Proponent shall undertake to protect the environment during the implementation (Construction and Operation) of the project and also carry out annual Environmental Audits.*

4.4.2.3 Environmental (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 shall undertake to ensure that all waste generated is collected and handled appropriately and disposed off at a designated waste disposal sites*

4.4.2.4 Environmental (Noise & Excessive Vibration Pollution) (Control) Regulations, 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.

Compliance

- *The proponent shall undertake to ensure that all noise and vibration are kept below the maximum allowable threshold*

4.4..2.5 Environmental (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.

4.4.2.6 Environmental (Conservation of Biological Diversity) Regulations, 2006

Part II of Regulations, section 4 states that no person shall engage in any activity that may have adverse impacts on ecosystems, lead to introduction of exotic species or lead to unsustainable use of natural resources without an EIA license. The regulation puts in place measures to control and regulate access and utilization of biological diversity that include among others banning and restricting access to threatened species for regeneration purposes. It also provides for protection of land, sea. Lake or river declared to be a protected natural environmental system in accordance to section 54 of EMCA, 1999.

4.4.2.7 Fossil Fuel Emission Control Regulations, 2006

This Regulation aims at eliminating or reducing emissions generated by internal combustion engines to acceptable standards. The regulation provides guidelines on use of clean fuels, use of catalysts and inspection procedures for engines and generators. This regulation is triggered as the

proponent would use vehicles and equipment's that depend on fossil fuel as their source of energy. It is recommended the requirements of the regulation be implemented in order to eliminate or reduce negative air quality impacts.

4.4.2.8 Environmental (Controlled Substance Regulations) Regulations, 2007

These regulations are described in Legal Notice No. 73 of 2007. The Government of Kenya banned the importation of Chlorofluorocarbons (CFCs) with effect from 1 January 2009, to ensure that Kenya is compliant with the provisions of the Montreal Protocol on Substances that Deplete the Ozone Layer.

4.5.0 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.

4.5.1 Water Resources Management Rules, 2007

One of the outcomes of the water sector reforms has been improved regulatory framework for water resource management and use. In addition to the Water Act 2002, the main document outlining the regulations is the Water Resource Management Rules 2007. The rules set out the procedures for obtaining water use permits and the conditions placed on permit holders. Sections 54 to 69 of the Water Resources Management Rules 2007 impose certain statutory requirements on dam owners and users in regard.

Other sections within the rules imply that WRMA can impose water quality sampling requirements from the water sources and impacts to the hydrology, water chemistry and river morphology downstream basin. Section 16 of the Water Rules requires approval from the Water Resources Management Authority (WRMA) for a variety of activities that affect the water

resources, including the storage of water in dams and pans. Approval by WRMA is conferred through a Water Permit. A permit is valid for five years and must be renewed.

Section 104 of the Water Resource Management Rules requires certain water permit holders to pay water use charges. The intention of the water use charges was to raise revenue for water

resource management, raise revenue for catchment conservation activities, improve efficiency of water resource abstraction and provide a system of data collection on water resource usage.

Compliance

- *The proponent shall follow the standard procedures and rules set in the utilization of water resources including abstraction controls, modes of use and responsibilities in protection of the resources including effluent treatment standards.*

4.6.0 The Occupational Safety and Health Act, 2007

Section 13 part 1(a) the employee is expected to ensure his own safety and health and of the other person who may be affected by his acts or omissions at work place, (c)requires the employee at all times to use protective equipment or clothing provided by the employer for purpose of preventing risks to his safety and health, (f) report to the supervisor any accidents or injury that arise in connection with his work Part 2 states that any employee who fails to follow this section commits an offence and shall on conviction be liable to a fine or imprisonment.

Section 21 provides that the employer or self employed person to notify the occupational health and Safety Officer of any accidents, dangerous occurrence, or occupational poisoning which has occurred at the work place. Section 32 gives power to the occupational safety and Health officer to enter inspects examine by day or night, a work place which he has reasonable cause to believe to be a work place and any part of any building of which forms a work place. Section 55 requires all plant, machinery and equipment whether fixed or mobile for use at work place to be used for designed work and operated by a competent person. Section 97 prohibits employers to employ persons below the age of 18 years at the work place or perform work by which its nature its likely to harm the persons safety or health.

Compliance

- *The proponent shall implement all health and safety measures and standards required during construction and operation of the project*

4.7.0 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 shall undertake to safeguard the environment ensuring that all solid waste or waste water effluent emanating from the proposed project is discharged appropriately.*

4.8.0 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 shall launched and obtain and shall apply for any other required approvals of the project development and licences from all relevant Local Authority Offices.*

4.9.0 Building Code 2000

Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the Local Authority for a permit to connect to the sewer line and all the wastewater must be discharged into sewers.

4.9.1 Urban 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.

4.9.2 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.

4.10.0 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 shall apply for any other required approvals of the project development and licences from all relevant Local Authority Offices.*

5.0.0 PUBLIC CONSULTATIONS

5.1.0 Sources of Information

One of the key information sources used during the Environmental Impact Assessment exercise was public participation. Views from the would be affected people were sought from the public through the following means:-

1. The administration of pre-designed questionnaires between 6th and 9th October 2020 during the project study exercise
2. Direct interviews with stakeholders and members of the public.

The objective of the consultation and public participation was to:-

1. Disseminate and inform the stakeholders about the project with special reference to its key components and location
2. Gather comments, suggestions and concerns of the interested and affected parties
3. Propose and discuss solutions and mitigation measures to the potential negative impacts and various concerns
4. Incorporate the information collected in the EIA study report

In addition, the Environmental Impact Assessment public consultation exercise enabled:-

- The establishment of a communication channel between the general public and the team of consultants, the project proponents and the Government.
- the concerns of the stakeholders be known to the decision-making bodies at an early phase of project development

The exercise was conducted by a team experienced registered environmental experts. The Consultation and Public Participation (CPP) Process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA section 58, however due to the ongoing Covid 19 pandemic and subsequent government directives, the holding of public meetings was not possible.

5.2.0 Issues raised and comments

This Sub-Section covers the views and opinions of the key stake holders (local leaders, surrounding, neighbours/institutions/organizations, and interested persons . It highlights both positive and negative socio-economic and environmental impacts anticipated during the construction and operational phases of the project. This is followed by suggested mitigation measures that the developer should incorporate to minimize environmental degradation and promote sustainable development.

5.2.1 Dilapidation of existing infrastructure

Heavy trucks transporting excavated materials and raw materials to and from the project site may lead to dilapidation of existing roads and also cause spillage of these materials on roads hence interfering with smooth motoring. Construction works may also interfere with existing peripheral drainage which runs along the project boundary, spillage of materials being transported

and poor construction of site access roads/culvert can lead to this.

Mitigation measures to be incorporated by the proponent are hereby outlined in sections 7.2.9.

5.2.2 Overstretching of infrastructure and zoning

It was feared by some that the conversion of the site to a high-rise apartment building may lead to the overstretching of public utilities and infrastructure such as sewer lines, water mains supply and roads. The height of the building was also indicated to be too high by some neighbours.

The Nairobi County Government planning department authorizes projects in accordance with their infrastructure (sewer, water supply) capability as per their own infrastructure assessments. Zoning and building plans authorization is also done by the Nairobi County Government. Of note is that the proposed building is also in character with several buildings around the neighbourhood (See Section 3.4).

5.2.3 Obstruction and traffic

Obstruction by construction transport vehicles during the construction phase and increased number of vehicles coming to and from the project during the operational phase will lead to increase in traffic along the access roads.

Mitigation measures to be incorporated by the proponent are hereby outlined in sections 7.2.9.

5.2.4 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.

Mitigation measures to be incorporated by the proponent are hereby outlined in sections
7.2.2 and 7.2.3.

5.3.0 Positive comments

a) The proposed project will create temporary employment for both skilled and unskilled labour both directly and indirectly
b) The proposed project once complete will improve the type of housing in the area by introducing modern and quality housing units
c) Development of the area will be enhanced
d) Security will improve
e) There will be markert of goods and sevices thereby improving the lifes of people
f) Government will increase revenue collection from rates and taxes

5.4.0 Mitigation Measures

- Ensure repair and maintenance of drainage facilities within and around the project site
- The developer should ensure that once the project is complete, post construction clean up should be carried out thoroughly especially the peripheral drainage and the access road
- Ensure the building envelope is surrounded with dust nets during the construction phase to

reduce dust emissions and construction debris

- Plant trees on the property to add aesthetic value and improve local environment
- Do not carry out construction works at night to control the noise
- Provide for adequate parking for the units so that they do not park on the side of the road making movement a challenge and increasing traffic unnecessarily
- Consult all relevant service providers and relevant authorities (i.e. KPLC, NCG, NW&SCo, NEMA amongst others) so as to harmonize the projects infrastructural and socio-economic developments with existing facilities
- Adhere to all relevant construction, occupational, health and safety regulations and any other relevant law.

*****Questionnaires are hereby attached within the appendices.

6.0.0 ALYSIS OF PROJECT ALTERNATIVES

6.1.0 Project site alternatives

6.1.1 No project alternative

The No Project option in 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 specifically to the landowner / developer as he will continue to pay land rent/rates on the plot while the property remains underutilized. The No Project Option is the least preferred from the socio-economic perspective.

6.1.2 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 an alternative project site shall have to be sought. Searching for the land to accommodate the scale and size of the 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 new studies, design and approvals since design and planning has to be suitable to site conditions. Project design and planning before the stage of implementation will cost the developer a significant sum of money. Whatever has been achieved and paid for to date will be counted as a loss to the developer.

The time wasted on these deliberations would cause delays that the proponent may not be able to afford. This may also lead to a situation like no project alternative option. The other consequence of this is that it would be a discouragement for private 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 an undesirable option for the proponent.

6.1.3 Carrying on with the proposed development alternative

Under the proposed Project alternative, the proponents of the proposed project would be issued with an EIA License clearly stating various Licensing conditions that the proponent must adhere to. In issuing the license, NEMA would approve the proponent's proposed development, provided all Licensing conditions 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 EMCA to the maximum extent practicable. This is the most suitable option.

6.2.0 Domestic waste water management alternatives

Three suitable technologies are discussed below:

6.2.1 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 there is an existing sewer line within the area.

6.2.2 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 discharge points like

the multi-storey residential building development is required. Given the scale of liquid waste emanating from the proposed project this option is not preferred since it will be uneconomical and inefficient.

6.2.3 Construction of a sewage treatment plant

This involves the construction of a treatment plant or the installation of prepackaged treatment plants. Whereas this is a viable option such STPs have proved to be a challenge in such setups as apartment blocks due to various reasons such as: nuisance of bad odour to tenants and neighbours; non-compliance with set effluent discharge standards and frequent breakdowns and malfunctions which may also lead to other environmental problems such as emission of raw effluent to the environment. Considering the above cons, this option is not viewed as suitable.

6.3.0 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 should give priority to Reduction at Source of the materials. This option will demand a solid waste management awareness programme by the management and the residents. Secondly, recycling, reuse and composting of the waste will be the next alternative in priority. This will call for a source separation programme to be put in place. The waste will be collected by solid waste recyclers within the surrounding area or be collected by a NEMA licensed waste management company.

6.4.0 Analysis of alternative construction materials and technology

The buildings will be constructed using modern, locally and internationally accepted materials to achieve environmental, public health, safety and security requirements. Equipment and materials that save energy and water should be given first priority without compromising on cost or availability factors. The concrete pillars and walls should be made using locally sourced stones, cement, sand, steel and fittings that meet the Kenya Bureau of Standards requirements.

6.5.0 Green Building Alternative

6.5.1 Introduction

Green building in Kenya or green construction is beginning to catch on, albeit slowly in Kenya's construction scene. Developers are placing an emphasis on producing houses that are environmentally and resource friendly. It is a rather misunderstood term, with some painting their houses green to keep in sync… building green entails constructing and managing buildings economically, with an emphasis on reducing environmental burdens and conserving resources. It involves the choice of materials and products used to achieve the best performance at building level. For it to be effective, it should encompass the whole building cycle, from design, construction, operation, maintenance and daily running of the building.

Several assessments in relation to green building in Kenya have identified that substantial savings in cost, embodied Carbon, electricity and water consumption are possible in housing currently being built in Kenya making it more green and affordable.

The current Nairobi climate is ideal for the design of energy efficient housing. A well-designed building i.e. orientation and careful position of openings and selecting building materials will minimise the requirement of lighting and heating in the house saving electricity or other fuels. Currently there is no need for any air-conditioning in Nairobi housing but it shouldn't be forgotten that unchecked construction and poor urban design can often result in higher than normal temperatures so people resort to energy consuming air-conditioning.

The construction technology most prevalent in Nairobi for multi-dwelling housing is the Reinforced Cement Concrete (RCC) frame with in-fill stone walls. The intermediary slabs, columns and roofing (constituting the structure of the building), door and window frames, and external/internal walls present the highest potential for savings in embodied energy i.e.: energy used in the production and transport of materials.

6.5.2 Alternatives to Achieving Green Building

The areas of concern may be categorized broadly as follows:

- Proper and efficient use of resources. These include power, water and other sources of energy
- Reducing waste and pollution,
- Improving occupant health

Green building can take on various forms. From the basic housing level to the national level, efforts are being put to reduce reliance on the costly fossil fuels. Some of the methods that can be adopted in this include:

The Use of Renewable Energy

More houses are powering up using solar panels. The availability of the technology and ease of setting up the panels have gone a long way in encouraging its adoption. The use of biomass (popularly known as biogas) is also gaining a significant foot hold in many homes. This is more so in rural areas, where animal waste is enhanced to produce gas used in powering up.
Waste (such as papers, plastics, and so forth) is also being used in an ingenious pilot project in areas of Nairobi to produce heat energy. This has been embraced in these communities as it provides an affordable way to cook and heat water.

Adoption of Water Harvesting, Treatment and Re-Use

Large housing projects such as the proposed one, should to adopt water treatment and re-use to cut on costs. With demanding clientele who want green compounds all year round, this technology is quite handy. The used water is collected and treated in collection tanks placed within the estates. This water is then re-used for irrigation of lawns and also in flushing toilets. Hence this calls for the adoption of sewage treatment systems such as the bio-box.

In addition, water harvesting should also be taken more seriously. Methods include tanks and also water pans in areas having space. Trenches in gardens are also dug up with the sole intention of trapping run-off water. Hence, the proposed project should entail rain water harvesting without failure.

The Use Of Plants Or Vegetation

Plants can be used as water towers to aid in replenishing ground water. Homes in hot areas are advised to adopt plants to keep the temperatures down. The proposed project has plans to establish dense vegetation cover around and within its compound without failure. This is also part of its camouflage.

Adoption Of Natural Lighting And Ventilation

Strategic building of windows and porches goes a long way in enhancing natural lighting. Sun roofs are also becoming a common feature in many homes, allowing much sunlight into the rooms. These are just some of the few methods that could be adopted in going green in building the proposed project.

7.0.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

7.1.0 Introduction

This Section identifies and discusses both positive and negative impacts associated with the proposed Project as well as their respective mitigation measures. 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.

This Chapter therefore describes the anticipated positive and negative impacts of the proposed Project due to project location and during construction, operation and decommissioning phases.

7.1.1 Negative impacts during construction phase

7.1.2 Extraction and use of building materials

Building materials such as hard core, ballast, cement, rough stone and sand required for the construction of the proposed Project will be obtained from quarries, sand harvesters etc. Since substantial quantities of these materials will be required for construction of the proposed project, the availability and sustainability of such resources at the extraction sites will be negatively affected-as they are not renewable in the short term. In addition, the sites from which the materials will be extracted may be significantly affected in several ways including landscape changes, displacement of animals and vegetation, poor visual quality and opening of depressions on the surface leading to several human and animal health impacts.

Proposed mitigation measures

- The Proponent will source building materials such as sand, ballast and hard core from registered quarry and sand mining firms, whose extraction sites have undergone satisfactory environmental impact assessment/audit and received NEMA approval.
- 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.
- The Proponent shall consider reuse of building materials and use of recycled building materials where applicable. This will lead to reduction in the amount of raw materials extracted from natural resources as well as reducing impacts at the extraction sites.

7.1.3 Noise pollution and vibration

Significant increases in noise and vibration levels may be expected during construction of the proposed Project. Such noise and vibrations may be generated by construction machinery and vehicles as well as construction workers. The impact of noise and vibrations on the surrounding community depends upon the characteristics of the noise and vibrations source (instantaneous, intermittent, or continuous in nature); time of day at which noise and vibrations occur; and the 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. Vibration impacts may include the cracking of nearby existing structures such as foundations, walls and water reservoirs. Noise and vibrations may also have an impact on the workers in the proposed project.

Proposed mitigation measures

- Apply for a License from NEMA whereby maximum permissible noise levels are to be exceeded
- Prescribe noise reduction measures if appropriate e.g. restricted working hours and transport hours and noise buffering;
- 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;
- Use quiet equipment (i.e. equipment designed with noise control elements such as mufflers);
- Limit trucks and other small equipment to minimize idling time and observe a common-sense approach to vehicle use such as switching off idle engines whenever possible; and
- Ensure use of well serviced and maintained vehicles and equipment.

7.1.4 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. Fugitive dust (depending on the timing of construction) and vehicular emissions are the major components of air pollution. The following construction related activities are generally associated with these emissions: Site clearance, excavation and use of heavy vehicles and machinery/equipment at construction site; Transportation of construction materials such as sand, cement, steel, masonry stone to the construction site; and operating of construction machinery and equipment

During the period of maximum construction activity, the fuel consumption is expected to rise significantly and the background concentrations of suspended particulate matter (SPM), respirable particulate matter (RPM), sulphur dioxide (SO^2), nitrogen dioxide (NO^2) and carbon monoxide (CO) are also expected to rise. These emissions if not appropriately mitigated can have significant respiratory and cardio-pulmonary effects on the local population, the health effects may range from subtle biochemical and physiological changes to difficulty in breathing, wheezing, coughing and aggravation of existing respiratory and cardiac conditions.

Proposed mitigation measures

- Provide 2.4 meter high hoarding along site boundary
- 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;
- Any skip hoist for material transport shall be totally enclosed by impervious sheeting;
- Water all active construction areas when necessary;
- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Down wash of trucks (especially tyres) prior to departure from site;
- 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
- Rapid on-site construction so as to reduce duration of traffic interference and therefore reducing emissions from traffic delays.

7.1.5 Solid waste generation

Construction activities create solid wastes that need to be disposed. Such wastes include: Excavated spoil, 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 the local community. 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.

Proposed mitigation measures

- All construction waste should be disposed in sites approved by the Nairobi City County by NEMA licensed firms.
- Construction waste should be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses.
- Measures to ensure that construction materials requirements are carefully budgeted should be put in place and the amount of construction materials left on site after construction is kept minimal.
- Consider the use of recycled or refurbished construction materials.
- 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;
- 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;
- Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste

7.1.6 Soil erosion and water logging

Soil erosion is likely to occur during construction at the site once exposed by excavation works especially during rainy and windy seasons. Considering the land clearing, excavation and other construction processes, soil will be exposed to erosion agents leading to soil/land degradation hence impacting negatively on the environment. Water logging of the proposed site may also occur in the event of heavy rainfall during excavation.

Proposed mitigation measures

- The stockpiling of construction materials should be properly controlled and managed at the site
- Leveling and ripping off compacted areas of the project site to reduce run-off velocity and increase infiltration of storm water into the soil
- Channel trenches and cut off drains into peripheral storm water drainages
- 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.

7.1.7 Surface and ground water hydrology and water quality degradation

Construction activities for the proposed development can 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).

Potential sources of impacts on hydrology and ground water quality during the construction phases are as follows: Soil run-off from the site leading to off-site contamination- particularly during rainy season: The excavated area, if linear, could act as a conduit to extend groundwater contamination to new areas. Improper disposal of construction debris leading to offsitecontamination of water resources or blocking of drainages leading to flooding. Spillage of oil and grease from the vehicles and wastewater stream generated from on-site activities.

Proposed mitigation measures

- Prepare a hazardous substance control systems and emergency response plans that will include preparations for quick and safe cleanup 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 cleanup of accidental spills.

7.1.8 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.

Proposed mitigation measures

- Connect to the existing NW&SCo main supply
- Harness rainwater for construction activities usage where applicable
- Install a discharge meter at all water outlets to determine and monitor total water usage
- Promptly detect and repair of water pipe and tank leakages
- Ensure taps are not running when not in use

7.1.9 Increased 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. Construction sites are known to attract large numbers of semi-skilled and un-skilled labour searching for job openings. Others may also use such opportunities to scout for potential robbery or terror targets.

Proposed mitigation measures

- Unattended public access to the construction site shall be restricted and only one entry/exit point should be used.
- The project site should be accessed through a designated entry/exit point during the transportation of all raw materials
- 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.
- 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.

7.1.10 Increased traffic

Obstruction by construction transport vehicles and construction activities adjacent to the nearby roads during the construction phase may lead to the increase traffic along Riverside Lane West and Riverside Drive. This may be exacerbated if these activities time/schedule coincide with Peak Traffic hours.

Proposed mitigation measures

- Ensure that the Entry/Exit to the project site is located where it will cause minimal traffic along adjacent roads
- Ensure all construction vehicles to and from the construction site use the designated Entry/Exit to the project site
- All transportation of construction raw materials and excavated materials are to be conducted at traffic off peak hours only
- Sensitize truck drivers to avoid unnecessary road obstruction
- Cover all trucks hauling soil, sand and other loose materials to avoid spillage and dust emissions that may interfere with smooth motoring
- Access to driveways will be maintained at all times unless other arrangements are made

7.1.11 Workers accidents and public safety

In any civil works, public as well as construction staff safety risks can arise from various construction activities such as falls into deep excavations; accidents due to operation and movement of heavy equipment and vehicles; injuries from falling objects; Injuries from hand tools amongst others. Because of the duration and complexity of the construction phase of the proposed Project, such activities need to be controlled and consequently the associated risks will be reduced.

Proposed mitigation measures

- Proper supervision, high workmanship performance, and provision of adequate safety measures will suppress the likelihood of such impacts on the public and ensure enhanced occupational safety.
- The Proponent shall adhere to the occupational health and safety rules and regulations stipulated in Occupational, Safety and Health Act, 2007.
- The contractor shall ensure provision of appropriate personal protective equipment to all staff members, as well as ensuring a safe and healthy environment for construction workers as outlined in the EMP.

7.2.0 Positive impacts during construction phase

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

7.2.1 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.

7.2.2 Provision of market for supply of building materials

The proposed Project will require supply of large quantities of building materials most of which will be sourced locally in the surrounding areas. Producers and suppliers of materials will thus get a ready market for their merchandise.

7.2.3 Improving growth of the economy

Through the use of locally available materials during the construction phase of the project, 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.

7.3.0 Negative impacts during operation phase

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

7.3.1 Increased traffic

It is expected that the number of vehicles around the project site shall increase hence leading to the possibility of commensurate increase in traffic around the adjacent access roads. This shall be dependent on the location of the buildings car park entry/exit, traffic control measures in place, number of tenants/visitors to the building, the nature of activities within the building amongst other factors.

Proposed mitigation measures

- "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
- Traffic management/parking personnel shall be provided to monitor parking and ensure smooth motoring along the buildings adjacent roads
- Access to driveways will be maintained at all times
- Any work that disturbs normal traffic signal operations shall be coordinated with the relevant authorities

7.3.2 Water use

During operation of the proposed Project, a lot of 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 onsite and several rain water storage tanks.

Proposed mitigation measures

- Install water meters where applicable
- Determine the monthly water consumption and its cost
- Identify activities and areas that cause high consumption
- Install water-saving devices in the appropriate places (flow regulators, water flow sensors, self-closing taps, low-flush toilets, etc.)
- Avoid leaving taps running unnecessarily and cleaning with high pressure hoses
- Regularly maintain plumbing fixtures and piping in order to avoid losses
- Replace defective seals and repair damage to water pipes

7.3.3 Electricity consumption

During operation, the building will use a lot of electrical energy mainly for purposes which include lighting, running of electrical gadgets including air conditioning equipment, refrigeration systems, pumping water into tanks/reservoirs. Since electricity generation involves utilization of natural resources, excessive electricity consumption will strain the resources and negatively impact on their sustainability.

Proposed mitigation measures

- Use energy-saving bulbs, especially in high consumption areas

- Install timers and motion detectors to reduce lighting time in selected locations such as emergency staircases.
- Reduce general lighting during daytime and make sure that exterior lighting is switched on only at night (e.g. use photoelectric cells)
- Organize preventive maintenance of the electric network and equipment, including heating and air conditioning systems

7.3.4 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.

Proposed mitigation measures

- Daily sweeping and collection of waste from common areas such as lobbies, staircases, entrances shall be done by management appointed cleaners
- Segregate wastes at source; organize the segregation of wastes at source
- Dispose of non-reusable and non-recyclable wastes using appropriate methods
- Do not burn waste outdoors, do not disperse them in nature or bury them
- Recycle electric and electronic appliances and donate unwanted appliances that are still working to local associations instead of disposing them
- Dispose waste responsibly by using NEMA licensed waste handlers

7.4.0 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.

7.4.1 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.

7.4.2 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.

7.4.3Optimal use of land

Change in land use from idle land to land on which a modern building block stand will optimize land use.

7.5.0 Negative impacts during decommissioning phase

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

7.5.1 Noise and vibration

The demolition works will lead to significant deterioration of the acoustic environment within the

proposed Project site and the surrounding areas. This will be as a result of the noise and vibrations that will be experienced during demolition.

Proposed mitigation measures

- Significant impacts on the acoustic environment will be mitigated as described in Section 7.2.2.

7.5.2 Air quality degradation

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.

Exhaust emission will also be experienced during decommissioning from the trucks that will be transporting the demolished objects to the disposal sites and storage areas. Large quantities of dust will be generated during demolition works. This will affect both demolition staff as well as the neighbouring establishments.

Proposed mitigation measures

- High levels of dust concentration resulting from demolition or dismantling works will be minimized as described in Section 7.2.3.

7.5.3 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.

Proposed mitigation measures

- Solid waste resulting from demolition or dismantling works will be managed as described in Section 7.2.4.

7.5.4 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 due to operation and movement of heavy equipment and vehicles; injuries from falling objects; Injuries from hand tools amongst others.

Proposed mitigation measures

- 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.

7.6.0 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.

7.6.1 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.

7.6.2 Employment opportunities

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

8.0.0 ENVIRONMENTAL MANAGEMENT PLAN

8.1.0 Introduction

An environmental management and monitoring plan has been developed to assist the Proponent in mitigating and managing environmental impacts associated with the life cycle of the Project. The EMP has been developed to provide a basis for an Environmental Management System (EMS; ISO 14001 principles) for the Project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the EMP. As such, the EMP will be subject to a regular regime of periodic review.

Tables 3, 4 and 5 form the core of this EMP for the construction, operational and decommissioning phases of the project. In general, the Tables outline the potential safety, health and environmental risks associated with the project and detail all the necessary mitigation measures, their financial costs, as well as the persons responsible for their implementation and monitoring. The EMP will be used as checklist in future environmental audits.

Table 3: Environmental management plan for the construction phase of the proposed project

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Minimize extraction site impacts and ensure efficient use of raw materials in construction				
High demand of raw material	□ Source building materials from local suppliers who use environmentally friendly processes in their operations.	Project Manager & Contractor	Throughout construction period	
	□ Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered.	Project Manager & Contractor	Throughout construction period	
	□ Ensure that damage or loss of materials at the construction site is kept minimal through proper storage.	Project Manager & Contractor	Throughout construction period	200,000
	□ Use at least 5%-10% recycled, refurbished or salvaged materials to reduce the use of raw materials and divert material from landfills	Project Manager & Contractor	Throughout construction period	0
Reduce storm-water, runoff and soil erosion				
Increased storm water, runoff and soil erosion	□ Surface runoff and roof water shall be harvested and stored in underground reservoir tanks for reuse.	The Civil Engineer, Mechanical Engineer and Project Manager	2 months	20,000 per unit
	□ A storm water management plan that minimizes impervious area infiltration by use of recharge areas and use of detention and/or retention with graduated outlet control structure will be designed.		1 month	
	□ Apply soil erosion control measures such as leveling of the project site to reduce run-off velocity and increase infiltration of storm water into the soil.		1 months	
	□ Ensure that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site.	The Civil Engineer, Mechanical Engineer and Project Manager	Throughout construction period	
	□ Ensure that any compacted areas are ripped to reduce run-off.		2 months	
	□ Site excavation works to be planned such that a section is completed and rehabilitated before another section begins.	Project Manager	Throughout construction period	5,000 per unit
	□ Open drains all interconnected will be provided on site.	Civil Engineer	Throughout	5,000 per unit

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	□ Roof catchments will be used to collect the storm water for some other uses.	Civil Engineer	construction period	
	□ Construction of water storage tanks to collect storm water for construction use.	Civil Engineer	Throughout construction period	
Minimize deep trenching and excavation hazards				
Persons falling	□ A barricade at least 900mm high must be erected around a trench that is 1 meter or more deep unless it is not possible only workers involved in the trench will be in the area; or another form of barrier exists (such as excavated materials near the trench).	The Civil Engineer and Project Manager	Throughout excavation works period	30,000
Trench collapse or cave-in	□ Excavated material should not be placed less than 600mm from the edge of a trench to minimize risk of collapse due to the weight of the spoil.	The Civil Engineer and Project Manager	Throughout excavation works period	
	□ An excavation where a possibility of collapse or cave-in exists should be shored, shielded , benched or battered to prevent the collapse or cave-in.	The Civil Engineer and Project Manager	Throughout excavation works period	
Safe access and exit	□ Ladders must be provided no more than 9 meters apart in the area where work will be carried out	The Civil Engineer and Project Manager	Throughout excavation works	20,000
Minimize solid waste generation and ensure efficient solid waste management during construction				
Increased solid waste generation	□ Use of an integrated solid waste management system i.e. through a hierarchy of options including: Source reduction, Recycling, Reuse, Combustion and Sanitary land filling.	Project Manager & Contractor	Throughout construction period	300,000
	□ Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities they will be needed	Project Manager & Contractor	One-off	0
	□ Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed of.	Project Manager & Contractor	One-off	0
	□ Ensure that damaged or wasted construction materials will be recovered for refurbishing and use in other projects.	Project Manager & Contractor	One-off	-

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	□ Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements	Project Manager & Contractor	One-off	30,000
	□ Use building materials that have minimal or no packaging to avoid packaging waste	Project Manager & Contractor	Throughout construction period	0
	□ Use construction materials containing recycled content when possible and in accordance with accepted standards.	Project Manager & Contractor	Throughout construction period	0
	□ Dispose waste more responsibly by dumping at designated dumping sites or landfills only.	Project Manager & Contractor	Throughout construction period	50,000/month
Reduce dust emissions				
Dust emission	□ Provide 2.4 m high hoarding along site boundary	Project Manager & Contractor	Throughout construction of building period	50,000
	□ Provide effective dust screen, sheeting or netting where a scaffolding is erected around the perimeter of a building			100,000
	□ Water all active construction areas when necessary;	Project Manager & Contractor	Throughout construction period	3,000
	□ Cover all trucks hauling soil, sand and other loose materials			0
	□ Down wash of trucks (tyres) prior to departure from site	Project Manager & Contractor	Throughout construction period	-
	□ Personal Protective equipment to be worn by all staff members			100,000
Minimization of exhaust emissions				
Exhaust emission	□ Vehicle idling time shall be minimized	Project Manager & Contractor	Throughout construction period	0
	□ Alternatively fuelled construction equipment shall be used where feasible equipment shall be properly tuned and maintained			
	□ Sensitize truck drivers to avoid unnecessary racing of vehicle engines at loading/offloading points and parking areas, and to switch off or keep vehicle engines at these points	Project Manager & Contractor	Throughout construction period	0
Minimization of noise and vibration				
Noise and vibration	□ Sensitize construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.	Project Manager & Contractor	Throughout construction period	1,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	□ Use quiet equipment (i.e. equipment designed with noise control elements such as mufflers);	Project Manager & Contractor	Throughout construction period	-
	□ 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;	Project Manager & Contractor	Throughout construction period	-
	□ Ensure that construction machinery are kept in good condition to reduce noise generation	Project Manager & Contractor	Throughout construction period	25,000
	□ Ensure that all generators and heavy duty equipment are insulated or placed in enclosures to minimize ambient noise levels.	Project Manager & Contractor	Throughout construction period	15,000
Minimization of energy consumption				
Increased energy consumption	□ Ensure electrical equipment, machinery and lights are switched off when not being used	Project Manager & Contractor	Throughout construction period	0
	□ Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy	Project Manager & Contractor	Throughout construction period	5,000
	□ Ensure planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts	Project Manager & Contractor	Throughout construction period	10,000
	□ Monitor energy use during construction and set targets for reduction of energy use	Project Manager & Contractor	Throughout construction period	5,000
Minimize water consumption and ensure more efficient and safe water use				
High water demand	□ Connect to the existing NW&SCo main supply	Mechanical Engineer and Project Manager	One-off	50,000
	□ Harness rainwater for construction activities usage		Throughout construction period	
	□ Install a discharge meter at all water outlets to determine and monitor total water usage	Project Manager & Contractor	One-off	2,000 per unit
	□ Promptly detect and repair of water pipe and tank leaks		Throughout construction period	1,000 per month
	□ Ensure taps are not running when not in use	Site foreman		1,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Ensure the general safety and security of the construction site and surrounding				
Safety and security	□ Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the construction site.	Project Manager & Contractor	Continuous	50,000/month
Minimize hydrology and water quality degradation				
Surface and groundwater contamination	□ Hazardous substance control and emergency response plan that will include preparations for quick and safe clean up of accidental spills.	The Mechanical Engineer, Project Manager, Contractor	Continuous	30,000
	□ Hazardous-materials handling procedures to reduce the potential for a spill during construction to be prescribed	The Mechanical Engineer	Continuous	2,000
	□ Identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted	The Mechanical Engineer	Continuous	-
	□ Ground water, will be collected during construction contained and disposed of in accordance with all applicable regulations	The Mechanical Engineer	Continuous	
Minimize traffic around the project site and adjacent roads				
Increased traffic, obstruction	□ Ensure all construction vehicles to and from the construction site use the designated Entry/Exit to the project site	Project Manager and Site Foreman	Throughout construction period	-
	□ All transportation of construction raw materials and excavated materials are to be conducted at traffic off peak hours only	Project Manager and Contactor	Throughout construction period	-
	□ Sensitize truck drivers to avoid unnecessary road obstruction	Project Manager, Contactor & site foreman		-
	□ Cover all trucks hauling soil, sand and other loose materials to avoid spillage and dust emissions that may interfere with smooth motoring		Throughout construction period	-
Minimize occupational health and safety risks				
Approval of building plans	□ Ensure that all building plans are approved by the Local Authority and the Local Occupational Health and Safety Office	Developer	One-off	50,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Registration of the premises	Registration of the project under the Occupational Safety and Health Act,2007 Laws of Kenya is mandatory	Developer	One-off	5,000
General register	A general register should be kept within the facility as stipulated in Occupational Safety and Health Act,2007.	Project Manager & Contractor	One-off	300
Incidents, accidents and dangerous occurrences.	Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place.	Project Manager, Developer & Contractor	Continuous	500/month
	Enforcing adherence to safety procedures and preparing contingency plan for accident response in addition safety education and training shall be emphasized.	The Contractor, Project Manager& Site Safety Officer	Continuous	20,000
Site organization	Develop a clear site organization plan and construction schedule	The Contractor, Project Manager& Site Safety Officer	Continuous	5,000
	Deliver and store materials at appropriate locations		Continuous	10,000
	Hire the right number of workers with clear work schedule and appropriate dress gear		Continuous	2,000
Safety, health and environment policy	Develop, document and display prominently an appropriate SHE policy for construction works	Project Manager& Contractor	One-off	1,000
Sanitary conveniences	Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers	Project Manager	One-off	20,000
	Mobile toilets, changed regularly, to be provided on site or latrines	Project Manager	Throughout construction period	10,000-30,000 per unit
Machinery/ equipment safety	Ensure that machinery, equipment, personal protective equipment, appliances and hand tools used in construction do comply with the prescribed safety and health standards and be appropriately installed maintained and safeguarded	Project Manager, Developer & Contractor	One-off	0
	Ensure that equipment and work tasks are adapted to fit workers and their ability including protection against mental strain	Project Manager & Contractor	Continuous	0

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	□ All machines and other moving parts of equipment must be enclosed or guarded to protect all workers from injury	Project Manager	One-off	0
	□ Arrangements must be in place to train and supervise inexperienced workers regarding construction machinery use and other procedures/operations	Project Manager	Continuous	5,000 per training
	□ Equipment such as fire extinguishers must be examined by an authorized agency. The equipment may only be used if a certificate of examination has been issued	Project Manager	Continuous	5,000 per examination
	□ Reports of such examinations must be presented in prescribed forms, signed by the examiner and attached to the general register	Project Manager	Continuous	5,000 per examination
Storage of materials	□ Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse	Project Manager	Continuous	15,000
	□ Ensure that items are not stored/stacked against weak walls and partitions	Project Manager	Continuous	0
Safe means of access and safe place of employment	□ All floors, steps, stairs and passages of must be of sound construction and properly maintained	Project Manager & Contractor	Continuous	-
	□ Securely fence or cover all openings in floors		One-off	-
	□ Provide all staircases within the building with suitable handrails on both sides	Project Manager & Contractor	One-off	-
	□ Ensure that construction workers are not locked up such that they would not escape in case of an emergency	Project Manager & Contractor	Continuous	-
	□ All ladders used in construction works must be of good construction and sound material of adequate strength and be properly maintained	Project Manager & Contractor	One-off	0
	□ All of scaffolds and work platforms shall be erected, altered and dismantled by competent persons	Project Manager & Contractor	Throughout construction period	-

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	□ All uprights must be provided with base plates (and, where necessary, timber sole plates) or prevented in some other way from slipping or sinking	Project Manager & Contractor	Throughout construction period	-
	□ All scaffolds must be secured to the building in enough places to prevent collapse	Project Manager & Contractor	Throughout construction period	-
	□ Guard rails or equivalent protection to be in place to stop falls from open edges on scaffolds, mobile elevating work platforms, buildings, gangways, excavations, etc	Project Manager & Contractor	Throughout construction period	-
	□ Enough barriers must be erected at rooftop edges to protect workers or materials falling from roofs	Project Manager & Contractor	Throughout construction period	
Emergency preparedness and evacuation procedures	□ Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency	Project Manager & Contractor	One-off	2,000
	□ Such procedures must be tested at regular intervals		Every 3 months	2,000
	□ Ensure that adequate provisions are in place to immediately stop any operations where there in an imminent and serious danger to health and safety and to evacuate workers	Project Manager & Contractor	One-off	10,000
	□ Provide measures to deal with emergencies and accidents including adequate first aid arrangements	Project Manager & Contractor	Continuous	5,000
First Aid	□ Well stocked first aid box which is easily available and accessible should be provided within the construction site	Project Manager & Contractor	One-off	5,000
	□ Provision must be made for persons to be trained in first aid, with a certificate issued by a recognized body.	Project Manager & Contractor	One-off	10,000
Fire protection	□ Firefighting equipment such as fire extinguishers should be provided at strategic locations such as stores and construction areas.	Project Manager & Contractor	One-off	30,000
	□ Regular inspection and servicing of the equipment must be undertaken by a reputable service provider and records of such inspections maintained	Project Manager & Contractor	Every 3 months	5,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)

	□ Signs such as “NO SMOKING” must be prominently displayed within the construction site, especially in parts where flammable materials are stored	Project Manager & Contractor	One-off	2,000
Ventilation	□ Enough space must be provided within the premises to allow for adequate natural ventilation through circulation of fresh air	Project Manager & Contractor	One-off	0
Lighting	□ There must be adequate provision for artificial or natural lighting in all parts the super structure in which persons are working or passing	Project Manager & Contractor	One-off	0
Electrical Safety	□ Circuits must not be overloaded	Project Manager & Contractor	Continuous	0
	□ Distribution board switches must be clearly marked to indicate respective circuits and pumps		One-off	0
	□ There should be no live exposed connections	Project Manager & Contractor	Continuous	0
	□ Electrical fittings near all potential sources of ignition should be flame proof	Project Manager & Contractor	One-off	0
	□ All electrical equipment must be earthed		One-off	0
Chemical Safety	□ Develop a suitable system for the safe collection, recycling and disposal of chemical wastes, obsolete chemicals and empty chemical containers to avoid their reuse for other purposes and to eliminate or minimize the risks to safety, health and environment	Project Manager & Contractor	One-off	10,000
	□ Ensure that all chemicals used in construction are appropriately labeled or marked and that material safety data sheets containing essential information regarding their identity, suppliers classification of hazards, safety precautions and emergency procedures are provided and are made available to employees and their representatives	Project Manager & Contractor	One-off	0
	□ Keep a record of all hazardous chemicals used at the site, cross-referenced to the appropriate chemical safety data sheets	Project Manager & Contractor	Continuous	0

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)

Supply of clean drinking water	□ Ensure that construction workers are provided with an adequate supply of wholesome drinking water which should be maintained at suitable and accessible points.	Project Manager & Contractor	One-off	5,000/month
Washing facilities	□ Ensure that conveniently accessible, clean, orderly, adequate and suitable washing facilities are provided and maintained within the site	Project Manager & Contractor	One-off	5,000
Ergonomics	□ Provision for repairing and maintaining of hand tools must be in place	Project Manager & Contractor	One-off	5,000
	□ Hand tools must be of appropriate size and shape for easy and safe use	Project Manager & Contractor	One-off	0
	□ Height of equipment, controls or work surfaces should be positioned to reduce bending posture for standing workers	Project Manager & Contractor	One-off	0

Table 4: Environmental management plan for the operation phase of the proposed Project

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Minimization of solid waste generation and ensuring more efficient solid waste management				
Solid waste generation	□ Provide solid waste handling facilities such as waste bins and skips	Proponent/Building management	One-off	10,000
	□ Ensure that solid waste generated at the building is regularly disposed of appropriately at authorized dumping sites by licensed waste handlers	Proponent/Building management	Continuous	25,000/month
Minimize risks of sewage release into environment				
Sewage disposal	□ Provide adequate and safe means of handling sewage generated (i.e. NW&SCo sewer mains)	Building management	One-off	-
	□ Conduct regular inspections for sewage pipe blockages or damages and fix appropriately	Building management	Continuous	3000 per inspection
Minimize energy consumption				
Energy resource utilization	□ Switch off electrical equipment, appliances and lights when not being used	Staffs/ Building management	Continuous	_
	□ Install occupation sensing lighting at various locations such as storage areas which are not in use all the time	Building management	One-off	10-40 % higher than ordinary lighting
	□ Install energy saving fluorescent tubes at all lighting points within the building instead of bulbs which consume higher electric energy	Building management	One-off	10-40 % higher than ordinary lighting
	□ Sensitize tenants & employees to use energy efficiently	Building management/Tenants	Continuous	500/month
Minimize water consumption and ensure more efficient and safe water use				
Water consumption	□ Promptly detect and repair water pipe and tank leaks	Building management	Continuous	2,000/month
	□ Encourage tenants and staffs to conserve water	Building management/Tenants	Continuous	500/month
	□ Ensure taps are not running when not in use		Continuous	500/month

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	□ Install water conserving taps that turn-off automatically when water is not being used	Building management	One-off	10-40 % higher than ordinary taps
	□ Install a discharge meter at water outlets to determine and monitor total water usage	Building management	One-off	2,000
Minimize Traffic around adjacent road				
Traffic generation	□ "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	Building Management & Traffic/Parking Attendant	Continuous	-
	□ Access to driveways will be maintained at all times	Security personnel	Continuous	-
	□ Any work that disturbs normal traffic signal operations shall be coordinated with the relevant authorities	Security personnel	Continuous	-
Ensure the general safety and security of the premises and surrounding areas				
□ Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises.		Proponent	Continuous	50,000-100,000/month
Environmental monitoring of the project				
The Firm of Experts (Stalin Environment) will undertake continuous environmental monitoring of the project in liaison to the National Environment Management Authority and the Proponent. This will ensure that environmental concerns are integrated into the project at every stage of implementation. An Initial Environmental Audit will be conducted in the first year of operation/occupation to confirm the efficacy and adequacy of the EMP and to propose a comprehensive operational Phase EMP in harmony with the buildings custom fittings		Proponent, Firm of Experts and NEMA	Continuous	-

Table 5: Environmental management plan for the decommissioning phase of the proposed project

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Frequency/ Timing	Cost (Ksh)
1. Demolition waste management				
Demolition waste	□ Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3.Composting and reuse 4. Combustion 5. Sanitary land filling.	Project Manager & Contractor	One-off	-
	□ All buildings, machinery, equipment, structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible	Project Manager & Contractor	One-off	
	□ All foundations must be removed and recycled, reused or disposed of at a licensed disposal site	Project Manager & Contractor	One-off	
	□ Where recycling/reuse of the machinery, equipment, implements, structures, partitions and other demolition waste is not possible, the materials should be taken to a licensed waste disposal site	Project Manager & Contractor	One-off	
	□ Donate reusable demolition waste to charitable organizations, individuals and institutions	Project Manager & Contractor	One-off	
	□ Rehabilitate accordingly	Architect, Project Manager		

9.0.0 CONCLUSION AND RECOMMENDATION

Recommendations

- Consult all relevant service providers and authorities (i.e. NCG, KPLC, NW&SCo, NEMA, amongst others) to harmonize the projects infrastructural and socio-economic developments with existingfacilities
- Adhere to all relevant construction, occupational, health and safety regulations and any other relevant law.
- Adhere to all conditions within the NEMA License once it is obtained.
- Ensure Water and Energy Management Systems are put in place as outlined within the report and incorporate rain water harvesting facilities
- Solid waste management during construction and operational phases of the project must adhere to the Environmental Management and Coordination (Waste Management) Regulations, 2006
- Ensure strict adherence to provisions of Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) Regulations, 2009
- Ensure waste water is disposed off as per standards set in the Environmental Management and Coordination (Water Quality) Regulations, 2006
- Ensure strict adherence to Occupational Health and Safety Act, 2007
- 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.

Conclusion

The Proponent of the proposed project should commit to putting in place the measures to mitigate the negative environmental, safety, health and social impacts associated with the life cycle of the Project identified within this report as far as is practicably possible.

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 and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects.

It is also recommended that the positive impacts that emanate from such activities shall be maximized as much as possible. It is expected that these measures will go a long way in ensuring the best possible environmental compliance and performance standards.

REFERENCES

- Kenya gazette supplement Acts 2000, Environmental Management and Coordination Act (Cap 387). Government printer, Nairobi
- Kenya gazette supplement number 56. Environmental Impact Assessment and Audit Regulations 2003. Government printer, Nairobi
- Kenya gazette supplement Acts, Environmental Management and Coordination (Water Quality) Regulations, 2006. Government printer, Nairobi
- Kenya gazette supplement Acts, Environmental Management and Coordination (Waste Management) Regulations, 2006. Government printer, Nairobi
- Kenya gazette supplement Acts, Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) Regulations, 2009. Government printer, Nairobi
- Kenya gazette supplement Acts Building Code 2000. Government printer, Nairobi
- Kenya gazette supplement Acts Land Planning Act (Cap. 303). Government244 printer, Nairobi
- Kenya gazette supplement Acts Penal Code Act (Cap.63). Government printer, Nairobi
- Kenya gazette supplement Acts Physical Planning Act, 1999. Government printer, Nairobi
- Kenya gazette supplement Acts Public Health Act (Cap. 242). Government printer, Nairobi
- Kenya gazette supplement Acts Water Act, 2002. Government printer, Nairobi
- The Occupational Safety and Health Act, 2007. Government Printer, Nairobi.

1. Ownership Documents

- Certificate of Incorpotaion
- Copy of Title Deed
- Pin Cert
-

2. Architectural Plans
&
Designs

3. APPROVED TOR LETTER

4. SUMMARY OF BQ

5. QUESTIONAIRS

6. NEMA PRACTISING LICENSE