ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FULL STUDY REPORT FOR THE PROPOSED OFFICE BLOCK ON LR. NO 1870/1/153, WESTLANDS AREA OF NAIROBI COUNTY.

GPS CO-ORDINATES -1.2255806 S and 36.802601E

March 2016

In Accordance With
Environmental Management and Coordination Act (EMCA), 1999 and EMCA (amendment) 2015 EIA/EA Regulations 2003

ALEXANDERFORBES	EarthCare Services Limited *for the posterity of resources and development*	MAGHARIBI CONSORTIUM
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CERTIFICATION

Project proponent: Alexander Forbes Retirement Fund (Provident Section) & Alexander Forbes Retirement (Pension Section)

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ACKNOWLEDGMENT

We take this opportunity to thank Alexander Forbes Retirement Fund and Esham Park Limited, for providing the opportunity to conduct this Environmental and Social Impact Assessment (ESIA) Report of the proposed commercial development. This was done in an endeavour to comply with the Legal requirement as stipulated in section 58 of the Environmental Management and Co-ordination Act (EMCA) of 1999 legal Notice No.8. Many thanks to Ms. Angela Okinda-Head, Financial services at Alexander Forbes Retirement Fund, Mr. David Kinyua, Mr. David Ndungu and Mr. Collins Kuindwa of Esham Park; Team members of Magharibi consortium for availing the necessary documentation and information to enable the experts effectively carry out the ESIA.

EXECUTIVE SUMMARY

Alexander Forbes Retirement Fund, herein referred to as the proponent, proposes to put up a commercial retail and/or office block on their parcel of land LR. No 1870/I/153 located in Westlands area of Nairobi County, at the junction of General Mathenge drive and Peponi road. The parcel of land lies on coordinates -1.2255806 S and 36.802601E and measures 0.4193Ha. The proposed project site is currently undeveloped. The proponent through Magharibi Consortium commissioned the ESIA process for the proposed project by appointing Earthcare Services Limited, a firm of Environmental Experts. The team was led by John Kuloba, a National Environment Management Authority (NEMA), registered Environmental Impacts Assessment (EIA) and Environmental Audit (EA) lead Expert.

EIA objective

The EIA full study report has been prepared pursuant to the recommendations by the National Environment Management Authority in a letter dated 29th February, 2016 to undertake in depth evaluation of potential impacts and to materialize harmony with the affected and interested stakeholders. The report will further guide the proponent in environmental protection through the Environmental Management and Monitoring Plan (EMMP) prepared and lastly, assist NEMA in making an informed decision while approving the proposed project.

The scope of the report is to describe the project, document all baseline information, legal and regulatory frame work associated with the project, analyse the project alternatives, assess both the positive and negative impacts and develop mitigation measures for negative impacts including designing Environmental Management and Monitoring Plan (EMMP) for the project.

Proposed project objective

The proposed project involves constructing an office block to meet the current demand for office space in Nairobi.

Proposed project description

The proposed project is split into two phases;

Phase 1:

- A 13 storey tower consisting of retail and lobby space on ground floor, retail and commercial lettable spaces on 1st to 3rd floor, and office suites on the 4th to 13th floor;
- A 4 storey commercial podium with retail and reception lobby on the ground floor, large atrium, retail and commercial lettable spaces on the 1st to the 3rd floor and a roof garden and terrace on the 4th floor; and

Phase 2

- A 20 storey office tower with retail and reception lobby on the ground floor, 1st to 3rd floor comprising of a large atrium, retail and commercial lettable spaces and office suites only from 4th to 20th floor.
- 200 parking spaces provision (3 basements)

In total, the entire project will have an area of 23,709 SQ.M and the approximate project cost is **1,842,554,356.63** (One billion, eight hundred forty-two million, five hundred fifty-four thousand, three hundred fifty-six shillings sixty-three cents).

Main Project Activities

The main project activities throughout the project cycle will include, but not limited to the following:

- Site preparation, including setting out of building works,
- Procurement of construction materials,
- Excavation works,
- Construction of building foundation works,
- Construction of superstructure works,
- Installation of internal fittings, internal/utility services,
- Development of vehicle parking, and walkway network,
- Development of electricity supply,
- Plumbing and drainage water supply, and rainwater harvesting,
- Landscaping,
- Final inspection of works,
- Solid wastes and waste water management,
- Cleaning,
- General repairs and maintenance,
- Decommissioning of project buildings.

EIA process and report

This EIA project report has been prepared pursuant to section 58 of the Environmental Management and Coordination Act (EMCA), 1999, EMCA (amendment) Act 2015 and in accordance with part II of the Environmental (Impact Assessment and Audit) Regulation, 2003, legal notice No. 101. The EIA process key activities included; preliminary assessment, literature review, field reconnaissance survey, direct observation, report writing and documentation.

A summary of anticipated significant environmental Impacts and their mitigation measures are found in Table 1.

Table 1: Anticipated significant environmental Impacts

Impact	Proposed mitigation
Noise and excessive vibration	• Machinery, vehicles and equipment to be maintained regularly • Comply with provisions of the noise and excessive vibrations pollution control regulations for noise levels for permissible noise and vibration levels • Provision of adequate and appropriate Personal Protective Equipment to the workers • Sensitize construction truck drivers to switch off vehicle engines when not in use • Avoid hooting especially when passing through silent zones areas such as schools, churches, residential areas, offices and hospitals • Enclose noisy machines or processes with acoustic screens
Soil and water pollution	• All heavy trucks and any other motorized machinery must be maintained well to avoid oil spills • Equipment and washing activities during construction to be done in

Impact	Proposed mitigation
	designated areas with impervious surface with interceptors for oily waste
Air Pollution (Dust, gases)	• Wetting exposed soil and site areas with water • Use tarpaulins to cover truck beds hauling soil and debris to and from the site • Use dust screens to cover the buildings under construction to trap dust • Provide appropriate personal protective equipment for employees exposed to dusts and gaseous emissions • Stock piles of earth should be enclosed/watered during windy conditions to reduce dust emission to neighbouring areas • Strict enforcement of onsite speed controls
Increased Solid waste generation	• Appropriate budgets for purchase of raw materials to reduce wastage through exposure to weather elements • Solid wastes to be put in a designated area for appropriate disposal • Segregation of waste at source so as to determine the recyclables • Contract a licensed handler to collect waste at regular intervals • Provide skips for wet and dry waste to hold before it is collected • All wastes to be transported by licensed waste handlers by NEMA and to be disposed in licensed disposal sites
Increased traffic volumes	• Construction vehicles will enter and leave the site at controlled points only. • Signage will be put in place to give warning and direct the traffic appropriately • Pedestrian walkways to be designated and protected by the placement of temporary barriers • Adhere to onsite traffic By-Laws and Kenya Traffic laws • Vehicle checkpoint to be designated inside the property to prevent snarl-up along the general Mathenge drive
Occupational safety and health hazards	• Compliance with all international, national or local health and safety standards that may exist • Issuance of Personal Protective Equipment (PPE) enforcing their use • Clear marking of work site hazards and training in recognition of hazard symbols • Regular inspection, testing and maintenance of equipment and machinery • Development and implementation of site emergency response plans • Training workers on health and safety precautions • Provide fully stocked first aid kits • Use of water sprays to arrest dust • Containment of hazardous materials • Fencing of the construction site to restrict entry and curb accidents • Installation of firefighting appliances • Provision of proper solid waste collection and disposal amenities • Provision of proper sewerage connections to prevent disease outbreaks
Increased energy demand	• The building design to take advantage of natural light during the day • Service and maintenance of powered machinery regularly to ensure efficiency • Use energy saving bulbs and appliances where possible
Increased effluent waste & surface / storm runoff	• Ensure that sewage pipes are not blocked or damaged so that the effluent can be delivered to the sewer system to avoid land and water contamination • Install adequate effluent and surface runoff management system

Impact	Proposed mitigation
generation	• Ensure that no surface runoff is directed to the sewer system to avoid sewer treatment plant overload • The contractor's work camp must have sanitation facilities installed to include a minimum of one latrine and washing area
Increased water demand	• Use of water saving devices (e.g. low volume high pressure cisterns, time delay taps, automatic shut-off taps • Rain water harvesting to be considered • Rain water harvesting will be used to supply water for non-portable use • Put in place measures for quick detection and repair of pipes & tanks leaks • Borehole water will be used to supplement the piped water supply
Influx of people	• Provide adequate social and other infrastructure to meet needs of the tenants, visitors and customers

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ACRONYMS AND ABBREVIATIONS

EMCA	Environmental Management and Coordination Act
EMMP	Environmental Monitoring and Management plan
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
KPLC	Kenya Power and Lighting Company
NCWSC	Nairobi City Water and Sewerage Company
NEMA	National Environment Management Authority
NEAP	National Environmental Action Plan
TOR	Terms of Reference
WRMA	Water Resources Management Authority
PPE	Personal Protective Equipment

1.0 INTRODUCTION

1.1 Project Background

The need to pursue sustainable development guided by environmental, social, cultural and ethical considerations has been accorded high priority worldwide. Due to numerous environmental challenges, resulting from unsustainable implementation of development programs and projects, the Kenyan government harmonized environmental laws under the Environmental Management and Coordination Act (EMCA), 1999 and its 2015 amendment, for the purposes of coordinating environmental management. EMCA 1999 and the 2015 amendment makes Environmental Impact Assessment (EIA) mandatory for all the projects specified in the Second Schedule of the Act. It is in pursuit of this piece of legislation that the project proponent commissioned this EIA process.

1.2 The Proponent

Alexander Forbes is the leading provider of financial and risk services in Africa. This expertise and approach has successfully been adopted within the Kenyan operation. Alexander Forbes provides financial services, risk and insurance broking and health and wellness solutions in Kenya with an extensive network of Alexander Forbes offices and partners in East and Central Africa.

Services offered are in the fields of actuarial services, retirement scheme administration, employee benefit consulting, asset consulting, financial and retirement planning, umbrella retirement fund, beneficiary trust fund, trustee and investment training, risk management, insurance broking and healthcare services. Alexander Forbes customers include small, medium and large organizations, trustees, specialist groups and individuals.

Alexander Forbes Retirement Fund is an umbrella fund which offers retirement benefits solutions. The Alexander Forbes Retirement Fund is a registered and approved retirement scheme providing participating employers and members a pension scheme or provident fund option, management participation, flexible benefit structure, inclusive costing and payment options, investments, online facility, benefit payment flexibility and communication to members.

1.3 EIA Project Objectives

The objective of the EIA is two-fold:

- To identify and assess all significant impacts of the proposed project on the biophysical and socio- economic environment; and
- To draw an environmental management and monitoring plan with suitable mitigation measures.

The specific objectives are as below: To:

1. Provide in depth description of the proposed development project site
2. Describe key components of works such as construction and decommissioning.
3. Identify for each component sources of adverse environmental impacts.
4. Review policy, legal and administrative framework that should be addressed for the proposed development project to proceed without negatively affecting the

environment.

5. Provide analysis of alternatives to the proposed development project.
6. Develop mitigation measures for identified negative impacts within an elaborate Environmental Management and Monitoring Plan (EMMP).
7. Prepare the ESIA report.
8. Submit the required hard copies and soft copy of the ESIA report to NEMA to allow review and approval of the proposed project by NEMA.

1.4 Justification of the proposed project

High economic growth and increased population in Nairobi has led to rapid increase in demand for office spaces. Westlands area is known to be home to a number of education, commercial and health institutions that require accommodation for their staff members. The needs of these people can only be taken care of through the construction of facilities, such as the proposed project. More importantly, it is vital to optimally utilize existing land, especially now that the land mass in Nairobi area is rapidly dwindling.

1.5 Terms of Reference (ToRs) For the EIA.

The general Terms of Reference (ToRs) for this report was to conduct an Environmental and Social Impact Assessment for the proposed commercial development. This is in accordance with NEMA's Environmental (Impact Assessment and Audit) regulations, 2003 under the Environmental Management and Coordination Act1999) and the Amendments of 2015.

The specific terms include:

1. Assessment and description of location/site, objectives, scope, nature of the proposed project,
2. Analysis of the proposed project activities during the project cycle; - construction, operation, decommissioning,
3. Evaluation of the project design,
4. Assessing materials to be used for the construction and implementation of the proposed project,
5. Assessing by - products, waste generated and the disposal methods,
6. Description and analysis of the national environmental legislative and regulatory framework, international guidelines, international conventions and treaties, related to the proposed project,
7. Evaluation of the implementation procedure/activities of the proposed project,
8. Identifying of all potential environmental impacts and scale, both positive and negative emerging from all phases of the proposed project works,
9. Gathering and collating views and perceptions of the public and other stakeholders on the proposed project,
10. Evaluating of the occupational health and safety issues related to the proposed project,
11. Identifying and analyzing alternatives to the proposed project including project site, design, and technologies,
12. Developing mitigation measures,
13. Developing an Environmental Management and monitoring Plan (EMMP) for the proposed project and baseline data for environmental monitoring,

14. Compiling the findings into an environmental impact assessment project report and submission of copies of the report to the proponent and NEMA to guide the implementation decisions on the proposed project.

1.6 Methodology

1. Site reconnaissance and visual surveys to expound on the baseline information and socio-economic characteristics of the existing situation at the project area during screening and scoping.
2. Desktop review to obtain baseline data and secondary data.
3. Questionnaire survey ***(see attached representative sample in appendices)***
4. Public consultative meeting on site was held on 12/03/2016 at the proposed project site ***(see attached minutes in appendix 3)***

1.7 EIA Team Members

The EIA team members are covered in table 2 below.

Table 2: Team Members

Name	Position	NEMA EIA/Audit expert registration number
John Kuloba	EIA/EA Lead expert	1018
Julie Wanja	Environmental Expert	4059
Hellen Mwende	Environmental Expert	6534
Walter Mugedo	Environmental Expert	5176
John Ambuya	Environmental Expert	
Winnie Wairimu	Sociologist	7629

1.8 Project Budget

The estimated project is **1,842,554,356.63** (One billion, eight hundred forty-two million, five hundred fifty-four thousand, three hundred fifty-six shillings sixty-three cents (**see attached summary at appendix 1).**

2.0 PROJECTS DESCRIPTION

2.1 Proposed commercial development

The proposed project is split into two phases;

Phase 1

- A 13 storey tower consisting of retail and lobby space on ground floor, retail and commercial lettable spaces on 1st to 3rd floor and office suites on the 4th to 13th floor;
- A 4 storey commercial podium with retail and reception lobby on the ground floor, large atrium, retail and commercial lettable spaces on the 1st to the 3rd floor and a roof garden and terrace on the 4th floor; and

Phase 2

- A 20 storey office tower with retail and reception lobby on the ground floor, 1st to 3rd floor comprising of a large atrium, retail and commercial lettable spaces and office suites only from 4th to 20th floor.
- Over 200 parking spaces provision (3 basements and surface car park areas)

In total the entire the entire project will have an area of 23, 709 SQ.M

(See attached architectural designs presentation on the appendix 11)

2.2 Proposed Project Location

The proposed project is situated on LR. No 1870/I/153, Westlands area of Nairobi County, at the junction of General Mathenge drive and Peponi road. The parcel of land lies on coordinates -1.2255806 S and 36.802601E and measures 0.4193Ha. The project site is currently not developed. The site is located in mixed land use area with neighbouring residential and commercial developments like Jesani Villas, Kaka Villas, Serenata Place and the courtyard. The current land use is residential. However, a change of land use from residential to office and retail is in progress (***see appendix 2).***

Figure 1: Map showing proposed project location

Proposed project Site

2.3 Sustainable design elements of the proposed project

2.3.1 Indoor Environmental Quality

This has been handled at design stage as follows;

1. **Ventilation and air change effectiveness -** The building has been designed to use a mixed mode cooling system, using either natural ventilation or air-conditioning systems when required by the building management system. The shallow depth of the floor plates is well within the limits of natural ventilation. During hot periods when natural ventilation is not effective, air conditioning will be used.
2. **Natural Lighting and glare control** - the building will be naturally lit through the use of curtain wall facades. However, curtain walling brings problems of overheating and glare, which have been dealt with by the introduction of solar shading glass panels to cut back both solar heat gain and glare into the offices.

2.3.2 Energy

This been a key element of sustainable design:

1. Passive solar design principles incorporating good orientation, solar shading, natural ventilation and natural lighting have been used.
2. The design also emphasises energy efficient fittings and appliances, which will be specified further during implementation.
3. Renewable energy systems like solar PV Panels and hot water systems will be incorporated into design in order to lower the peak energy demand of the building.

2.3.3 Water

The design provides for the following:

1. Water saving devices (Urinals, time delay taps, low flush cisterns etc.)
2. Grey water recycling systems and rainwater harvesting will be used to supply non-portable use such as land scape irrigation and water use in toilets.

2.3.4 Transport

To satisfy sustainable transport in the project, non-motorized transport will be catered for through the provision of the following:

1. Bicycle parking racks and changing rooms for cyclists.
2. Priority parking for those using carpooling and alternative fuel vehicles.
3. Incorporating many diverse functions into the building to ensure easy access to services such as eateries, mobile banking services, thus effectively ensuring people do not have to travel out of the building to get such services.

2.3.5 Construction materials

The building will mostly make use of green certified materials as in the following categories:

1. Materials with recycled content such as post-consumer recycled steel and aluminum.
2. Using as little non-renewable materials as possible in order to conserve the environment.
3. Materials will be sourced from within the region as much as possible.

2.3.6 Landscape and Ecology

The design considers the following:

1. Maximization of open space design.
2. Storm water management design in the surface car parking.
3. Reduction of heat island effect through the use of green roofs on the podium and on the office tower roofs.
4. Protection and restoration of habitat during the construction period and after.

2.3.7 Emissions

Key sustainability components in this category include:

1. Eliminating the use of ozone depleting refrigerants for the proposed air conditioning system.
2. Ensuring all discharges into the Nairobi County sewer and storm water mains meet the standards of international green building emissions into public mains as well as our local standards set by NEMA's Water quality regulations of 2006.
3. Minimizing light pollution by choosing and placing the luminaires correctly.

2.4 Waste Management strategy

This section deals with the management strategy for the various types of waste, including solid and wastewater.

2.4.1 Solid waste management

The technologies for the management of the solid wastes will incorporate the collection of the waste from the source, transportation of the waste to the place of storage and final disposal through a contracted waste handler. During construction phase:

- The contractors shall store, transport and dispose non-recyclable waste as per the EMC (Waste management) regulations of 2006.
- Express condition shall be put in the contract, that before the contractor is issued with a completion certificate, he will clear the site of all debris and restore it to a state acceptable by the supervising architect/ project engineer and the environmental consultant.

When in operation, the proponent will contract a NEMA licensed waste handler who will collect all solid waste at agreed intervals and dispose them at designated dumping sites. Skips shall be provided for dry and wet waste which will temporarily hold the waste before collection.

2.4.2 Liquid Waste Management

During the construction stage, wastewater that shall be discharged shall be sprinkled on the working areas to reduce dust generation by the construction machinery while contaminated wastewater shall be channelled into the sewer line to prevent water and soil pollution.
Wastewater during operational stage shall be managed on site through connection to the sewer line which already serves the area.

2.5. Water supply and demand

Water supply: The area relies on piped water supply from Nairobi City Water and Sewerage Company (NCWSC). The proponent will also drill a borehole to augment the piped water supply. (***See attached detailed calculations on appendix 10)***

Table 3: Water consumption and storage summary

Description	**No. of Liters**
Total Daily water consumption = 1,536 projected occupants ×45 = 69,120 liters	70,000 liters
Total reserve for hose reel is	14,000 liters
Therefore, the total Overhead Storage will be;	**84,000 liters**
3 days' water storage (90,000lts × 3Days)	270,000Litres
Reserve for Sprinkler System	100,000 liters
Underground water storage tank will be	**370,000 liters**
Total Building Water Storage (overhead storage plus underground storage	**454,000 liters**

2.6 Fire protection

The design of the proposed development incorporates firefighting equipment and exits to be installed in all the project components.

2.7 Construction activities and inputs

2.7.1 Input during construction

Table 4 below summarizes the anticipated most significant impacts during construction.

Table 4: Anticipated significant environmental Impacts

Activity Area	Material Input	Waste expected	Impact concerns
Ground excavation and foundation construction. Dig structural foundations to expectations of the architect	Fine chisel, natural stones, cement, sand, ballast, water, steel bars, water and murram	Top soil, subsurface rock from the foundations, cement bags, sand ballast, and steel pieces remains	Dust, noise, solid waste, biodiversity/vegetation loss, occupational health and safety and water demand
Wall framework	Building stones, wooden posts, steel bars, water, cement, sand and ballast	Remains from dressing of stones, cement bags, metal bar pieces and wooden posts remains	Dust health and safety, water demand, solid wastes
Slabs, beams, columns	Cement, sand aggregates, twisted bars, steel rods, reinforcement bars, water, formwork wires	Waste water, cement bags, twisted bars and steel/rods off cuts wire remains	Noise, dust, solid waste, waste water, visual view
Roof, support doors, roofing, ceiling	Roofing timber, fixings and fittings iron sheets, iron lopper, nails, wood preservatives	Timber and iron cuttings, nail remains, soft board remains	Health and safety, solid waste
Windows	Steel frames, glass	Broken glass	Health and safety, solid waste
Finishing/fine plaster exterior, interiors flooring	Cement, sand, paints, varnish, thinner paints, tiles and fillers	Cement bags, remains of varnish and paints and containers tiles pieces	Dust, solid waste, health and safety
Electrical works	Conduits, electrical cables, meter boxes, sockets, consumer control units, circuit breakers.	Offcuts of conduits and other electric cables	Health and safety, solid waste disposal

Labour	Skilled and unskilled	Sanitary waste	Health and safety, liquid and solid waste generation

2.8.2 Proposed Project Construction Phase Activities.

1. Pre- construction stage.

This involves:

a. Design and drawing of architectural plans and designs and applying for the various permits and licenses including the Nairobi City County Development Control Section approvals of the project
b. Undertaking traffic studies
c. Scheduling geotechnical and hydrogeological surveys
d. Environmental and social impact assessment and approvals by NEMA

2. Materials, storage and handling.

This will involve procurement, transport and storage of various input materials.

a. **Non-hazardous materials:** The store for non-hazardous materials will be accommodated within the site office. Materials to be stored in this store shall include samples for review / testing by consultants and or inspectors.
b. **Hazardous materials:** Hazardous materials shall include paints, oil, grease, vehicle fuel and bitumen. The store to keep these materials shall have iron sheet walling and roof and a waterproof concrete floor to contain spills. Storage and handling of all hazardous chemicals shall be in accordance with manufacturer's instructions as outlined on the material safety data sheets.
c. **Bulk construction materials:** The bulk materials to be stored on site include: sand, ballast, stones, cement, quarry chips, steel and timber. It is recommended that the project proponent should plan for material to be delivered in small and manageable quantities in order to avoid any form of deposit, which will impede site activities, induce safety hazards and create a nuisance to the neighbourhood.

3. Site office

The contractors shall construct temporary site offices to run and manage all activities at different phases. This will also include securing of the utility services such as water, electricity which will be crucial for the construction activities.

4. Site clearance and fencing.

The proposed project site shall be fenced. This will help to control access to the site for purposes of safety and security. All projects developments shall be fenced off by the respective contractors. The fence will also serve to restricted access reducing the amount of dust and other solid waste that have a potential of getting into and out of the site. Site clearance will include removal of top soil.

5. Excavations.

Will involve excavating for the various unit foundation works, access roads and the landscaping. The bulk of the excavated material will be carried away from site by the contractor to approved dumpsite(s) in accordance with the EMCA (waste management) regulations, 2006.

6. Civil works activities.

a. Masonry, concrete work and related activities
b. Superstructure: Includes construction of support pillars and stone walling
c. Structural reinforcement: Will be done with loop iron at every alternating course.
d. Plumbing and drainage: Plumbing and drainage will include both underground water mains and drainage systems and above ground internal water service installation. It will also include testing and inspection of the system. Installation of pipe work for water supply and distribution will be carried out within offices and associated facilities. In addition, pipe work will be done to connect tubing to storage tanks, hot water cylinders and sanitation fittings, connect sewage from the premises to the waste water treatment plant, and for drainage of storm water, plumbing activities will include installation of sanitary appliances, construction of manholes, metal and plastic cutting, the use of adhesives, metal grinding and wall drilling.
e. Electrical works: The electrical supply shall be derived from Kenya Power Company Limited (KPLC). Electrical work during construction of the premises will include wiring, installation of electrical gadgets and appliances including electrical cables, lighting apparatus, sockets, fluorescent fittings, lamps etc. in addition, there will be other activities involving the use of electricity such as welding and metal cutting. This will also entail street lighting with installation of lighting column, lanterns duct for road crossings, control pillar cabling. It will also include testing and inspection of the system.
f. Roofing work
g. Other internal installations: Includes the doors windows, stairways, ventilations tiling.
h. Landscaping and recreational zones: To include beautification both natural (Trees, grasses, flowers and ornamental plants) and artificial (Cabro designs work).
i. Security feature: This will include construction of gates to manage the sites access, installation of security lighting, emergency response appliance (firefighting appliances, first aid box, inter alia) and a boundary wall.

3.0 STUDY AREA

3.1 Administrative Framework of Westlands

Westlands is a suburb of Nairobi that was until the early 1980s composed of residential homes and a few shops. The area has since developed into a major commercial and economic area outside the Central Business District of Nairobi. Apart from being a commercial centre, Westlands is also one the eight administrative divisions in Nairobi, with the following six subdivisions:

1. Parklands
2. Kitisuru
3. Highridge
4. Kangemi
5. Kilimani
6. Lavington

The proposed project lies in Highridge division of Westlands constituency.

3.2 Physical environment

1. **Topography**: The land gently slopes at an altitude of 1788m.
2. **Hydrology:** The closest river to the project site is Mathari River at a distance of about 500metres from the project site. This is the nearest surface water.
3. **Geology:** The rocks in the Nairobi area mainly comprise a succession of lavas and Pyroclastic of the Cainozoic age and overlying the foundation of folded Precambrian schist's and gneisses of the Mozambique belt (Saggerson, 1991). The crystalline rocks are rarely exposed but occasionally fragments are found as agglomerates derived from former Ngong volcano. Geotechnical investigations of the site are ongoing. This will give more detailed information on the geology.
4. **Soils**: The project site is characterized by red soil. The soils of the Nairobi area are products of weathering of mainly volcanic rocks. Weathering has produced red soils that reach more than 50 feet (15m) in thickness (Saggerson, 1991). A number of subdivisions are recognized in the Nairobi area according to drainage, climatic regions and slopes, and other categories have been introduced for lithosols and regosols.

3.3 Climate

Nairobi County has a fairly cool climate resulting from its high altitude. Temperature ranges from a low of 100C to a high of 290C. It has a bi-modal rainfall pattern. The long rains season fall between March and May with a mean rainfall of 899 millimetres (mm) while the short rains season fall between October and December with a mean rainfall of 638 mm. The mean annual rainfall is 786.5 mm (Nairobi County Integrated Development Plan, 2014).

3.4 Biological environment

1. **Flora**

The site is not developed. At the time of assessment, the site was in use as a construction materials storage site and site camp. Vegetation is little and consists of grass, scattered shrubs, weeds, avocado tree (*Persea americana*) and Mango tree (*Mangifera indica)*.

2. **Fauna**

There are no animal habitats onsite.

3.3 Infrastructural facilities

1. **Energy Sources:** The proposed project area gets the bulk of its energy supply from the Kenya Power and Lighting Company (KPLC). The site will be connected to the national grid.
2. **Water Sources:** The project area is well served with piped water from the Nairobi Water and Sewerage Company (NCWSC). The proponent will also sink a borehole to augment the supply from the NCWSC.
3. **Transport and communication: -**
    a. ***Roads:*** The project area is well served by a good road network which is tarmacked. The site is accessed via General Mathenge drive and Peponi road.
    b. ***Communication:*** The area is well covered by all mobile service providers (Safaricom, Airtel, Orange and YU) and Telkom Kenya (Land line).

4. ***Sanitation:*** The project area has a sewer line. It is served by the Nairobi City Water and Sewerage Company.

3.4 Land Use

The current land uses include both commercial and residential use. The proponent land use is in the process of being changed from residential use to offices and retail use (this is ongoing and a change of use certificate shall be filed with NEMA). The immediate developments are both residential and commercial. The project neighbors Serenata Place, the Courtyard, Kaka Villas, Jesami villas.

4.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

There are a number of national policy and legal provisions and International EIA provisions that have a direct bearing on the optimum operation of the proposed development.

4.1 Relevant national policies

The following national policies are of relevance to the proposed project development:

4.1.1 The National Environmental Action Plan (NEAP)

The NEAP was a deliberate policy effort to integrate environmental considerations into the country's economic and social development. The integration process was to be achieved through a multi-sectoral approach to develop a comprehensive framework to ensure that environmental management and conservation of natural resources are an integral part of societal decision making.

Relevance to the proposed project

The NEAP has indicated how resources e.g. Water, energy within particular sections of the country should be managed in order to ensure their sustainable utilization. The project shall be implemented and operated based on these guidelines.

4.1.2 Environment and development policy (Sessional Paper No.6 of 1999)

The aim of this policy is to harmonize environmental and development goals so as to ensure sustainability. The paper provides comprehensive guidelines and strategies for government action regarding environment and development.

Relevance to the proposed project

The interaction of the proposed project with physical elements may lead to some negative impacts. Mitigation measures are therefore necessary to ensure balanced coexistence of the project and the surrounding environment and facilities.

4.2 Legal framework

4.2.1 Environment Management and Coordination Act, (Amendment) 2015

Section 58.(1) Of the Act states "Notwithstanding any approval, permit or license granted under this Act or any other law in force in Kenya, any person, being a proponent of a project, shall, before financing, commencing, proceeding with, carrying out, executing or conducting or causing to be financed, commenced, proceeded with, carried out, executed or conducted by another person any undertaking specified in the Second Schedule to this Act, submit a project report to the Authority, in the prescribed form, giving the prescribed information and which shall be accompanied by the prescribed fee".

Section 59 (1) states that upon receipt of an environmental impact assessment study report from any proponent under section 58(2), the Authority shall cause to be published in the Gazette, in at least two newspapers circulating in the area or proposed area of the project and over the radio":

Relevance to the proposed project

This Act provides a legal and institutional framework for the management of the environmental related matters. This report has been written pursuant to section 58 (1) of this Act and the proponent shall take note of its provisions.

4.2.2 Environmental Impact Assessment and audit regulations 2003

These regulations stipulate how an EIA project report should be prepared and specifies all the requirements that must be complied with. It highlights the stages to be followed, information to be made available, role of every stakeholder and rules to be observed during the whole EIA project Report making process.

It also requires that during the EIA process a proponent shall in consultation with the Authority seek views of persons who may be affected by the project or activity.

Relevance to the proposed project

This EIA project report has been prepared in line with the required procedures.

The proponent through the Environmental consultants has sought the views of the project neighbours through public meetings, direct interviews and through questionnaire survey.

4.2.3 EMCA (Water Quality Regulations, 2006)

The Water Quality Regulations (2006) are contained in the Kenya Gazette Supplement No. 68, Legal Notice No. 120. Water Quality Regulations apply to water used for domestic, industrial, agricultural, and recreational purposes; water used for fisheries and wildlife purposes, and water used for any other purposes. Different standards apply to different modes of usage. These regulations provide for the protection of lakes, rivers, streams, springs, wells and other water sources. It is an offence to contravene the provisions of these regulations with a fine not exceeding five hundred thousand shillings.

In addition, of immediate relevance to the proposed project for the purpose of this Project Report is Part II Sections 4-5 as well as Part V Section24.

- Part II Section IV states that “Every person shall refrain from any act which directly or indirectly causes, or may cause immediate or subsequent water pollution”.
- Part IV Section 24 states that “No person shall discharge or apply any poison, toxic, noxious or obstructing matter, radioactive wastes, or other pollutants or permit any person to dump any such matter into water meant for fisheries, wildlife, recreational purposes or any other uses”.

According to these regulations, “Every person shall refrain from any action 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”.

Relevance to the proposed project

All waste water shall be channelled to the sewer line so as not to pollute the ground and surface water and if a pollution incidence occurs the contractor/proponent shall notify the authority immediately. The contractor/proponent will handle hazardous substances in a manner that is not likely to cause water pollution

4.2.4 EMCA (Wetlands, riverbanks, lakeshores and Sea shore management) regulations, 2009

PART III – Management of River Banks, Lake Shores and Sea Shore

General Principles.

17. The following principles shall be observed in the management and conservation of river banks, lake shores and the seashore;

(a) Resources on the river banks, lake shores and the sea shore shall be utilized in a sustainable manner;

(b) Environmental impact assessment as required under the Act shall be mandatory for all major activities on river banks, lake shores and the seashore; and

(c) Special measures, including prevention of soil erosion, siltation and water pollution are essential for the protection of river banks, lake shores and the seashore.

Relevance to the proposed project

The Proponent shall prevent soil erosion, siltation and water pollution to protect surface water bodies which are away from the proposed site.

4.2.5 EMCA (Waste Management) Regulation, 2006

The Waste Management Regulations (2006) are contained in the Kenya Gazette No. 69, Legal Notice No. 121. The Waste Management Regulations are meant to streamline the handling, transportation and disposal of various types of waste. The aim of the Waste Management Regulations is to protect human health and the environment. The regulations place emphasis on waste minimization, cleaner production and segregation of waste at source. The regulation requires licensing of transporters of wastes and operators of disposal site (sections 7 and 10 respectively). Of immediate relevance to proposed development for the purposes of this project report is Part II Sections 4(1-2), 5 and 6.

- Section 4 (1) states that “No person shall dispose of any waste on a public highway, street, road, recreational area or any other public place except in a designated waste receptacle”. Section 4(2) and 6 explain that the waste generator must collect, segregate (hazardous waste from non-hazardous) and dispose waste in such a facility that shall be provided by the relevant local authority.

- Section 5 provides method of cleaner production (so as to minimise waste generation) which includes the improvement of production processes through conserving raw materials and energy.

- Section 11 provides that any operator of a disposal site or plant shall apply the relevant provisions on waste treatment under the local government act and regulations to ensure that such waste does not present any imminent and substantial danger to the public health, the environment and natural resources.

Relevance to the proposed project

The Developer/contractor is expected to take all responsibility to ensure that solid waste is properly handled, stored, transported and disposed as per the procedures provided in this

regulations. The waste must be transported by NEMA licensed transporter and disposed in waste treatment facility that is approved by the authority.

4.2.6 EMCA (Noise and Excessive Vibration Pollution Control) Regulations, 2009

These Regulations require that no person or activity shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. In determining whether noise is loud, unreasonable, unnecessary or unusual, the following factors may be considered:

- Time of the day;
- Proximity to residential area;
- Whether the noise is recurrent, intermittent or constant;
- The level and intensity of the noise;
- Whether the noise has been enhanced in level or range by any type of
- Whether the noise is subject to be controlled without unreasonable effort or expense to the person making the noise.

These regulations also relate noise to its vibration effects and seek to ensure no harmful vibrations are caused by controlling the level of noise.

Part II Section 4 state that: except as otherwise provided in these Regulations, no person shall

- Make or cause to be made excessive vibrations annoys, disturbs, injures or endangers the comfort, response, health or safety of others and the environment; or
- Cause to be made excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source.

Table 5: Second Schedule– Maximum Permissible Noise Levels for Construction Sites

Maximum permissible Noise levels for construction sites (measurements taken within the facility)		
Facility	Day	Night
i. Health facilities, educational institutions. Homes for disabled etc.	60	35
ii. Residential	60	35
iii. Areas other than those prescribed in(i) and (ii)	75	65

Relevance to the proposed project

The contractor shall be required to implement the provisions of the EMMP, to ensure noise reduction. In addition, he shall be required to adhere to the provisions of maximum permissible levels for construction sites.

4.2.7 Draft Environmental Management and Coordination (Air Quality) Regulations, 2008

The objective of these Regulations is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. The general prohibitions state that no person shall cause the emission of air pollutants listed under First Schedule (Priority air pollutants) to exceed the ambient air quality levels as required stipulated under the provisions of the Seventh Schedule (Emission limits for controlled and non-controlled facilities) and Second Schedule (Ambient air quality tolerance limits).

Relevance to the proposed project

The contractor shall adhere to the provisions of this act, as well as implement the mitigation measures provided in the EMMP to prevent air pollution especially during construction phase.

4.2.8 Occupational Health and Safety Act 2007 CAP 514

The Act makes provision for the health, safety and welfare of persons employed. The provision requires that all practicable measures be taken to protect persons employed from any injury. The provisions of the act are also relevant to the management of hazardous and non-hazardous wastes, which may arise at the project site. The act provides that all measures should be taken to ensure safety, health and welfare of all the stakeholders in the work place.

Relevance to the proposed project

Workers and occupants' safety will be given priority during both construction and operation phases of the project. It shall be the duty of the contractor in this case to ensure safety and health of workers during construction phase.

The construction sites for different contractors shall be registered as workplace with the directorate of occupational safety and health services under the ministry of labour social security and services. A fire audit, risk assessment and safety and health audit has to be conducted for the sites at least once every year. All provisions of this Act relevant to the project activities shall be adhered to. All plants shall be subjected to periodical examinations as provided by law.

4.2.9 The Physical Planning Act of 1996 CAP 286

Part V—Control of development

30. (1) No person shall carry out development within the area of a local authority without a development permission granted by the local authority under section 33.

    (2) Any person who contravenes subsection (1) shall be guilty of an offence and shall be liable to a fine not exceeding one hundred thousand shillings or to an imprisonment not exceeding five years or to both.

    (3) Any dealing in connection with any development in respect of which an offence is committed under this section shall be null and void and such development shall be discontinued.

    (4) Notwithstanding the provisions of subsection (2)—

(a) The local authority concerned shall require the developer to restore the land on which such development has taken place to its original condition within a period of not more than ninety days;
(b) If on the expiry of the ninety days' notice given to the developer such restoration has not been affected, the concerned local authority shall restore the site to its original condition and recover the cost incurred thereto from the developer.

31. Any person requiring development permission shall make an application in the form prescribed in the Fourth Schedule, to the clerk of the local authority responsible for the area in which the land concerned is situated.
The application shall be accompanied by such plans and particulars as are necessary to indicate the purposes of the development, and in particular shall show the proposed use and density, and the land which the applicant intends to surrender for—
(a) Purposes of principal and secondary means of access to any subdivisions within the area included in the application and to adjoining land;
(b) Public purposes consequent upon the proposed development.

36. If in connection with a development application a local authority is of the opinion that proposals for industrial location, dumping sites, sewerage treatment, quarries or any other development activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an environmental impact assessment report.

Relevance to the proposed project
This Act provides for order in terms of development execution. The proponent has already submitted the project designs to the Nairobi City County Development Control Section for approval; an approval will be obtained in due course. This development shall also comply with all the provisions of the physical planning act.

4.2.10 The Penal Code CAP 63
Chapter XVII on "Nuisances and offences against health and convenience" contained in the penal code strictly prohibits the release of foul air into the environment which affects the health of the persons. It states "Any person who voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way is guilty of a misdemeanour"

Relevance to the proposed project
Waste disposal and other project related activities shall be carried out in such a manner as to conform to the provisions of the code.

4.2.11The Public Health Act (Cap. 242).
Part IX, section 115, of the Act states that no person or institution shall cause nuisance or condition liable to be injurious or dangerous to human health. As well, section 116 of the act requires local Authorities to take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and prevent occurrence of nuisance or condition liable to be

injurious or dangerous to human health. Further, part XII, Section136, states that all collections of water, sewage, rubbish, refuse and other fluids which permits or facilitates the breeding or multiplication of pests shall be deemed nuisances and are liable to be dealt with in a manner provided for by this Act. (GOK, 1986).

Relevance to project

The main contractor and the proponent will be required to provide sanitary facilities and solid waste handling containers for use by the construction workers on site during construction and operation phases. A licensed solid waste transporter will also be contracted to collect all solid waste from the site for dumping at approved sites. Wastewater from the proposed project developments during the operational phase will be channelled to the sewer line. The final effluent must meet the stipulated standard for disposal into the sewer line.

5.0 ENVIRONMENTAL IMPACTS AND MITIGATION

5.1 Description of the existing and anticipated impacts

5.1.1 Existing impacts

There were no impacts at the time of the study since the project site is not in use by the proponent.

5.1.2 Anticipated impacts

The anticipated impacts of the proposed project on the environmental elements are both positive and negative. The magnitude of each impact is described in terms of being significant, minor or permanent, short-term or long term, specific (localized) or widespread, reversible or irreversible. The assessment criteria for the significant impacts are as shown in the table 6 below:

Table 6: Assessment criteria for significant impacts

Key	Type of impact	Key	Type of impact.
++	Major positive impact.	+	Minor positive impact.
- -	Major negative impact	-	Minor negative impact.
0	Negligible/zero impact	NC	No change
Sp	Specific/localized	W	Widespread.
R	Reversible	Lr	Irreversible.
Sh	Short term.	L	Long term.
T	Temporary	P	Permanent

On the basis of information gathered during both the desktop and field study, the potential environmental impacts of the proposed project are as tabulated below in table 7..

Table 7: Potential environmental and Socio impacts

Impacts on Or due to	Construction	Occupation	Decommissioning
Noise and Excessive Vibrations	-, Sh, Sp,	0	- -, Sh, Sp
Soil and Water Pollution	Sh -	0	-
Air Pollution(dust and gaseous)	-, Sh, Sp	0	-, Sh, Sp
Increased Solid Waste generation	-, Sh	0,	- -, Sh, Sp
Increased liquid and solid wastes	0	- ,L	0
Increased Traffic Volumes	-, Sh	- -, L,	0
Occupational safety and health hazards	Sh, Sp,-	0	Sh, Sp, -
Increased energy demand	0	0	0
Increased effluent waste & surface / Storm runoff generation	0, Sp	-, L	0
	-	-L	0
Increased revenue to the central government	++,Sh	++, L	0
Economic investment hence wealth	++	++, L	-

Provision of high quality commercial retail / office space for leasing	NC	++, L	-
Employment and improved security	0	++, L	++, Sh

5.2 Positive Benefits

There are a number of positive benefits associated with the proposed development. The following are some of the positive benefits anticipated:

1. **Increase in revenue to the central and county government**

Through payment of relevant taxes, rates and fees to the government and the local authority, the project will contribute towards the national and local revenue earnings.

2. **Economic investment hence increases in wealth**

The proponent will receive returns on his investments.

3. **Provision of high quality commercial retail / office space for leasing**

This will attract many investors such as retail shops, restaurants among others.

4. **Provision of employment opportunities of skilled, semi-skilled and unskilled labourers.**

There shall be an increase in job availability during construction phase and operational phases of the proposed development. New businesses will lease space thus create employment opportunities for numerous people and this will positively impact on the employment and income situation at the level of the area as well as at the county and national levels. Employment during construction phase will however be short term.

5. **Improved Security**

Security will be ensured around the proposed development through distribution of suitable security lights and presence of 24-hour security guards. This will lead to improvement in the general security in the surrounding area.

5.3 Negative environmental Impacts during construction phase

The issues that are seen as likely to negatively affect the biophysical and human environment and population therein include the following:

5.3.1 Noise and excessive vibration

The construction works, delivery of building materials by heavy trucks and the use of machinery/equipment including bulldozers, generators, metal grinders and concrete mixers will lead to high levels of noise and vibration within the construction site and the surrounding area.
Elevated noise levels within the site can affect project workers and the residents, passers-by and other persons within the vicinity of the project site.

Proposed mitigation measures

1. It is recommended that machinery and equipment will be serviced regularly to ensure that they are in good condition to minimize excessive noise and vibration.
2. It is recommended that the contractor will ensure that noise & excessive vibration from construction activities are within permissible levels as per the provision of the

Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. This includes among others adhering to permissible noise and vibration level. The proponent also has to apply for noise permit for construction activities.

3. It is recommended that the workers be provided with Personal Protective Equipment (PPEs) such as ear plugs, to protect them from excessive noise and vibration.

5.3.2 Soil erosion and water pollution

Impacts are expected from oil spills and other hazardous substances from construction equipment and washing activities during construction, which may lead to contamination of ground water through leaching. Water pollution is also envisaged to emanate from increased surface run off to water bodies with its associated waste load. At the construction phase, soil excavation for the construction site will loosen the soil and expose it to erosive elements of air and water.

Proposed mitigation measures

1. Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
2. It is recommended that all machinery and equipment be regularly maintained and serviced to avoid leak oils.
3. It is recommended that maintenance and servicing of vehicle, machinery and equipment must be carried out in a designated area (protected service bays) and where oils are completely restrained from reaching the ground. Such areas should be covered to avoid storm water from carrying away oils into the soil or water systems. Waste water/ wash water from these areas should be properly disposed.
4. It is recommended that all oil products and materials should be stored in site stores or in the contractor's yard. They should be handled appropriately to avoid spills and leaks.
5. It is recommended that car wash areas and other places handling oil activities within the site must be well managed and the drains from these areas controlled. Oil interceptors must be installed along the drainage channels leading from such areas.
6. It is recommended that wastewater generated from the washing down of mixer trucks and drum mixers and similar equipment should wherever practicable be recycled. The discharge of wastewater will be kept minimal.
7. It is recommended that there should be no flooding within the site at all.

5.3.3 Air Pollution (dust, gases)

During the construction phase, air pollution will emanate from gaseous emissions from the construction machinery, concrete mixing activities, vehicles transporting and offloading construction materials on site. Dust will also be generated during excavation process and vehicle movement. Emissions from the vehicle exhausts such as sulphur dioxide, carbon monoxides and hydrocarbons and dust generated from vehicle movement and earth work

constitute major pollutants, which can affect air quality. Based on the project description, impacts to air quality from construction activities should be temporary.

Proposed mitigation measures

1. It is recommended that wetting exposed soil and site areas with water will control dust emissions.
2. It is recommended that particulate emissions will be controlled by the off-site disposal of construction debris.
3. It is recommended that staff working in dust generating activities e.g. site preparation, excavation, concrete mixing, stone dressing should be provided with dust masks.
4. It is recommended that stock piles of earth should be enclosed / watered during windy conditions to reduce dust emissions to neighbouring areas.
5. It is recommended that emissions from the vehicle and machinery should be minimized by servicing them regularly.

5.3.4 Increased Solid waste generation

Waste categories that are expected to be generated during this phase are identified as follows:

1. **Site clearance and excavation waste:** Will include substantial amount of organic waste and waste soils, stones and rocks resulting from site clearance and excavation activities
2. **Construction waste:** Will include construction stone chips, wood, paper, glasses, waste metals, asphalt, concrete packaging wastes, roofing material *etc.*

Proposed Mitigation Measures

1. It is recommended that construction waste be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses. In this regard, the proponent should be committed to ensuring those construction materials left over at the end of construction will be used in other projects rather than being disposed off. Some of the waste can be sold or donated or recycled/reused by construction companies, local community groups, institutions and individual residents or homeowners.
2. It is recommended that during the construction phase the contractor and the proponent are expected to ensure that the waste is disposed off according to NEMA and the Nairobi County Government waste management laws, regulations and by – Laws.
3. Purchase of perishable construction materials such as paints should be incrementally done to ensure reduced spoilage of unused materials.
4. It is recommended that use of construction materials containing recyclable content when possible and in accordance with accepted standards.
5. It is recommended to provide solid waste collection and segregation facilities.

5.3.5 Increased traffic volumes

Automobile traffic will be impacted during the construction. The heavy commercial vehicles to the construction site will cause strain to the neighbourhood as a result of increased traffic volume, noise, and damage to the existing road infrastructure.

Proposed mitigation measures,

1. Proper traffic control will be implemented to safeguard both the public and construction traffic.
2. It is recommended that to control vehicle traffic, construction vehicles will enter and leave the site at controlled points only.
3. It is recommended that signage will be put in place to give warning and direct the traffic appropriately.
4. It is recommended that measures will be taken to protect pedestrians from construction activities that border pedestrian walkways. Where necessary, walkways will be protected by the placement of temporary barriers.
5. It is recommended that to further mitigate the negative impacts due to traffic, the contractor and the proponent are expected to adhere to Nairobi county government traffic by-laws and Kenya traffic laws.

5.3.5 Occupational safety and health hazards

Employee well-being requires consideration of the occupational health and safety of workers and contractors, workplace conditions (e.g. wages, benefits, security, rights and growth opportunities), as well as job satisfaction and pride.

During the construction phase it is expected that there will be accumulation of various streams of waste especially vegetation from site clearance, metal cut offs and construction debris. These may cause injuries to workers and people accessing the site. Storage and handling of various materials may result to spillage. The construction process is expected to generate noise and may also result to general accidents. As a result, the above could cause adverse human health, injuries or loss of life.

Proposed mitigation measures

Most hazards can be successfully controlled by the adoption of safe equipment and machinery use methods, training programs and occupational health and safety management systems.

Measures to avoid minimize and mitigate the negative health and safety impacts during the construction phase include:

1. Compliance to all international, national and local health and safety standards that may exist,
2. Issuance and training of all personnel in the use of Personal Protective Equipment (PPEs) and chemical handling,
3. Clear marking of work site hazards and training in recognition of hazard symbols,
4. Training of all personnel in fire prevention and protection,
5. Regular inspection, testing and maintenance of equipment and machinery,
6. Accident investigation and prevention initiatives; and development of and training in site emergency response plans,
7. Training workers on health and safety precautions,
8. Provide a full first aid kit at the construction yard,
9. Use of water sprays to arrest dust,
10. Containments of hazardous materials,

11. Fencing of the construction site to restrict entry and curb accidents

5.4 Negative environmental Impacts during operation phase

5.4.1. Increased Energy Demand.

The project is envisaged to increase energy demand, as it will be connected to the national electricity grid. Power will be needed in the units, and for security lighting. This will ultimately lead to increased power demand. In addition, during operation, the retail and office blocks once fully occupied will consume a lot of electrical energy. Since electricity generation involves utilization of natural resources, increased electricity consumption will strain the resources and negatively impact on their environmental sustainability.

Proposed mitigation measures

1. It is recommended that the proponent plans to install an energy-efficient lighting system in the development which will contribute immensely to energy saving during the operational phase of the project. This includes use of energy saving bulbs.
2. It is recommended that tenants be sensitized to ensure energy efficiency in their operations.
3. Renewable energy systems like solar PV Panels and hot water systems will be incorporated into design in order to lower the peak energy demand of the building

5.4.2 Increased Solid Waste Generation

The project is expected to generate substantial amounts of solid waste during its operation phase.

The bulk of the solid waste generated during the operation of the project will consist of paper, plastic and organic wastes. Such waste can be detrimental to the environment through blockage of drainage systems and scenic pollution. Some of these waste materials especially the plastic/polythene are not biodegradable and may cause long-term pollution of the environment.

Proposed mitigation measures

1. During the initial period of the project operation, the proponent will be responsible for efficient management of solid waste generated. The proponent company will provide waste handling facilities such as waste bins, holding skip for temporarily holding waste generated at the site. In addition, the proponent will ensure that such waste is disposed of regularly and appropriately. The proponent shall ensure to contract a NEMA licensed waste handler for appropriate disposal of the waste.
2. It is recommended that in addition, early establishment of waste management strategies and plans can provide a sustainable base for future operations on the site, and needs to take into account both hazardous and non-hazardous wastes.
3. It is recommended that use of durable, long-lasting materials that will not need to be replaced often, thereby reducing the amount of construction waste generated over time.

5.4.3. Increased Effluent Waste and Surface/Storm Runoff Generation

The proposed project will definitely lead to increased demand for sanitation and sewage disposal. This may increase strain on the current sewer system. The surface runoff from the building roof and pave ground will lead to increased volume and velocity of storm water or run-off flowing from the proposed project site. This will in turn lead to increased amounts of storm water entering the drainage system potentially resulting to overflow and damage, and/or strain to such systems, in addition to increased erosion or water logging of the drainage channels.

Proposed mitigation measures

1. It is recommended that the sewer system installed should be adequate to handle all the effluent from the development.
2. It is recommended to ensure that sewerage discharge pipes are not blocked or damaged since this can lead to release of the effluent, resulting in land and water contamination. Such blockage or damages will be fixed expeditiously. This will be done through continuous and regular inspection and maintenance of the system.
3. It is recommended that the construction of effective and adequate surface/storm water drainage system be undertaken.
4. It is recommended to ensure that no surface wastewater is directed into the sewer system to avoid overloading the sewerage system.

5.4.4. Increased Risk of Occupational Health and Safety Incidences.

These include chances of Accidents (falls &trips) and fire outbreaks*.*

Proposed mitigation measures

1. The design already factors installation of firefighting appliances i.e. Water hose reels, storage of water for firefighting only, water sprinklers, fire exits.
2. It is recommended to put in place and implement an Emergency Response Plan (ERP).
3. It is recommended to ensure proper solid waste collection and disposal amenities and proper sewer treatment to prevent disease outbreaks
4. Regular cleaning and disinfection of sanitary facilities

5.4.5 Increase Water Supply Demand

The activities during the operation phase of the project will involve the use of large quantities of water. Once operational, the proposed project will increase the number of people, visitors and workers to the building hence increasing demand for the utilities and services such as water.

Proposed mitigation measures

1. The proponent shall drill a borehole to supplement water supply from NCWSC for the project.
2. It is recommended that water conserving fittings be installed to conserve water use. These will include water conserving tap installations and toilet flush system designed to use less water. (*these are recommended in the design*)

3. It is recommended that the design will incorporate rainwater harvesting and storage to supplement water from NCWSC.
4. It is recommended that measures for quick detection and repair of pipes and tanks leak should be put in place.

5.5 Anticipated Positive Impacts during Project Decommissioning Phase

5.5.1 Rehabilitation

Upon decommissioning of the proposed project, rehabilitation of the project site will be carried out to restore the site to near to its' original state or better.

5.5.2 Employment Opportunities

For decommissioning to take place properly and in good time, several people will be involved. As a result, several employment opportunities will be created for the demolition.

5.6 Anticipated Negative Impacts during Project Decommissioning Phase

5.6.1 Livelihoods and Economic Loss

The establishment and operation of the project will bring about a lot of positive changes to the lives of the people around it and also to the surrounding economy. Decommissioning of the project will thus mean a reverse of these gains whereby many people will lose their source of livelihood from jobs to business ventures hence directly leading to a decline of the area economic stature and a drawback to the economy at large.

Proposed mitigation measures

1. It is recommended that the business associated with the development should be notified of intention of decommissioning in good time to relevant adjustment.
2. It is recommended for redeployment of the affected workers where feasible.

5.6.2 Solid Waste Generation

Demolition of the project buildings and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, wood and, glass. 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 chemicals into the environment.

Proposed mitigation measures

1. It is recommended that demolition waste be recycled, reused or sold to third parties to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses
2. It is further recommended that the materials that cannot be reused or recycled should be disposed off appropriately to a NEMA licensed and designated disposal site.

5.6.3 Excessive Noise and Vibration pollution

The decommissioning related activities such as demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas. This will be as a result of the noise and vibration that will be experienced as a result of demolishing of the proposed project buildings and related components.

Proposed mitigation measures

1. It is recommended that noise and vibration will be minimized in the project site and surrounding areas through sensitization of construction truck drivers to switch off vehicle engines while offloading materials. In addition, they will be instructed to avoid hooting especially when passing through silent zones areas such as schools, churches, residential areas and hospitals.
2. It is recommended that construction machinery shall be kept in good condition e.g. greasing to reduce noise generation from friction of movable parts.
3. It is recommended that all generators and heavy duty equipment be insulated or placed in enclosures to minimize ambient noise levels.

5.6.4 Dust and Exhaust Emissions

Large quantities of dust will be generated during demolition works. Particulate matter pollution is likely to occur during demolition and transportation of the construction waste. There is possibility of suspended and settle-able particles affecting the site workers and the surrounding neighbours' health. Exhaust emissions are likely to be generated during the demolition period by the various machinery and equipment to be used as well as motor vehicles used for the exercise.

Proposed mitigation measures

1. It is recommended that dust emission during decommissioning will be minimized through strict enforcement of onsite speed controls as well as limiting unnecessary traffic within the project site.
2. It is recommended that the demolition site will be fenced off.

5.6.5 Occupational Health and Safety Hazards

Demolition works will inevitably expose workers and the public to occupational health and public safety risks. In particular, working with heavy equipment, handling and use of tools engender certain risks. The construction workers are also likely to be exposed to risk of accidents and injuries resulting from accidental falls, falling objects, and injuries from hand tools and other equipment.

Proposed mitigation measures

1. It is recommended that the decommissioning works, workers be issued with appropriate PPEs and the decommissioning contractor to enforce their use.
2. Restrict onlookers/scavengers from site

5.6.6 Displacement of tenants

The decommissioning of the project will result into displacement of the tenants, workers and persons living and making business out of the commercial retail and office block

Proposed mitigation measures

It is recommended that adequate notices to interested and affected parties (IAP) should made of the impending decommissioning to make arrangement for alternative arrangements.

6.0 PROJECT ALTERNATIVES

6.1 Introduction

This section examines alternatives to construction of the proposed development in terms of the site, products, materials, technology and waste management. Also, impacts of each alternative are identified, discussed and compared with those of this development proposal. With such information, reviewers have basis for decision-making.

6.2 No Project Alternative

This option implies that the existing situation prevail i.e. no construction/development activity to take place. This option is mostly applicable in situations where the proposed project area is in ecologically sensitive areas. The land in which the proposed project is to be constructed is in a stable environment and therefore will not be affected by this development activity. From a socio-economic perspective the "no action" alternative may not be the best alternative as the numerous benefits to be gained from the development both locally and nationally would not be realized and the resources in the area would continue to be underutilized since the land lies idle. The 'No Project Option' is therefore the least preferred from the socio-economic and partly environmental perspective, since if the project is not done: -

- The economic benefits especially during construction i.e. provision of jobs for skilled and non-skilled workers will not be realized
- There will be no generation of income by the developer and the Government
- The social-economic status of Kenyans and local people would remain unchanged
- The local skills would remain under utilized
- No employment opportunities will be created for Kenyans during operation phase.
- Discouragement for investors to produce this level of standard and affordable developments.

From the analysis above, it becomes apparent that the 'No Project Alternative' is not the appropriate alternative to the local people, Kenyans, and the Government of Kenya. This alternative describes a situation where the proposed development fails to be implemented. In case this happens, positive impacts associated with the proposed development will not accrue to the stakeholders, the development consultants, contractors and suppliers of materials. However, from an environmental conservation perspective, this alternative will be beneficial in the sense that any potential negative impacts associated with the project will be avoided.

The "No Action Alternative" should not be adopted, as we need to encourage development so long as it is undertaken on a sustainable basis as per the environmental management plan developed in this report. In addition, adopting the "no action alternative" will mean that the existing shortfall in residential, commercial and retail outlets needs will continue to prevail unabated. This is not viable since the proponent had already committed finances and land to a development project that suits development objectives. Construction of this development will create employment, both skilled and semi-skilled. If the project is abandoned, then the trickle-down of financial resources will not be felt in this area. In this respect, the "No project alternative" is deemed inappropriate.

6.3 Alternatives to Site

Currently, there is no other alternative site available to the proponent for the proposed development. Looking for suitable land to accommodate the scale and size of the project and completing official transaction on it may take a long period. In addition, it is not a guarantee that such land would be available. The project design and planning before the stage of implementation would call for cost; already incurred in the proposed development i.e. whatever has been done and paid to date would be considered as a loss to the proponent. Assuming the project will be given a positive response after (say relocation) by the relevant authorities including NEMA, it (project) would have been delayed for a long period before implementation. The other consequence of this is that it would discourage both foreign and local investors especially in the building sector. In consideration of the above concerns and assessment of the current proposed site, relocation is not a viable option.

6.4 Construction Materials and Technology

There is a wide range of construction and furnishing materials which can be sourced locally and internationally. In this construction, certified raw materials/equipment and modern technology will be used. The concrete walls will be made using locally sourced stones, cement, sand (washed and clean) metal bars and fittings that meet the Kenya Bureau of Standards (KBS) requirements. Alternative sources of energy such as solar energy will be utilized and electrical appliances that save energy will be given first priority.

7.0 ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN (EMMP)

7.1 Significance of EMMP

The aim of the Environmental Monitoring and Management plan (EMMP) is to provide a road map to the proponent on how to address identified significant impacts (environmental and social), requirements for labour specialization (responsibility), frequency of monitoring activities, and estimated cost implications.

Table 8 below provides the EMMP of the outlined environmental and social impacts.

Table 8: Anticipated significant environmental Impacts and mitigation measures

Impact	Proposed mitigation	Responsibility	Monitoring Activity	Cost Estimate (for monitoring activity other costs are included in the BoQ
CONSTRUCTION PHASE				
Noise and excessive vibration	• Ensure that machinery, vehicles and equipment to be used in site operations are well maintained regularly • Comply with provisions of the noise and excessive vibrations pollution control regulations for noise levels for permissible noise and vibration levels. • Provision of adequate and appropriate PPEs to the workers • Sensitization of construction truck drivers to switch off vehicle engines while offloading materials and avoid hooting especially when passing through silent zones areas such as schools, churches, residential areas, offices and hospitals • All generators and heavy duty equipment be insulated or placed in enclosures to minimize ambient noise levels • Enclose noisy machines or processes with acoustic screens	Contractor	• Routine Inspection • Noise survey reports • Sensitization programs on noise reduction	• 500,000.00/year
Soil and water pollution	• All heavy trucks and any other motorized machinery must be maintained well to avoid oil spills • Equipment and washing activities during construction which may lead to contamination of ground waters through leaching be done in designated areas with impervious surface and a drainage system which can intercept oils and greases and other wastes loads	Contractor	• Routine inspection/reports	• No extra costs

Impact	Proposed mitigation	Responsibility	Monitoring Activity	Cost Estimate (for monitoring activity other costs are included in the BoQ
Air Pollution (dust, gaseous emissions)	• Dust emissions will be controlled by wetting exposed soil and site areas with water • Ensure that tarpaulins will be used over truck beds hauling soil and debris to and from the site • Ensure that dust screens will be used to cover the buildings under construction to trap dust • Ensure that staff working in dust generating activities e.g. Site preparation, excavation, concrete mixing, stone dressing should be provided with appropriate and adequate PPEs such as dust masks • Ensure that stock piles of earth should be enclosed/watered during windy conditions to reduce dust emissions to neighbouring areas • Ensure strict enforcement of onsite speed controls as well as limiting unnecessary traffic within the project site	Contractor	• Routine monitoring • Air quality tests/reports	• 500,000.00/year
Increased Solid waste generation	• Limit quantity by developing appropriate budgets for purchase of raw materials to reduce wastage through exposure to weather elements • Solid wastes to be put in a designated area for appropriate disposal • Segregation of waste to be done at source so as to determine the recyclables. • Contract a licensed handler to collect waste at regular intervals • Provision of skips for wet and dry waste to hold before it is collected • All wastes to be transported by licensed waste	Contractor	• Records keeping • Routine inspection • Reports	• No extra costs

Impact	Proposed mitigation	Responsibility	Monitoring Activity	Cost Estimate (for monitoring activity other costs are included in the BoQ
	handlers by NEMA and to be disposed in licensed disposal sites			
Increased traffic volumes	• To control vehicle traffic, construction vehicles will enter and leave the site at controlled points only. • Signage will be put in place to give warning and direct the traffic appropriately • Put in place measures to protect pedestrians from construction activities that border pedestrian walkways. Where necessary, walkways will be protected by the placement of temporary barriers • The contractor and the proponent are expected to adhere to onsite traffic rules and Kenya Traffic laws	Contractor	• Traffic movement control plan	• No extra cost
Occupational safety and health hazards	• Compliance to all international, national or local health and safety standards that may exist • Issuance of Personal Protective Equipment (PPE) enforcing their use • Clear marking of work site hazards and training in recognition of hazard symbols • Regular inspection, testing and maintenance of equipment and machinery • Develop and implement site emergency response plans • Training workers on health and safety precautions • Provide fully stocked first aid kits • Use of water sprays to arrest dust • Containments of hazardous materials • Fencing of the construction site to restrict entry	Contractor	• Routine inspection • Auditing • Provision of PPE and trainings	• 1,000,000.00/ year

Impact	Proposed mitigation	Responsibility	Monitoring Activity	Cost Estimate (for monitoring activity other costs are included in the BoQ
	and curb accidents • Installation of firefighting appliance in common amenities • Ensure proper solid waste collection and disposal amenities and proper sewer connections to prevent disease outbreaks			
OPERATION PHASE				
Increased energy demand	• Consider the possibility of using alternative sources of energy especially renewable ones such as solar energy • All the proposed buildings are designed to take advantage of natural light during the day, only few sections will rely on artificial lighting fully during the day • Service and maintain Powered machinery regularly to ensure efficiency. • Use energy saving bulbs and appliances where possible	Proponent Property Manager	Energy Audits	500,000 /year
Increased effluent waste & surface / storm runoff generation	• Ensure that sewage pipes are not blocked or damaged so that the effluent can be delivered to the sewer system to avoid land and water contamination • Install adequate effluent and surface runoff management system • Ensure that no surface runoff is directed to the sewer system to avoid sewer line overload	• Proponent • Property Manager	• Routine inspection records	• 100,000.00/year

Impact	Proposed mitigation	Responsibility	Monitoring Activity	Cost Estimate (for monitoring activity other costs are included in the BoQ
Increased water demand	• Installation of water saving fittings to limit use of water e.g. installation of toilet flushes with low volume high pressure cisterns, aerated or spray flows in taps, automatic shut-off taps • Rain water harvesting • Incorporation of roof rain water harvesting from the roof of buildings • Put in place measure for quick detection and repair of pipes & tanks leaks. • Use underground water (borehole water) to augment the supply	• Property Manager	• Keeping records of consumption • Water meters	No extra cost
Increased no. of people	• Provide adequate social and other infrastructure to meet needs of the tenants, visitors and customers	• Proponent • Property managers	• Audit of adequacy of amenities	No extra cost
DECOMISSIONING PHASE				
Livelihood and economic loss	• Business associated with the development should be notified of Intention of decommissioning in good time to relevant adjustment • Redeployment of the affected workers where feasible.	• Property managers		No cost
Excessive Noise and Vibrations	• Sensitization of construction truck drivers to switch off vehicle engines while offloading materials • Avoid hooting especially when passing through silent zones areas such as schools, churches,	• Property Managers Contractor	• Traffic plan • Traffic Audit	200,000,00/once

Impact	Proposed mitigation	Responsibility	Monitoring Activity	Cost Estimate (for monitoring activity other costs are included in the BoQ
	residential areas and hospitals • Construction machinery shall be kept in good condition e.g. greasing to reduce noise generation from friction of movable parts • It is recommended that all generators and heavy duty equipment be insulated or placed in enclosures to minimize ambient noise levels			
Dust and exhaust emissions	• Strict enforcement of onsite speed controls as well as limiting unnecessary traffic within the project site • Fence demolition site with dust screens	• Contractor	• Air quality survey • Routine monitoring	200,000.00
Occupational safety and health hazards	• Issue workers with appropriate PPEs • Restrict onlookers/scavengers from site	• Contractor	• Routine inspection	300,000,00
Displacement of tenants	• Adequate notices to interested and affected parties (IAP) to be notified on time	• Property Manager	-	No cost

8:0 EMERGENCY RESPONSE PLAN (ERP)

Emergencies and disasters can occur any time without warning. It is important for the proponent to prepare for them and to be in a good position to act to minimizing panic and confusion when they occur. Emergency Response Plans (ERP) will have to be instituted throughout the project cycle.

The following elements of a conventional emergency response plan are recommended as summarized in table 9 below.

Table 9: Conventional Emergency Response Plan

Emergency Response Plan Components	Actions/Requirements	Responsibility
Potential Emergency	• Identification of all potential emergencies associated with the proposed project at the project site, Include, Fires, Accidents & Incidents, Security, and Terrorism ***etc***.	• Contractor during construction and Decommissioning phases. • Proponent or property management company during operation phase.
Emergency Operations Coordinator (EOC)	• Designate a primary and secondary contact person	• Contractor during construction and decommissioning phases. • Proponent or property management company during operation phase.
Emergency contact Numbers	• Give & Display contact for Fire station, Ambulance, police, Hospitals, Others	• Contractor during construction and decommissioning phases • Proponent or property management company during operation phase.
Installation of emergency equipment	• Fire sensors • Fire alarms, • fire extinguishers, • fire hose, • Panic alarm button, • Provision and enforcement of use of	• Contractor during construction and decommissioning phases. • Proponent or property management

Emergency Response Plan Components	Actions/Requirements	Responsibility
	PPEs, • Emergency Communication equipment, such as Phone & alarm bells	company during operation phase.
Training for emergency response	• Regular training for emergency response	• Contractor during construction and decommissioning phases. • Proponent or property management company during operation phase
Trained in the use of emergency equipment	• Employees Training in the use of emergency equipment	• Contractor during construction and decommissioning phases. • Proponent or property management company during operation phase.
First Aid	• Provision of first aid kits, • First aid management training	• Contractor during construction and decommissioning phases. • Proponent or property management company during operation phase.
Signage	• Fire sensors • Signage, action poster, alarm bell/ panic button	• Contractor during construction and decommissioning phases. • Proponent or property management company during operation phase.
Procedure for rescue and evacuation	• Evacuation plan • Warning system,	• Contractor during construction and

Emergency Response Plan Components	Actions/Requirements	Responsibility
	• Assembly site • Shelter in place plan.	decommissioning phases. • Proponent or property management company during operation phase.
Tenant emergency contact information	• List of all owners, residents & their activities	• Proponent or property management company during operation phase.
ERP review	• Annual ERP review	• Contractor during construction and decommissioning phases. • Proponent or property management company during operation phase.

9.0 PUBLIC CONSULTATION

9.1 Introduction

Public participation is basically concerned with involving, informing and consulting the public in planning, management and other decision-making activities. Public participation tries to ensure that due consideration is given to public values, concerns and preferences when decisions are made. It encompasses the public actively sharing in the decisions that government and other agencies make in their search for solutions to issues of public interest.

Public consultation in this project was done with the following aims:

- To inform the neighbours and other stakeholders about the proposed project and its objectives
- To seek views, concerns and opinions of people in the area concerning the project
- To establish if the local people foresee any positive or negative environmental effects from the project and if so, how they would wish the perceived impacts to be addressed.

9.2 Methodology and Source of Information

During the EIA Project report phase, public participation was a key component in getting the information to be incorporated in writing this report it. The neighbours to the project were consulted through; informal interviews, a public meeting and through questionnaire survey. During the process, both positive and negative views of the perceived affected neighbours were sought. The exercise was conducted by a team of experienced registered EIA experts via administration of pre-designed questionnaires. **(Attached at the appendix 4 are participants' questionnaires filled during public participation and minutes of the public consultative meeting on appendix 3).**

9.3 Highlights of issues that arose during the public meeting.

1. **Increased dust from construction activities**

The neighbouring residents were concerned that there will be increased dust generation during construction which would be a nuisance and sought clarification on what was to be done about it. They were informed that dust screens will be used all round the construction site and building to abate dust dispersion.

2. **Damages and compensation**

A neighbouring resident sought to know if the proposed excavation for the basement levels would affect their boundary wall and trees and if it does if there will be remediation measures.

3. **Interruption of water supply, sewer, electricity**

The residents informed the team that if interruption of any of the above was to be done, they be informed prior if it has an effect on them and the interruption period to be reasonable and an alternative provided if the interruption is long term.

4. **Project design**

The residents wanted to know the coverage of the proposed development in terms of square feet; and the number of basement levels.

Additionally, the residents sought to know if the proposed basement levels construction can destabilize the neighbouring building. The project architects-Adventis In house Africa (AIA) responded to this in detail (see attached minutes on appendix 3)

5. **Insecurity**

The residents sought to know how the proponent would manage the influx of new people seeking jobs during construction phase and the possibility of insecurity. They were informed there will be controlled entry and exit to the site. Also, the boundary wall will remain intact to contain all workers on site.

6. **Parking provisions/Traffic management**

The residents were informed of the traffic management strategies during construction and operation phase. They found it satisfactory and in addition sought to know the number of parking spaces available; they were informed that for parking spaces have been provided as per the local authority by laws that is 1 car park for every 100 Square meters.

7. The residents welcomed the proposed project and requested that the mitigation measures mentioned in the presentation be implemented during all project phases. They additionally requested for presentation summary made on that day (12/3/2016) together with the contacts of the project consortium. These were provided to them on 17/3/2016.

10.0 CONCLUSION

The primary objective of the environmental impact assessment was to fulfil the legal requirements, as outlined in the Environmental Management and Co-ordination Act, 1999, EMCA (Amendment) 2015 and the Environmental Impact Assessment and Audit Regulations, 2003. Most of the issues arising from the environmental impacts assessment study relate to noise, air quality, waste management and occupational health and safety issues.

From the socioeconomic angle, the project comes with many positive impacts. These include job creation, improvement of the local economy and as a source of revenue to the local and national Governments. However, at this stage of project development, there are a number of areas that need attention to ensure that the project will meet acceptable environmental performance and acceptability. Most of the issues have been discussed in the earlier sections of this report and should be followed up and implemented.

Recommendations for corrective measures for the potential significant environmental impacts and safety risks have been incorporated the environmental impacts assessment study report.
The proposed project will be beneficial to the proponent and the country in general. A comprehensive Environmental Management and Monitoring Plan (EMMP) has been formulated and sufficient mitigation measures for the predicted negative environmental impacts have been proposed therein. It is in this regard that the Lead expert recommends that the project proponent fully implement the EMMP and that NEMA considers issuing the proponent with an EIA License.

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APPENDICES

1. Cost summary (bill of quantities) and payment Receipt of 0.1%project cost to NEMA
2. Change of Use in Progress
3. Minutes of the public consultation meeting held on 12/03/2016
4. Samples Questionnaires survey
5. Copy of Title deed and PIN Certificates
6. Site pictures and neighbourhood
7. List of invitations sent to residents for public meeting on 3rd and 4th March 2016
8. Attendance sheet-public meeting held on 12/03/2016
9. Public meeting pictures
10. Water usage and storage calculations
11. Architectural designs subject to approval by the county physical planning department